

**INTERNATIONAL COURT OF JUSTICE**

---

**DISPUTE CONCERNING  
CERTAIN ACTIVITIES CARRIED OUT BY NICARAGUA  
IN THE BORDER AREA  
(COSTA RICA V. NICARAGUA)**

**COUNTER - MEMORIAL  
OF THE REPUBLIC OF NICARAGUA**

**VOLUME I**

**06 August 2012**



**INTERNATIONAL COURT OF JUSTICE**

---

**DISPUTE CONCERNING  
CERTAIN ACTIVITIES CARRIED OUT BY NICARAGUA  
IN THE BORDER AREA  
(COSTA RICA V. NICARAGUA)**

COUNTER - MEMORIAL  
OF THE REPUBLIC OF NICARAGUA



**VOLUME I**

**06 August 2012**



## TABLE OF CONTENTS

<b>CHAPTER 1: INTRODUCTION</b> .....	<b>1</b>
A. THE SCOPE OF THE DISPUTE .....	4
1. Dredging Program .....	4
2. Issues of Sovereignty .....	10
3. Counter Claims .....	12
(a) The Road .....	14
(b) Nicaragua’s right of Navigation on the Colorado River .....	16
(c) The Non-existence of the Bay of San Juan del Norte .....	16
(d) Violation by Costa Rica of the Court’s Order on Provisional Measures .....	17
B. STRUCTURE OF THE COUNTER MEMORIAL .....	18
<b>CHAPTER 2: BACKGROUND OF THE DISPUTE</b> .....	<b>21</b>
A. THE RELEVANT GEOGRAPHY .....	22
1. The San Juan de Nicaragua River .....	22
2. The adjacent biosphere reserves and internationally-protected wetlands .....	26
3. Harbour Head and the Bay of San Juan del Norte .....	27
4. The “Caño” .....	27
B. HISTORICAL BACKGROUND: THE ORIGINS OF THE BORDER BETWEEN NICARAGUA AND COSTA RICA .....	29
1. The Jérez-Cañas Treaty of Limits of 15 April 1858 .....	30
2. The Award of President Cleveland of 1888 .....	32
3. The Alexander Awards 1897-1900 .....	33
4. The Dispute Concerning Navigation and Related Rights (Costa Rica v. Nicaragua) .....	35
C. NICARAGUA’S DREDGING PROGRAM .....	37
D. ACTIVITIES IN THE CAÑO .....	44

<b>CHAPTER 3: APPLICABLE LAW</b> .....	<b>51</b>
A. THE 1858 TREATY AND ITS SUCCESSIVE ARBITRAL AND JUDICIAL INTERPRETATIONS .....	51
1. The 1858 Treaty Establishes the Sovereignty of Nicaragua over the River San Juan de Nicaragua .....	52
(a) The 1858 Treaty of Limits and its arbitral interpretation .....	52
(b) The recognition of Nicaragua’s sovereignty over the San Juan de Nicaragua River .....	53
2. The Legal Regime of the San Juan de Nicaragua established by the 1858 Treaty .....	56
B. THE LIMITED ROLE OF PRINCIPLES AND RULES OF GENERAL INTERNATIONAL LAW .....	60
1. The Subsidiary Role of General Principles .....	61
(a) The principle of the non-harmful use of the territory .....	62
(b) The obligation to notify and consult .....	65
(c) The absence of veto right in general international law .....	68
(d) The obligation to conduct a proper environmental impact assessment .....	69
2. The Relationship between the Treaty of Limits and the Other Treaties Invoked by Costa Rica .....	71
<b>CHAPTER 4: NAVIGATION ON THE SAN JUAN DE NICARAGUA RIVER</b> .....	<b>75</b>
A. NICARAGUA’S RIGHT TO DREDGE THE RIVER TO IMPROVE ITS NAVIGABILITY .....	76
1. Factual and Historical Background .....	77
2. The Origins of Nicaragua’s Dredging Project .....	92
3. Nicaragua’s Right To Dredge .....	96
B. THE IMPACTS ON NAVIGABILITY OF THE SAN JUAN DE NICARAGUA RIVER CAUSED BY COSTA RICA’S CONSTRUCTION OF A ROAD ON THE RIGHT BANK .....	103
C. NICARAGUA’S RIGHT TO NAVIGATE ON THE COLORADO BRANCH OF THE SAN JUAN DE NICARAGUA RIVER .....	119

**CHAPTER 5: NICARAGUA HAS COMPLIED WITH ITS OBLIGATIONS UNDER INTERNATIONAL ENVIRONMENTAL LAW ..... 125**

A) INTRODUCTION .....126

B) NICARAGUA CONDUCTED A THOROUGH ENVIRONMENTAL IMPACT ASSESSMENT.....127

1. Overview of Environmental Regulations in Nicaragua .....127

2. MARENA’s Assessment of the Proposed Dredging Project Prior to Authorization .....134

(a) The Project .....135

(b) The Request for Environmental Authorization.....136

(c) The Formation of the Intra-Governmental Team.....139

(d) The Terms of Reference .....140

(e) The First Site Inspection.....141

(f) The Public Consultation and Comment Period .....145

(g) The Third Site Inspection .....148

(h) The EIS .....149

(i) The Fourth Site Inspection.....158

(j) Continued Environmental Impact Assessment.....161

(k) The Fifth Site Inspection.....166

(l) The Technical Opinion .....167

(m) MARENA’s Issuance of the Environmental Permit.....170

3. MARENA’s Review and Authorization of Additions to the Dredging Project .....176

(a) The Proposed Project Additions .....180

(b) MARENA’s EIA of the Proposed Project Additions .....183

(c) No Requirement for a New EIS.....190

C) NICARAGUA BREACHED NO OBLIGATIONS OF NOTIFICATION OR CONSULTATION.....194

D) NICARAGUA IS IN FULL COMPLIANCE WITH WHAT COSTA RICA CALLS THE “ENVIRONMENTAL PROTECTION REGIME” .....205

1. Nicaragua Is in Full Compliance with the Ramsar Convention . . . . .	207
2. Nicaragua Is in Full Compliance with the SI-A-PAZ and Central American Biodiversity Agreements . . . . .	212
3. Nicaragua’s Activities Are Fully Consistent with the Treaty of Limits as Interpreted by the Cleveland Award . . . . .	216
E) NICARAGUA’S ACTIVITIES HAVE CAUSED NO DAMAGE TO COSTA RICA AND POSE NO RISK OF FUTURE HARM . . . . .	221
1. The Dredging Project . . . . .	222
(a) Reduced Scope of the Dredging Project. . . . .	222
(b) Progress To Date . . . . .	233
(c) Activities Conducted in late 2010 . . . . .	235
2. No Damage Caused to Costa Rica . . . . .	237
(a) Harm Allegedly Caused by Nicaragua’s Caño-Clearing Activities . . . . .	243
(i) The Felling of Trees. . . . .	244
(ii) The Removal of Undergrowth. . . . .	248
(iii) The Excavation of Soil . . . . .	249
(iv) The Depositing of Soil and Debris in the Wetland . . . . .	251
(b) Harm Allegedly Caused by Nicaragua’s Dredging Activities. . . . .	255
(i) No Dredged Sediments Have Been Deposited on the Costa Rican Bank. . . . .	255
(ii) Dredging Has Not Caused Erosion of the Costa Rican Bank. . . . .	264
3. The Absence of Any Risk of Harm to Costa Rica . . . . .	269
(a) No Risk of Harm to Costa Rica’s Environment . . . . .	280
(b) No Risk of Harm to the Navigability of the Colorado River . . . . .	287

**CHAPTER 6: TERRITORIAL SOVEREIGNTY. . . . . 293**

A. NICARAGUA’S ALLEGED ‘FAILURE’ TO RAISE A DISPUTE . . . . .	294
B. THE PLAIN LANGUAGE OF THE ALEXANDER AWARD . . . . .	301
1. Location of the Border: the First Channel Met. . . . .	301
2. Costa Rica’s Claims Were Already Rejected by General Alexander. . . . .	307



C. THE CAÑO HAS LONG EXISTED IN ITS CURRENT LOCATION . . .	314
1. The Relevance of Maps and Satellite Photographs . . . . .	315
2. The Existence of the Caño . . . . .	318
3. Costa Rica’s Experts Do Not Assist Its Case . . . . .	344
D. NICARAGUA’S HISTORIC ACTIVITIES IN THE CAÑO AND THE AREA IN DISPUTE. . . . .	351
1. Nicaragua’s Sovereign Activities . . . . .	353
2. Costa Rica’s Acquiescence . . . . .	358
3. Costa Rica’s Lack of Effectivités. . . . .	364
E. THE PRESENT DAY NON-EXISTENCE OF THE BAY OF SAN JUAN. . . . .	367
1. Physical disappearance of the Bay of San Juan . . . . .	368
2. The Cleveland Award . . . . .	374
3. The Alexander Awards . . . . .	379
4. The Practice of the Parties . . . . .	381
5. Loss of Territory in International Law . . . . .	382

**CHAPTER 7: OTHER VIOLATIONS CLAIMED BY COSTA RICA . . . . . 385**

A. NICARAGUA COMPLIED WITH THE INTERNATIONAL COURT OF JUSTICE’S ORDER FOR PROVISIONAL MEASURES OF 8 MARCH 2011. . . . .	385
1. Nicaragua Has Refrained from “sending to or maintaining in” Harbour Head any State Personnel. . . . .	387
2. Acts of the Guardabarranco Environmental Movement cannot be attributed to Nicaragua. . . . .	389
(a) The Court’s Order does not prohibit private individuals to travel to the disputed territory. . . . .	390
(b) Members of the Guardabarranco Environmental Movement are not de facto personnel of Nicaragua. . . . .	392
3. In any event, no violation of the Court’s Order has been committed .398	
(a) Costa Rica has not been prevented from exercising its rights under the second provisional measure. . . . .	398

(b) The dispute has not been aggravated, extended or made more difficult to resolve .....	400
B. THE ALLEGED VIOLATION OF THE INTERNATIONAL COURT OF JUSTICE’S JUDGMENT OF 13 JULY 2009 .....	402
<b>CHAPTER 8: REMEDIES .....</b>	<b>407</b>
<b>CHAPTER 9: COUNTER-CLAIMS .....</b>	<b>415</b>
A. THE COURT HAS JURISDICTION TO DECIDE UPON NICARAGUA’S COUNTER-CLAIMS.....	416
1. The Consequences of the Construction of a Road along the San Juan de Nicaragua River.....	417
(a) General Considerations .....	417
(b) Lack of Blueprints and Environmental Impact Assessment ....	420
(c) Lack of Consultation.....	424
(d) Damages Caused to Nicaraguan Territory and the Environment .....	428
2. The Consequences of the Current Non-Existence of the Bay of San Juan del Norte .....	435
3. The Right of Nicaraguan Vessels to Reach the Ocean via the Colorado River .....	438
4. Costa Rica Violation of the Court’s Order on Provisional Measures..	439
B. NICARAGUA’S COUNTER-CLAIMS ARE ADMISSIBLE .....	446
1. Nicaragua’s Counter-Claims are “Distinguishable from a Defence” ..	446
2. Nicaragua’s Counter-Claims are “Directly Connected with the Subject-Matter of Claims” of Costa Rica .....	448
<b>SUBMISSIONS.....</b>	<b>455</b>
<b>CERTIFICATION .....</b>	<b>459</b>
<b>APPENDIX 1 .....</b>	<b>461</b>
<b>APPENDIX 2 .....</b>	<b>525</b>
<b>LIST OF ANNEXES.....</b>	<b>555</b>

## INDEX OF FIGURES

Figure 1.1 Map of the Republic of Nicaragua .....	7
Figure 2.1 Excerpt of Satellite Image issued by LAND INFO .....	23
Figure 2.2 Photographs of stuck boats in the San Juan de Nicaragua River .....	38
Figure 2.3 Photographs showing hand-held equipment for the clearing of the caño .....	47
Figure 2.4 Photograph of trees requiring removal from the area adjacent to the caño .....	48
Figure 4.1 Comparison of 2010 Satellite Image and 1851/1858 maps .....	84
Figure 4.2 Excerpt of Satellite image issued by LAND INFO .....	92
Figure 4.3 Location of Juan Rafael Mora Porras Highway.....	105
Figure 4.4 Photographs showing large swaths of deforested territory .....	107
Figure 4.5 Photographs showing drastic alteration of natural surface runoff patterns and sediment run-off into the San Juan de Nicaragua River .....	109
Figure 4.6 Photograph showing debris left next to the San Juan de Nicaragua River .....	143
Figure 5.1 Map of Deposit Sites Proposed in September 2006 EIS.....	154
Figure 5.2 Map of All Deposit Sites Analyzed During October 2006 Site Inspection.....	160
Figure 5.3 Map Illustrating 8 Priority Areas .....	225
Figure 5.4 Photographs of Erosion Included at pp. 77 & 82 of EIS.....	267
Figure 5.5 Photographs of Erosion Presented to Central American Court of Justice .....	268
Figure 6.1 2010 Satellite Image.....	306
Figure 6.2 Sketch of the Harbour of Greytown-1897, First Alexander Award of 30 September 1897 .....	308
Figure 6.3 Map of San Juan del Norte surveyed by Ensign W.J. Maxwell in 1888 .....	309
Figure 6.4 1949 Costa Rica Map .....	319

Figure 6.5 1971 Costa Rica Map .....	321
Figure 6.6 1931 U.S. Army Corps of Engineers Map .....	325
Figure 6.7 1961 Aerial Image .....	328
Figure 6.8 January 2011 Satellite Image .....	330
Figure 6.9 1961 Aerial Image (2) .....	331
Figure 6.10 1970 U.S. CIA Map .....	333
Figure 6.11 1970 U.S. CIA Map .....	334
Figure 6.12 1979 U.S. CIA Map .....	334
Figure 6.13 1983 U.S. CIA Map .....	335
Figure 6.14 1978 Texaco Map .....	336
Figure 6.15 1997 Satellite Image .....	337
Figure 6.16 2007 Satellite Image .....	338
Figure 6.17 2009 Photographs .....	341
Figure 6.18 2009 Photograph .....	343
Figure 6.19 Map of 1831 by Mr. George Peacock with additions up to 1859 .....	369
Figure 6.20 San Juan de Nicaragua or Greytown surveyed under command of Comm. C. Hatfield U.S.N. 1872 and Com. E.P. Lull U.S.N. 1873. ....	372
Figure 9.1 Photographs of fragile soil removal and dumping of sediments .....	431

## LIST OF ACRONYMS

CFIA (Spanish Acronym)	Association of Federated Engineers and Architects of Costa Rica
CIA	Central Intelligence Agency
CONAVI (Spanish Acronym)	Consejo Nacional de Vialidad (Spanish) or National Roads Authority
CORASCO (Spanish Acronym)	Corea & Asociados S.A.
CRA	Costa Rica Application
CRM	Costa Rica Memorial
DGCA (Spanish Acronym)	Directorate General of Environmental Quality
EIA	Environmental Impact Assessment
EIS	Environmental Impact Study
EPN (Spanish Acronym)	Empresa Portuaria Nacional (Spanish) or National Port Authority or National Port Company
FONARE (Spanish Acronym)	National Recycling Forum
FUNDENIC-SOS (Spanish Acronym)	Nicaraguan Foundation for Sustainable Development
HEC-RAS	Hydrologic Engineering Centers River Analysis System
ICN (Spanish Acronym)	Geographic Institute of Costa Rica
ILC	International Law Commission
INETER (Spanish Acronym)	Territorial Institute of Nicaragua
IUCN	International Union for the Conservation of Nature
JAPDEVA (Spanish Acronym)	Junta de Administración Portuaria y Desarrollo Económico de la Vertiente Atlántica (Spanish) or Port Administration and Economic Development of the Atlantic
LANAMME (Spanish Acronym)	Laboratorio Nacional de Materiales y Modelos Estructurales, Universidad de Costa Rica (Spanish) or National Laboratory of Materials and Structural Models
MARENA (Spanish Acronym)	Ministerio del Ambiente y los Recursos Naturales ( Spanish) or Ministry of the Environment and Natural Resources

MTI	Ministry of Transport and Infrastructure
NCM	Nicaragua Counter Memorial
OAS	Organization of American States
P.C.I.J.	Permanent Court of International Justice
PROCUENCA (Spanish Acronym)	Integrated Management of Water Resources and Sustainable Development of the San Juan River Basin and its Coastal Zone
SI-A-PAZ (Spanish Acronym)	International System of Protected Areas for Peace
SINAC (Spanish Acronym)	La Dirección Ejecutiva del Sistema Nacional de Áreas de Conservación (Spanish) or The Executive Directorate of the National System of Conservation Areas
UNITAR	United Nations Institute for Training and Research
UNOSAT	UNITAR Operational Satellite Applications Programme
UTM	Universal Transverse Mercator

## CHAPTER 1

### INTRODUCTION

1.1 The present case was brought before the Court by means of an Application filed by the Republic of Costa Rica (Costa Rica) against the Republic of Nicaragua (Nicaragua) on 18 November 2010, in which it requested the Court to adjudge and declare that Nicaragua was in breach of its international obligations “as regards the incursion into and occupation of Costa Rican territory, the serious damage inflicted to its protected rainforests and wetlands, and the damage intended to the Colorado River, wetlands and protected ecosystems, as well as the dredging and canalization activities being carried out by Nicaragua on the San Juan River.”

1.2 The title given to the case by the Court is *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*.

1.3 Costa Rica also on 18 November 2010 filed a Request for the Indication of Provisional Measures. In its Order of 8 March 2011, the Court indicated several measures, among which that “Each party shall inform the Court as to its compliance with the Court’s Order on Provisional Measures”. Costa Rica has filed 7 reports starting on 1 April and the last one on 3 July 2012. For its part Nicaragua has presented two reports, one on 5 April 2011, shortly after the Court’s Order was read and a second report on 23 July 2012.

1.4 By Order of 5 April 2011 the Court determined that the time limit for the filing of each Party's written pleading was 5 December 2011 for the Memorial of Costa Rica and 6 August 2012 for the Counter-Memorial of Nicaragua. Costa Rica filed her Memorial within the time-limit fixed by the Court and the present Counter-Memorial of Nicaragua is also filed within the time limit so fixed.

1.5 In her Memorial Costa Rica bases the jurisdiction of the Court on Article XXXI of the American Treaty on Pacific Settlement of 30 April 1948 (Pact of Bogotá) and on the declarations of acceptance pursuant to Article 36 (2) of the Statue of the Court made respectively by Costa Rica dated 20 February 1973 and by Nicaragua on 24 September 1929.

1.6 Costa Rica also invoked as a basis of the Court's jurisdiction, a Diplomatic Note from the Acting Minister of Foreign Affairs of Nicaragua in which he asserts that the dispute between the Parties is *sub judice* before the Court.<sup>1</sup> Nicaragua considers it unnecessary to resort to this Diplomatic Note since the two instruments invoked leave no doubt of the Court's jurisdiction. If the intention of citing this Diplomatic Note is to imply that Nicaragua somehow might attempt to find a way out of this dispute before the Court by invoking questions of jurisdiction or admissibility then it should be recalled that Costa Rica was not the first party to call for this dispute to be brought before the Court.

---

<sup>1</sup> CRM, p. 30, par. 1.21



1.7 When the present dispute began, Costa Rica ignored Nicaragua's request to try to settle the issues bilaterally and had recourse to the Organization of American States (OAS). In that context, the President of Nicaragua, Mr. Daniel Ortega, publicly announced that the appropriate forum to deal with the dispute, if it could not be settled bilaterally, was the International Court of Justice since it was a legal dispute over sovereignty<sup>2</sup>. This announcement was made on 2 November 2010 during the meeting of the OAS and before Costa Rica had given any indication that it would consider bringing the matter to the Court. Quite the contrary, Costa Rica was insisting that the appropriate forum to discuss and settle the dispute was the OAS. Costa Rica about-faced on this point only after the recommendations of the Secretary General of the OAS and the resolution of that Organization did not coincide with its position. It was only then that Costa Rica decided to pre-empt Nicaragua from filing an Application with the Court, by racing to the Peace Palace and filing its own Application<sup>3</sup> on 18 November 2010. So there is no question that Nicaragua now or ever has attempted or will attempt to avoid the jurisdiction of the Court.

1.8 However, Nicaragua wishes to make clear – as it did in the previous case brought by Costa Rica against Nicaragua<sup>3</sup> - that while it accepts the

---

<sup>2</sup> El 19 Digital, Nicaragua will go to The Hague for delimitation of the border with Costa Rica, 2 November 2010 available at [http://www.el19digital.com/index.php?option=com\\_content&view=article&catid=23:nacionales&id=17616:presidente-de-nicaragua-sentara-posicion-oficial-sobre-tema-del-rio-san-juan&Itemid=12](http://www.el19digital.com/index.php?option=com_content&view=article&catid=23:nacionales&id=17616:presidente-de-nicaragua-sentara-posicion-oficial-sobre-tema-del-rio-san-juan&Itemid=12) (last visited 21 July 2012)(NCM, Vol. III, Annex 93.)

<sup>3</sup> Counter Memorial of Nicaragua (NCM) in the *Dispute Concerning Navigational and Related Rights* (Costa Rica v. Nicaragua), p. 1, para. 4.

jurisdiction of the Court, it nevertheless considers that the main issues raised by Costa Rica have already been settled by the 1858 Treaty<sup>4</sup>, the 1888 Cleveland Award<sup>5</sup> and the Alexander Awards of 1897-1900<sup>6</sup>.

## **A. THE SCOPE OF THE DISPUTE**

1.9 The two basic issues in the present case are the questions of sovereignty in the area in and around the mouth of the San Juan River and the questions relating to the right of Nicaragua to maintain and improve the navigation of the San Juan de Nicaragua River. As will become evident in the present Counter-Memorial, both of these questions were the objects of a long historical dispute between the Parties that was definitely settled by the instruments mentioned in the preceding paragraph.

1.10 The geographical and historical background of the dispute is discussed in more detail in Chapter 2 of this Counter-Memorial. At this point, a few general remarks are in order.

### **1. Dredging Program**

1.11 A dominant feature of Nicaraguan geography is Lake Nicaragua that has a surface of 8.264 km<sup>2</sup> (see **Figure 1.1**). The San Juan de Nicaragua River originates in Lake Nicaragua and after flowing for more than 200 km. through Nicaraguan territory it empties into the Atlantic Ocean (Caribbean Sea)

---

<sup>4</sup> See paras. 2.23 – 2.30 below.

<sup>5</sup> See paras. 2.33 – 2.36 below.

<sup>6</sup> See paras. 2.37 – 2.40 below.

(see **Figure 1.1**). Sovereignty over this River was long disputed by Costa Rica and the question was the object of the Treaties and the Awards indicated in paragraph 1.7 above. These instruments determined that Nicaragua had sovereignty over the River and that Costa Rica was to have as a boundary line the right or southern bank of the River from a point 3 miles from Castillo Viejo to the sea and in this section of the River, Costa Rica was awarded rights of navigation with objects of commerce. Furthermore, the Cleveland Award of 1888 clearly decided that Costa Rica could not prevent Nicaragua from executing the necessary works in order to maintain and improve the navigation of the River.<sup>7</sup>

1.12 The San Juan de Nicaragua River bifurcates into two main branches about 35 km. before reaching the sea (the delta). At the time the 1858 Treaty was signed, the main flow of the San Juan de Nicaragua River followed the northern branch (San Juan proper) through Nicaraguan territory and emptied into the Bay of San Juan. Shortly after that date the main flow of the San Juan substantially deviated at the delta into a branch known as the Colorado that flows entirely through Costa Rican territory.<sup>8</sup> This deviation of the waters of the San Juan to the Colorado branch has increased in the past decades due to the intense deforestation of the Costa Rican territory along the right (Costa Rican) bank that has greatly increased the silting of the River and caused a substantial deleterious effect on its navigability. At present, nearly 90% of the waters of the Nicaraguan

---

<sup>7</sup> See paras. 4.38 – 4.39 below.

<sup>8</sup> See paras. 4.18 – 4.19 below.

River of San Juan flow through the Colorado branch. The original main outlet of the Nicaraguan River is navigable by only small shallow draft boats and only for certain periods during the year. No sea going vessels can enter from the sea or navigate in the San Juan proper at any point downstream from the delta. At present, only Costa Rica can navigate to the sea by following the Nicaraguan River of San Juan downstream to the delta, and then following the Colorado branch through Costa Rican territory to the sea.

Figure 1.1<sup>9</sup>

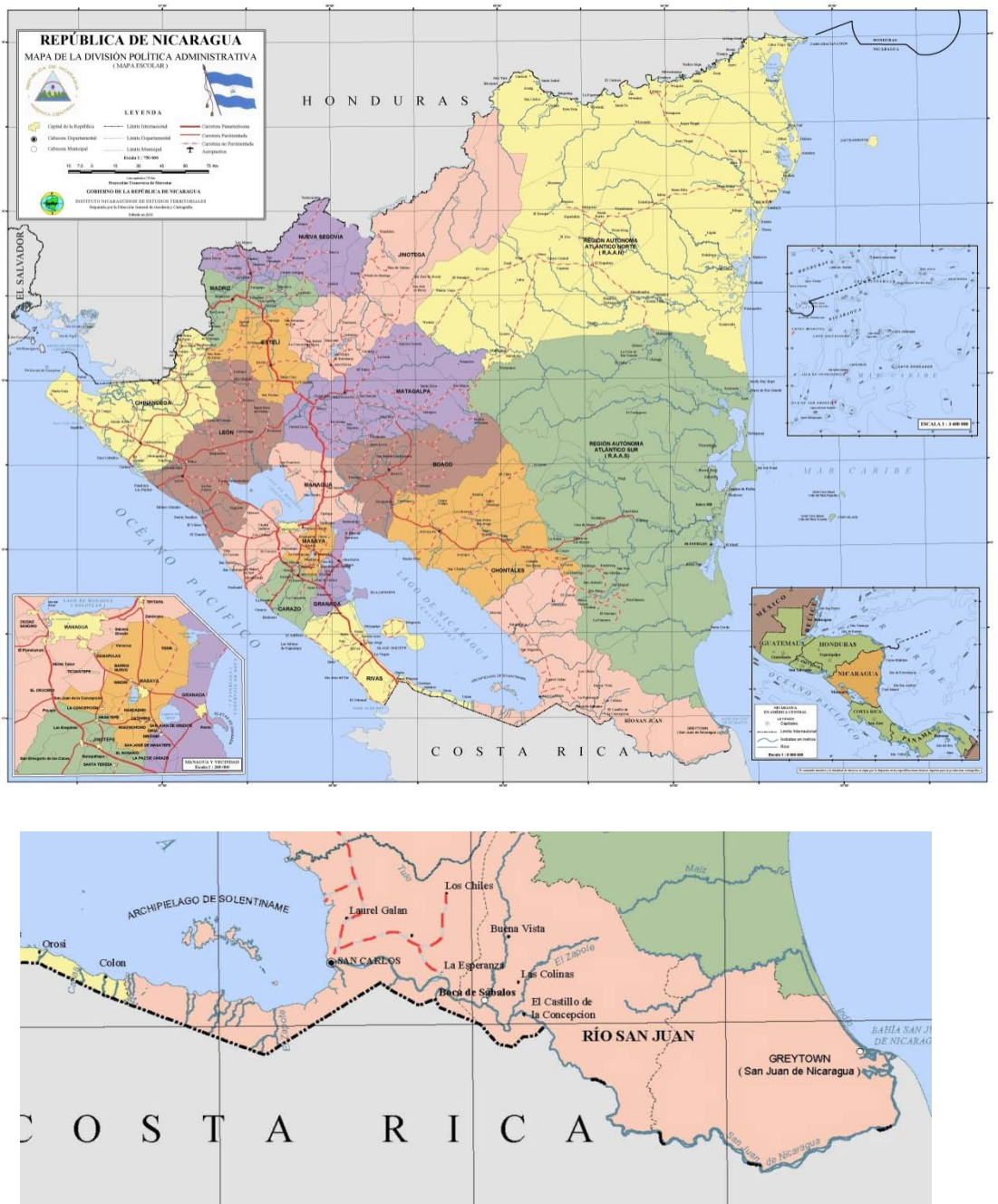


Figure 1.1 Map of the Republic of Nicaragua

<sup>9</sup> Map of the Republic of Nicaragua (INETER) available at <http://www.ineter.gob.ni/> (last visited 21 July 2012) (NCM IV, Annex 118).

1.13 This situation prompted Nicaragua, in spite of its lack of adequate economic resources, to endeavour to put in place a dredging program that would make possible the year round navigability of the River for at least small river vessels. Feasibility studies for this dredging program were made and an Environmental Impact Assessment was conscientiously prepared and approved after several years of study by the appropriate Authorities. The account of the development of this modest dredging program is introduced in Chapter 2 and is analysed in detail in Chapter 5.

1.14 The dredging program for the San Juan was discussed in public and the issue was published in the media, including the Official Gazette. The program was analysed by the Costa Rican Authorities (including Costa Rica's Foreign Minister in a meeting with the Costa Rican Parliament) who concluded that it would have no significant effects on the water flow of the Colorado branch or on Costa Rican territory.<sup>10</sup>

1.15 The dredging program that has been executed is a very minor undertaking carried out with small, mostly artisanal, dredging equipment<sup>11</sup> that has not even been able so far to come close to offsetting the increased silting of the River caused by Costa Rica's construction of a road running along its right

---

<sup>10</sup> See para.4.31; *further see* para. 5.111; *see also* Van Rhee & De Vriend, Delft University of Technology, "The influence of dredging on the discharge of the San Juan River," 19 July 2012 (hereinafter "2012 Van Rhee & De Vriend Supplemental Report"), Chapter 2.1 (NCM, Vol. I, Appendix 2).

<sup>11</sup> See paras. 5.183-5.189.

bank<sup>12</sup>. In carrying out this program, Nicaragua plainly has been acting within its lawful right to maintain the navigability of the River, and has not caused any harm to Costa Rica. But this issue barely scratches the surface of the larger question that Costa Rica's Application and Memorial seek to avoid: Nicaragua's right to undertake a thorough maintenance of the River that would restore navigability for sea-going vessels as existed in 1858 when the Treaty was signed. It is this right, under the Treaty and the 1888 Cleveland Award, that Nicaragua is requesting the Court to confirm. For these reasons, if the Court were simply to declare that the dredging that is in process is a lawful undertaking and causes no harm to Costa Rica, it would not finally resolve the present dispute, or get at its heart. It would, at best, postpone the essence of the case to a separate and subsequent proceeding, after Nicaragua is in a financial position to exercise its sovereign rights, under the Treaty and the Cleveland Award, and, by dredging and other technical means, improve the navigability of the River to the level that existed in 1858, so that sea going vessels may once again traverse the River from its mouth at the Caribbean Sea all the way to Lake Nicaragua and back. Rather, that consign this fundamental issue to a separate case, with attendant impact on the Court's time and resources, Nicaragua seeks to have the entire dispute over improvements to the River resolved here and now.

---

<sup>12</sup> See e.g. Section B, Chapter 4; See also G. Mathias Kondolf, PhD, "Distributary Channels of the Rio San Juan, Nicaragua and Costa Rica: Review of Reports by Thorne, UNITAR, Ramsar, MEET, and Araya-Montero," July 2012 ("hereinafter Kondolf"), Section 2.14 (NCM, Vol. I, Appendix 1)

## 2. Issues of Sovereignty

1.16 Improving the navigability of the lower reaches of the San Juan de Nicaragua, downstream from the deviation to the Colorado branch, has always been very important to Nicaragua, but not nearly so much to Costa Rica, which does not need the lower San Juan to reach the sea because it uses the Colorado instead. Thus, it has always been difficult for Nicaragua to obtain Costa Rica's cooperation, even though it has right of navigation in that part of the River. The task was made more difficult because when the dredging process was ready to begin, an analysis of the legal instruments was made in order to determine the exact channel or caño that the border followed. The existing maps, both Costa Rican and Nicaraguan, had not been verified on the ground since the time of the Alexander Awards at the end of the 19th Century. This was a well-known fact since all the maps had legends indicating that they had not been verified on the ground. This problem was discussed with Costa Rica on several occasions in recent years. As discussed in Chapter 6, a Bi-National Commission had been in place since January 1991 that, inter alia, addressed border issues. A recurring question during the meetings of the Commission (e.g. at the meeting in May 1997) was the need for the preparation of "large-scale maps in the border area" between the starting point on the Caribbean Coast at Punta de Castilla and the frontier post of Peñas Blancas located on the western side of Lake Nicaragua.<sup>13</sup> In

---

<sup>13</sup> See para. 6.7 below.



a later meeting in October 2006 the question of locating the starting marker at the mouth of the San Juan was discussed.<sup>14</sup>

1.17 What was clear when the final stages of the dredging program were being prepared was that there were no maps acceptable to both Parties that accurately traced the present day border and there were no border markers indicating the boundary in the areas of the mouth of the River. In these circumstances, the small-scale dredging process contemplated by Nicaragua would have to proceed on the basis of a scrupulous adherence to the text of Alexander's Awards, or an agreement with Costa Rica, which appeared to have no interest in one. In the meantime, the lower San Juan was drying up faster and faster, rendering all forms of navigation impracticable. In Nicaragua's view, the border according to the Alexander Awards was clear, and left to Nicaragua the areas in which it had effectively been exercising undisputed sovereignty for many years, and where Costa Rica had never maintained a presence, let alone sought to exercise sovereign authority. These facts are addressed in greater detail in Chapter 6.

1.18 After the dispute broke out when Nicaragua started the dredging program on the ground, the first reaction of Nicaragua was to propose to Costa Rica that the question be discussed in the Bi-National Commission that had been

---

<sup>14</sup> See para. 6.8 below.

put in place 20 years before to deal, among other things, with this type of problems.<sup>15</sup>

1.19 Costa Rica reacted to this proposal by sending heavily armed guards to the area in an attempt to take control of a territory it had never before occupied, administered or even set foot on.<sup>16</sup> The presence of this armed force could not be sustained, precisely because Costa Rican Authorities had never been in the area and had no knowledge of its conditions. Costa Rica rejected Nicaragua's call for a bilateral discussion to resolve the matter, refused any bilateral contacts with Nicaragua and called a meeting of the Organization of American States (OAS) to deal with the dispute.

1.20 As indicated above, Nicaragua did not consider that the dispute with Costa Rica was a political matter that could be dealt within the OAS. Rather it considered that it should be dealt on a bilateral basis or, if no agreement was possible, it should be brought before the Court since it involved a legal dispute on sovereignty and sovereign rights.

### **3. Counter Claims**

1.21 Nicaragua is filing 4 Counter Claims in this Counter-Memorial that are directly connected with the subject-matter of the claims of the Applicant State. Two of these claims are directly related to the question of the lack of navigability of the San Juan de Nicaragua River. The first claim addresses, the enormous

---

<sup>15</sup> See para. 6.17 below.

<sup>16</sup> See para. 6.18 below.

damage to the River by the unprecedented silting of its waters and bed caused by the helter skelter construction of a road along the right margin of the River; with apparently heedless transposition into the river of huge amounts of soil, surface vegetation and even felled trees removed by Costa Rica to make way for the road. The damage caused by these road-building activities, and the entirely irresponsible manner in which they were carried out, causes irreparable harm to both the environment of the River and to its navigability. The second claim is that, given the silt and sedimentation currently blocking the lower reaches of the River and rendering it impassable to the sea, until Nicaragua can navigate out to sea on the San Juan River proper, it should be entitled to do so through the Colorado branch (which Costa Rica currently prohibits it from doing).

1.22 The third Counter Claim is directly related to the issue of sovereignty around the mouth of the river. This refers to the present status of the no longer existent Bay of San Juan, which once was at the mouth of the San Juan de Nicaragua River. As explained in Chapter 9, the silting and sedimentation process that has dried up the lower reaches of the River, among other causes, made it all but impassable except to the smallest vessels, has completely eliminated the Bay. This is confirmed by current satellite imagery that shows that there is no longer any such feature at the mouth of the River. Accordingly, Nicaragua seeks the Court's recognition of this indisputable fact, and the legal consequences that derive from it: the former Bay, which is now dry land on the Nicaraguan side of the border now belongs to Nicaragua. The fourth Counter

Claim is addressed to non-compliance by Costa Rica with the provisional measures ordered by the Court.

**(a) The road**

1.23 The first Counter Claim relates to the construction of a road by Costa Rica very close to the right margin of the San Juan de Nicaragua River.<sup>17</sup>

1.24 Costa Rica began officially constructing this road on the basis of an Emergency Decree dictated by the President of Costa Rica on 21 February 2011. On the basis of this “emergency” Decree, a 160 km. road was authorized to be constructed a few meters from the right margin of the San Juan River. The construction of this road was begun without fulfilling any of the internal regulatory processes contemplated in Costa Rican legislation or international law for the construction of this type of project. No Environmental Impact Study was made for the construction of the road, even though it was known at the time that it would inevitably destroy forests and wetlands, and seriously affect the San Juan de Nicaragua River.

1.25 The direct relation of this road to the present case is that, apart from the environmental damage it is causing, it is enormously accelerating, the sedimentation of the San Juan de Nicaragua River. The need for dredging the River has become even more imperative since the construction of the road began. It is now to the point where if the River is not dredged, before long it will simply

---

<sup>17</sup> See paras. 9.8 – 9.33 below.

cease to exist together with the thousands of square kilometers of wetlands and flora and fauna that depend on this water course. The international scandal that Costa Rica has propagated against Nicaragua for presumed damage to an area of 250 remote and uninhabited hectares near the mouth of the River is simply a cover for the virtual ecocide with which it is expediting with its industrial and agricultural activities in an area that affects thousands of square kilometers of wetlands and centennial forests.

1.26 Nicaragua filed an Application on 21 December 2011 against Costa Rica for the breaches of its international obligations and the consequent damages of Nicaragua's rights that the construction of this road and certain other industrial and agricultural project entail. That case is titled the *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)* and is pending before the Court. In its Application in that case, Nicaragua stated:

“56. Nicaragua is aware that the legal and factual grounds of the present case are connected to the ongoing case concerning Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua). Nicaragua reserves its rights to consider in a subsequent phase of the present proceedings and after further consideration of the other pending case whether to request that the proceedings in both cases should be joined.”

1.27 Nicaragua considers that with the filing of its Counter Claims in the present case, including its claim based on the harm caused to the San Juan de Nicaragua River caused by the construction of this road and particularly, on its navigability, a discussion of the joinder of the cases becomes more opportune. This is a question that will have to be decided by the Court.

**(b) Nicaragua’s right of Navigation on the Colorado River**

1.28 The Treaty of limits of 1858 also addressed the question of navigation on the San Juan de Nicaragua River. Its purpose on this question was to clarify the rights of the parties over the River. The Treaty stipulated that Nicaragua had rights of sovereignty which obviously included full rights of navigation on the River whilst Costa Rica had only certain limited rights of navigation over it. It was, thus, implicit that both States would have the benefits of navigation on the River out to the sea. It was never a question that Costa Rica with its limited rights would be able to navigate along the River and out to sea and that Nicaragua, due in great part to a process of silting and sedimentation caused substantially by the hand of man in Costa Rica, would be blocked from doing so. Therefore, Nicaragua is claiming that it has the same rights of navigation on the Colorado River as Costa Rica enjoys on the San Juan River, until the conditions of navigability of the San Juan existing at the time the 1858 Treaty was concluded are re-established.<sup>18</sup>

**(c) The Non-existence of the Bay of San Juan del Norte**

1.29 The present case quite visibly – if not noisily – involves a question of sovereignty over territory in the general area of the mouth of the San Juan River. The area in dispute of approximately 250 hectares of wetlands around Harbour Head, as claimed by Costa Rica, is not the only or even the most

---

<sup>18</sup> See paras. 4.66 – 4.75 below.

important territorial issue in dispute in that area. The Treaty of Limits of 1858 stipulated that the Bay of San Juan was to be common as between the Parties. At the time of the signing of the Treaty, the San Juan de Nicaragua River emptied into the Bay of San Juan which was the natural entrance into the River from the sea. With the passage of time, the silting process of the River and the changes caused by the ocean currents, the Bay of San Juan no longer exists. This was a situation that was taken into account in the Awards of President Cleveland and General Alexander. Although Costa Rica accepts that the eastern sector of the original Bay, which is now Harbour Head, is entirely Nicaraguan, it persists in claiming common rights with Nicaragua on the other non-existent part of the original Bay that was located towards the west. For these reasons, Nicaragua is requesting the Court to declare that it is the sole sovereign over the land area where the former Bay of San Juan once existed. This question is directly connected with the sovereignty issues dealt with in the present case<sup>19</sup>.

**(d) Violation by Costa Rica of the Court's Order on  
Provisional Measures**

1.30 Costa Rica has interpreted the Order on Provisional Measures of 8 March 2011 as a *carte blanche* for visiting the area in dispute by its personnel. The Court was very careful in its wording of this Order and in no way can it be understood to grant permanent visiting and surveillance rights to Costa Rica in the

---

<sup>19</sup> See Section E, Chapter 6 below.

territory in dispute unless “it is necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated”. There has been no proof or even claim that there is irreparable prejudice being caused and yet Costa Rica persists in its visits without taking Nicaragua into proper account. Apart from this, the actions taken by Costa Rica –not least the construction of the road – are actions which pose grave risks of irreparable prejudice to the area in dispute and surrounding wetlands, and significantly aggravate or extend the dispute before the Court and make it more difficult to resolve.

## **B. STRUCTURE OF THE COUNTER MEMORIAL**

1.31 The Counter Memorial is structured in accordance with the schema indicated below that identifies the Chapters into which it is divided. It addresses the issues raised by the Applicant State and also raises Counter Claims.

1.32 The Schema of the Counter Memorial is as follows:

Chapter 2 addresses the background of the dispute. It is divided into 4 sections: the first is the relevant geography including a general description of the San Juan de Nicaragua River and the areas near its mouth where the main border dispute is sited; the second section, is a general historical background on how the border was defined as well as the rights of the Parties on the River; the third section gives a general overview of the dredging program that has been put in place in the River; and the final section describes the activities in the caño or channel of the River that serves as the border.



Chapter 3 analyzes the law applicable to the case. It reviews the relevant instruments that regulate the border and other aspects of the dispute between the Parties, as well as the limited role of the principles and rules of general international law.

Chapter 4 addresses the general topic of navigation on the San Juan de Nicaragua River including the question of Nicaragua's right to dredge the River and describes the dredging program and its lack of harmful impact on Costa Rican territory. Chapter 4 also details the impact of the road constructed by Costa Rica on the right bank of the River and its deleterious effects on the River system in general, and its navigation in particular and the greater need it creates for dredging. The Chapter also explains the need and justifies the rights of Nicaragua to navigate to the sea on the Colorado River until such time as it may recover its capacity to do so on the San Juan proper.

Chapter 5 addresses the environmental issues involved in the dredging program set in place by Nicaragua. It is exhaustive and leaves no doubt that the dredging carried out by Nicaragua causes no damage to the environment or to Costa Rican territory. This analysis is based also on studies and reports prepared by well-known authorities on questions of dredging and the environment.

Chapter 6 addresses the issues of sovereignty and the location of the border. It analyses the legal instruments pertinent to the determination and fixing of the border and how these instruments leave no doubt that the border must follow the first channel or caño that runs east from the River proper into Harbour Head and

how this coincides with the caño in dispute and the historic activities of Nicaragua in the area. Furthermore, this Chapter explains the reasons why the Bay of San Juan can no longer be considered to be common to both States since it no longer exists as a physical feature.

Chapter 7 discusses other violations alleged by Costa Rica; in particular, the alleged lack of compliance by Nicaragua with the Provisional Measures Order of 8 March 2011 and with the Judgment of the Court of 13 July 2009. It shows that there is no merit to any of these allegations.

Chapter 8 addresses the lengthy and disjointed list of Remedies requested by Costa Rica in its Memorial, and shows that none of them is justified.

Chapter 9 sets forth the four Counter Claims made by Nicaragua on the questions of (i) the road that is being constructed by Costa Rica on the right bank of the River, (ii) physical disappearance of the Bay of San Juan, (iii) Nicaragua's need and right to navigation to the sea on the Colorado Branch of the River, and (iv) Costa Rica's non-compliance with the Order of the Court and provisional measures.

Finally, the submissions of Nicaragua.

In addition to Volume I, the Counter Memorial consists of Volumes II, III and IV, which contain 26 documentary annexes, 11 documents relating to national legislations, 1 military document, 42 correspondence documents, 13 diplomatic notes, 6 minutes of meetings, 11 affidavits, 22 press report, 6 reports, 22 maps and 15 images.

## CHAPTER 2

### BACKGROUND OF THE DISPUTE

2.1 In Chapter 1 of its Counter Memorial filed on 29 May 2007 in the *Dispute Concerning Navigational and Related Rights (Costa Rica v. Nicaragua)*, Nicaragua presented a general geographic overview of the San Juan de Nicaragua River<sup>20</sup> as well as a historical background to the Treaties and Arbitral Awards that regulated navigational rights in the River. These same documents also regulate the maintenance of the navigability of the River, and identify the location of the boundary between the two States.<sup>21</sup>

2.2 In the former case the type of navigation rights were in question. In the present case, the right itself of navigation by Nicaragua is in question, since the only way Nicaragua may enjoy this right is by maintaining the navigability of the River. Thus much of the material involved in the earlier case is pertinent to the present one.

2.3 The other main issue in the present case is that of sovereignty in and around the mouth of the River. This issue is also governed by the same Treaties and Awards that were put forward in their historical context in the former case.

---

<sup>20</sup> NCM, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, Sections 1.1, paras. 1.1.1-1.1.25.

<sup>21</sup> *Ibid.*, Sections 1.2-1.3, paras. 1.2.1-1.3.49.

2.4 For these reasons, the geographical and historical background submitted in this Chapter (Sections A and B) is an abridged version of what was presented in the former case, with particular additions as appropriate in the present circumstances.

2.5 This Chapter also gives a general background of the dredging program that Nicaragua is attempting to carry out in the San Juan de Nicaragua River (Section C), as well as a short explanation of the activities that have been carried out in the “caño” in dispute (Section D).

#### **A. THE RELEVANT GEOGRAPHY**

2.6 The purpose of this section is to describe the present situation of the San Juan de Nicaragua River, and the geography and fragile ecosystem along the river, including the adjacent biosphere reserves and internationally-protected wetlands. This section also includes a geographical description of the lower part of the San Juan de Nicaragua River which covers the area of Harbour Head Lagoon and what used to be the historical bay at its mouth, and gives a picture of the obstacles to navigation on this part of the river.

##### **1. The San Juan de Nicaragua River**

2.7 The San Juan de Nicaragua River originates at Lake Nicaragua and runs the length of its 205 kilometers entirely through Nicaraguan territory while descending 31 meters from the level of the lake into its present outlet directly into the Caribbean Sea. (see **Figure 2.1.**)

2.8 The only natural outlet that drains the water of the Lake Nicaragua out to sea is the San Juan de Nicaragua River, whose flow is also fed directly by some Costa Rican tributaries such as the San Carlos, Medio Queso, Pocosol, Infiernito and the Sarapiquí Rivers. The impressive flow of water<sup>22</sup> of the San Juan de Nicaragua River is also maximized by the region's heavy rainfall that ranges from 2,500 to 6,000 millimeters annually<sup>23</sup>, one of the highest figures registered in Western Hemisphere.

**Figure 2.1.**<sup>24</sup>



**Figure 2.1.** Excerpt of Satellite Image issued by LAND INFO

---

<sup>22</sup> INETER, Summary of Measurement of liquid and suspended solids content during the years 2006, 2011 and 2012. (NCM, Vol. II, Annex 16). It shows that downriver from the Sarapiquí mouth the flow of the San Juan River is 1105.583 cubic meters per second. *See also* Counter Memorial of the Republic of Nicaragua, “*Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)*”, Volume 1, 29 May 2007, para. 1.1.5.

<sup>23</sup> Although downstream of the river in the specific zone near the mouth of the San Juan and Colorado Rivers, the average annual rainfall varies from 5,000 to over 7,000 mm. *See* RAMSAR Advisory Mission Report No. 69, in CRM, Vol. IV, Annex 147, p. 111.

<sup>24</sup> *See* NCM, Vol. IV, Annex 119(A), *see also* Annex 119 (C) containing a satellite image issued by LAND INFO (pictures were taken between 2009-2012) of the San Juan River, with geographic-reference information.

2.9 The first sector of the San Juan of Nicaragua River runs from its outlet in the lake to El Castillo; in this sector its course flows broadly, with an average width of 300 meters; its banks are low and prone to flooding and are also characterized by the existence of sandy islands where vegetation has grown. In its middle sector, the river runs down through several rapids, passing through stretches not more than 50 meters wide; the current becomes deeper and forms ponds, crating the so-called “dead waters”. Immediately downstream from this area, the San Carlos River descends from the volcanic chain of Costa Rica and discharges large amounts of silt into the San Juan, causing the current to form rectilinear shoals up to the confluence of the Sarapiquí, another river originating in Costa Rica that also carries impressive amounts of silt and contaminants from the agricultural and industrial developments that have deforested the area were this river flows.

2.10 According to the official classification of watersheds in Costa Rica, among the tributaries located in the southern sector of the San Juan de Nicaragua River subsystem are the Poco Solo, La Cureña, San Carlos and Sarapiquí Rivers. These last two rivers, whose surrounding lands are mainly used for farming, agriculture and logging, provide much of the flow and virtually the entire load of sediment carried by the San Juan of Nicaragua River<sup>25</sup>.

---

<sup>25</sup> Procuencia San Juan, Problems related to soil degradation and sedimentation, available at <http://www.oas.org/sanjuan/english/documents/tda/information/soil.html> (*last visited* 21 July 2012).

2.11 At the delta, the river bifurcates into what is known as the Lower San Juan River which continues flowing down Nicaraguan territory, and the Colorado River which flows into Costa Rican territory. The Colorado River in the present day carries around 90% of the water flow of the San Juan River and is navigable all year round by seagoing vessels. The Lower San Juan, the third sector of the river, runs through a flat and sedimentary terrain and is navigable part of the year and only by small shallow draft vessels.

2.12 The high levels of sedimentation in this sector of the river mainly due to the extreme quantities of sand and pollutants supplied by the Costa Rican tributaries that discharge into the San Juan, result in the drastic changes of the geography on both banks such as the enclosure of the lagoons (Silico, Ebo, La Barca, Harbour Head), which not too long ago formed part of the main course of the river.

2.13 The extreme sedimentation process originating in the Costa Rican tributaries has resulted in the blocking of the River's outlet to the sea<sup>26</sup>, the deviation of its waters to the Colorado River<sup>27</sup>, and the total sedimentation and consequent disappearance of the Bay of San Juan del Norte<sup>28</sup>. (see **Figure 2.1.**)

---

<sup>26</sup> See paras. 4.10 – 4.24 below.

<sup>27</sup> *Ibid.*

<sup>28</sup> See paras. 9.34 – 9.41 below.

## **2. The adjacent biosphere reserves and internationally-protected wetlands**

2.14 The area including and surrounding the San Juan River has an impressive wealth of biodiversity and Nicaragua has invested considerable efforts in crafting and enforcing the laws and regulations necessary to protect and preserve these delicate ecological areas<sup>29</sup>.

2.15 The San Juan River Biosphere Reserve, recognized as such by the Man and Biosphere Programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO), comprises seven protected areas, including the Indio Maíz Biological Reserve bordering the Nicaraguan side of the river and the San Juan River Wildlife Refuge<sup>30</sup>, consisting of the river itself and a two-kilometer strip abutting the Nicaraguan bank. The San Juan River Wildlife Refuge is recognized by the RAMSAR Convention as an internationally-protected wetland which meets “nearly all of the RAMSAR criteria” and forms, along with the Indio Maíz Biological Reserve, “one of the most extensive biological nuclei of the Mesoamerican Biological Corridor”<sup>31</sup>.

---

<sup>29</sup> See rejoinder of the Republic of Nicaragua, “*Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*”, Volume 1, 15 July 2008, para. 4.35.

<sup>30</sup> “Furthermore the biosphere reserve includes a part of Lake Cocibolca and the municipalities of El Almendro, San Miguelito, Morrito and Nueva Guinea with a large (256,000 habitants) and culturally rich human population including 20,000 habitants of Rama, Miskitu, Negra and Creole ethnic groups. Each one of these groups has its own way of preserving and/or using the national resources of the area”, available at Ramsar’s official website [http://www.ramsar.org/cda/en/ramsar-pubs-annolist-anno-nicaragua/main/ramsar/1-30-168%5E16106\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-pubs-annolist-anno-nicaragua/main/ramsar/1-30-168%5E16106_4000_0__) (last visited 21 July 2012).

<sup>31</sup> *Ibid.*



### **3. Harbour Head and the Bay of San Juan del Norte**

2.16 Shortly after the Treaty of Limits between Nicaragua and Costa Rica was signed, the waters of the San Juan de Nicaragua River suffered a major deviation into the Colorado River.<sup>32</sup> An increase in the sedimentation of the original main outlet of the San Juan and natural phenomena contributed to the further deviation and shifting of the main channel. These changes affected the whole geography of the area. Where the main outlet of the river originally discharged into the San Juan Bay it now discharges directly into the Caribbean Sea, whilst smaller channels continue to flow from the river proper into Harbour Head Lagoon. The first of these channels or “caños” that flows from the river proper to Harbour Head is precisely the caño that is presently in dispute.

### **4. The “Caño”**

2.17 Section B, below, details the different instruments that govern the location of the boundary between the Parties. The boundary was fixed by the Treaty of 1858 and the Cleveland Award of 1888<sup>33</sup>, and the process of demarcation was carried out by a special Commission established by the Treaty of 1896<sup>34</sup>. This Commission was headed by the Engineer Umpire, General Alexander, who rendered 5 Awards dating from the years 1897 to 1900.<sup>35</sup> The

---

<sup>32</sup> See paras. 4.10 – 4.17 below.

<sup>33</sup> See paras. 2.23 – 2.40 below.

<sup>34</sup> See para. 2.36.

<sup>35</sup> *Ibid.*

first three Awards are especially relevant to the present case since they have application for the area in dispute.

2.18 The demarcation process began on the Caribbean side and was subject to a special caveat by General Alexander. He made very clear that in the area presently in dispute the border was to follow the right margin of the river and hence, was subject to the changes that might occur on the river. Thus, General Alexander stated as follows in his Second Award:

- a. “It should be noted, for a clearer understanding of the question at hand, that the San Juan River runs through a flat and sandy delta in the lower portion of its course and that it is obviously possible that its banks will not only gradually expand or contract but that there will be wholesale changes in its channels...
- b. “The proposed measurement and demarcation of the boundary line will not have any effect on the application of those principles...
- c. “The fact that the line has been measured and demarcated will neither increase nor decrease any legal standing that it might have had if not been measured or demarcated.”<sup>36</sup>

2.19 Another point that was clarified by the Arbitrator was the claim by Costa Rica that the boundary should follow the channel of the San Juan that headed into the western part of the San Juan Bay. General Alexander explicitly decided that the border should follow the channel that headed to the right; that is, toward the east into Harbour Head, which was then the eastern part of the original Bay of San Juan.

---

<sup>36</sup> Second Award of the Umpire E.P. Alexander in the boundary question between Costa Rica and Nicaragua (hereinafter, Second Award ), reprinted United Nations, *Reports of International Arbitral Awards*, Vol. XXVIII (2007) p. 224 (emphasis added) (CRM, Vol. II, Annex 10).

2.20 Based on these rulings, General Alexander determined that the boundary should follow this course:

“Its direction shall be due northeast and southwest, across the bank of sand, from the Caribbean Sea into the waters of Harbor Head Lagoon. It shall pass at its nearest point, 300 feet on the northwest side from the small hut now standing in that vicinity. On reaching the waters of Harbor Head Lagoon the boundary line shall turn to the left, or southeastward, and shall follow the water’s edge around the harbor until it reaches the river proper by its first channel met. Up this channel, and up the river proper, the line shall continue to ascend as directed in the treaty.”<sup>37</sup>

2.21 In the present case, Costa Rica asserts essentially the same position that it argued unsuccessfully to General Alexander more than 100 years ago: that the border follows the river proper in a westerly direction to its outlet to the sea where it now debouches and not follows a channel heading east into Harbour Head. Nicaragua’s position is that the border determined by Alexander is the present day “first channel met”, which is the channel located at the southwest corner of the Harbour Head Lagoon and running some 1.560 meters east from the river proper into the Lagoon<sup>38</sup>.

## **B. HISTORICAL BACKGROUND: THE ORIGINS OF THE BORDER BETWEEN NICARAGUA AND COSTA RICA**

2.22 This Section is closely linked to Chapter 3 below, in which the pertinent texts of the Treaties and Awards that govern the question of the border

---

<sup>37</sup> First Award of the Umpire E.P. Alexander in the boundary question between Costa Rica and Nicaragua (hereinafter, First Award), reprinted United Nations, *Reports of International Arbitral Awards*, Vol. XXVIII (2007) p. 220 (CRM, Vol. II, Annex 9).

<sup>38</sup> See paras. 6.22 – 6.35 below.

and the rights of maintaining and improving the navigability of the River are reproduced, and their juridical import is analyzed.

### **1. The Jérez-Cañas Treaty of Limits of 15 April 1858**

2.23 At the time of independence from Spain on 15 September 1821, the five colonial provinces that had constituted the Captaincy General of Guatemala became an independent State. It was then agreed that the borders between all the Central American states should follow the rule of *uti possidetis iuris*.<sup>39</sup>

2.24 In 1824, a civil war broke out in Nicaragua leaving the country incapable of defending its territory. Taking advantage of this ruinous situation and ignoring the rule of *uti possidetis iuris*, a substantial part of the territory of the former province of Nicaragua, the District of Nicoya (Guanacaste), was taken over by Costa Rica. With its de facto possession of this territory, Costa Rica laid claim to a part of the margin of the huge Lake Nicaragua which, added to its claims of sovereignty over the San Juan de Nicaragua River, allowed Costa Rica to claim exclusive rights over any interoceanic canal to be cut through that part of the Central American isthmus.

2.25 In 1856, Nicaragua was invaded by William Walker and other military elements from the United States, who took complete control of the country and declared himself President of Nicaragua. This action prompted the

---

<sup>39</sup> See Counter Memorial of the Republic of Nicaragua, “Dispute Regarding Navigational and Related Rights (*Costa Rica v Nicaragua*)”, Volume I, 29 May 2007, para 1.2.1.

reaction of the rest of the Central American nations, which saw themselves threatened and joined forces with Nicaragua in order to expel the foreign invaders.

2.26 Once the invaders were defeated and expelled, all Central American troops, except those of Costa Rica, left Nicaraguan territory. During the struggle, Costa Rica had taken control over the San Juan de Nicaragua River and parts of the lake, refused to withdraw her troops and gave an ultimatum to Nicaragua claiming rights over this area<sup>40</sup>.

2.27 It was only after a declaration of war by Nicaragua against Costa Rica, and the mediation of other Central American States, that the situation was resolved and the Jérez-Cañas Treaty of Limits of 15 April 1858 was signed. This Treaty was comprehensive and sought to resolve, once and for all, the territorial dispute between Nicaragua and Costa Rica, including the questions of the District of Nicoya and the San Juan River.<sup>41</sup>

2.28 The Jérez-Cañas Treaty set the boundary between the two countries as starting at Punta de Castilla, located at the mouth of the San Juan River in the eastern side of the Bay of San Juan del Norte (Harbour Head), and running along the right bank to a point 3 English miles from what is known as Castillo Viejo. From there, the land boundary starts and runs to the Pacific Ocean at Salinas Bay.

---

<sup>40</sup> See Counter Memorial of the Republic of Nicaragua, "*Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)*", Volume I, 29 May 2007, para 1.2.43.

<sup>41</sup> *Ibid.* p. 35, para 1.2.47.

2.29 The Treaty also recognized the dominion and exclusive sovereignty of Nicaragua over the San Juan River, and granted Costa Rica perpetual rights of navigation, with objects of commerce, in a limited section of the river.

2.30 It also established, in Article IV, that the Bay of San Juan del Norte as well as Salinas Bay shall be common to both Republics. However, as will be shown in Chapter 4, the Bay of San Juan del Norte has ceased to exist and with it any Costa Rica rights.

## **2. The Award of President Cleveland of 1888**

2.31 For the Nicaraguan people and government, the Treaty of Limits of April 15, 1858 was a vivid manifestation and constant reminder of the occupation of Nicaragua by Costa Rica during and after one of the bloodiest war fought in the history of Central America.<sup>42</sup> The Treaty was perceived by Nicaraguans as imposed by the use of force at a moment when the national defenses were at their weakest. This led Nicaragua to challenge the validity of the Treaty of 1858.

2.32 In order to put an end to the dispute on the validity of the 1858 Treaty, as well as clarifying, if the Treaty was valid, certain aspects of the Treaty that Nicaragua considered needful of interpretation, a Treaty was signed on 24 December 1886, whereby it was agreed to submit all the issues to the Arbitration of the President of the United States, Mr. Grover Cleveland.

---

<sup>42</sup> More people die during this war than in the war between Spain and the United States in 1898. Bermann, Karl: Within the framework of the Great Stick: Nicaragua and the United States since 1848 (South End Press, Boston, 1986, p.72-76).

2.33 After determining that the Treaty of 1858 was valid, in his Award dated 22 March 1888, the Arbitrator proceeded to settle the other issues submitted by Nicaragua.

2.34 With respect to the issue of the starting point of the boundary where the San Juan debouches into the Caribbean Sea, President Cleveland determined that it begins at Punta de Castilla that was then located at the mouth of the River.

2.35 On the questions of the rights of Nicaragua as sovereign over the River, the Arbitrator reaffirmed that Nicaragua was the exclusive sovereign, and had the right to undertake works to maintain and improve the navigability of the River and that Costa Rica could not prevent Nicaragua from carrying out those works.

2.36 The task of demarcation of the border was left to a Bi-National Commission established by the Treaty of 27 March 1896. This Commission was headed by General Edward Porter Alexander, who was appointed as Engineer-Umpire by President Cleveland.

### **3. The Alexander Awards 1897-1900**

2.37 General Alexander rendered a total of 5 awards, of which the first three are especially relevant to the present case.

2.38 His first award, dated 30 September 1897, indicated the starting point of the demarcation, identifying what seemed to him the extremity of Punta de Castilla:

“...I declare the initial line of the boundary to run as follows, to wit:

“Its direction shall be due northeast and southwest, across the bank of sand, from the Caribbean Sea into the waters of Harbor Head Lagoon. It shall pass, at its nearest point, 300 feet on the northwest side from the small hut now standing in that vicinity. On reaching the waters of Harbor Head Lagoon the boundary line shall turn to the left, or southeastward, and shall follow the water’s edge around the harbor until it reaches the river proper by the first channel met . Up this channel, and up the river proper, the line shall continue to ascend as directed in the treaty .”

2.39 His second Award, date 20 December 1897, concerned the request by Costa Rica that the Bi-National Commission should determine the course of the River on the ground such as it was at that moment in time. General Alexander complied but made very clear that since the right margin of the River was the border, any demarcation line fixed in the ground at that moment “will necessarily be affected in the future by all these gradual or sudden changes” in the course of the River.

2.40 This matter was further clarified in the third Award, dated 22 March 1898, in which Alexander decided that the water level of the river that should be used to determine the position of the right bank was the water level in its navigable state. Alexander decided,

“that the exact dividing line between the jurisdictions of the two countries is the right bank of the river, with the water at ordinary stage and navigable by ships and general-purpose boats.”



#### **4. The Dispute Concerning Navigation and Related Rights (Costa Rica v. Nicaragua)**

2.41 For more than a hundred years after the Cleveland Award, Costa Rica made no claims over the San Juan River. At the end of 1980, there were talks about reviving the old dream of the Nicaragua canal and improving navigation in the San Juan River, this triggered the reaction of Costa Rica just as it had a hundred years back. In order to deter any investors Costa Rica created a dispute by demanding the right to navigate and patrol the San Juan River with its armed security forces. History was repeating itself.

2.42 Costa Rica filed an Application against Nicaragua before the Court, demanding full rights to navigate the river with armed personnel and questioning the right of Nicaragua to regulate navigation in the river. The Court reaffirmed the rights of Nicaragua in regard to these matters and, specifically, reaffirmed the rights of Nicaragua to regulate navigation in the river and to maintain its navigability.

2.43 And now that some modest maintenance activities – small scale dredging and clearing of obstructed waterways – have been carried out by Nicaragua, solely for the purpose of improving navigation, Costa Rica has reacted in exaggerated fashion, declared a “diplomatic war” against Nicaragua, and closed the door to bilateral dialogue.

2.44 The current case is a new avatar of the traditional strategy of Costa Rica to try to undermine the sovereignty of Nicaragua over the San Juan de

Nicaragua River whenever Nicaragua tries to exercise its sovereign rights over the river, including its efforts to restore the river's navigability.

2.45 Alexander made it clear that “the San Juan River must be considered a navigable river” and therefore, under the above-mentioned international instruments, Nicaragua has not only the *right* to dredge and maintain the river, but also has a *responsibility* to do so, particularly for the wellbeing of the communities around the river that depend exclusively on river navigation, and to maintain the natural ecosystem that depends on the existence of the river.

2.46 In sum, the border between Nicaragua and Costa Rica is not a static one, but is subject to the changes undergone by the course of the San Juan de Nicaragua River, especially at its mouth. The pertinent changes are the natural ones, not those caused by the industry or artifice of Costa Rica. The 160 km long road that Costa Rica has constructed along the river bank not only has destroyed the natural ecosystems but necessarily has severe consequences on the river, particularly because of the sedimentary character of the soil that has been dumped or allowed to leech into the river, adding to the need for dredging in order to maintain navigability.

### C. NICARAGUA'S DREDGING PROGRAM

2.47 The heavy sedimentation of the San Juan River mentioned above is most pronounced in the delta and lower San Juan.<sup>43</sup> This sedimentation, which mainly originates from rivers and runoff in Costa Rican territory, is responsible for blocking Nicaragua's access to the sea during most of the year for even shallow draft vessels.<sup>44</sup>

2.48 This sedimentation has caused and continues to cause serious losses in river flow. Some sections of the Lower San Juan have been identified by municipal and national authorities as posing especially serious problems in the dry season, when the loss of water flow can be severe enough to make very small boats run aground. Indeed, sometimes even small personal boats<sup>45</sup> will remain stuck for hours or days before reaching their final destination (see **Figure(s) 2.2.**)

---

<sup>43</sup> See paras. 2.10 – 2.13 above.

<sup>44</sup> See the Counter Memorial of the Republic of Nicaragua, "Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua), Volume 1, 29 May 2007, para. 1.1.15.

<sup>45</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, p.8, para. 2 (CRM, Vol. IV, Annex 164).

**Figure(s) 2.2.**<sup>46</sup>



**Figure(s) 2.2.** Photographs of stuck boats in the San Juan de Nicaragua River

2.49 Given that the San Juan de Nicaragua River represents the only transportation route from the interior of the country to the municipality of San Juan de Nicaragua, it is of vital importance for Nicaragua to improve conditions for navigating the stretch of the river in the section that extends from the Delta, near the bifurcation with the Colorado River, to the mouth of the river in the Caribbean Sea. By so gravely limiting navigability, the sedimentation has prevented the residents of the town of San Juan de Nicaragua from enjoying full

---

<sup>46</sup> *Ibid.*, Annex I

participation in national life and has hindered their access to basic public services and the enjoyment of their rights as citizens under the Nicaraguan Constitution.<sup>47</sup>

2.50 Furthermore, the impossibility of navigation into and from the sea has hindered the economic development not only of the municipality of San Juan de Nicaragua, with its few thousand inhabitants, but more importantly of the country as a whole. The San Juan de Nicaragua River is only navigable year round for Nicaraguan vessels only between Lake Nicaragua and the delta, where most of the flow goes into the Colorado branch. From there, only Costa Rican ships can continue via the Colorado branch out to the sea.

2.51 It is Nicaragua's right<sup>48</sup> – and also its duty – to ensure navigation on the River “by ships and general-purpose boats”<sup>49</sup>, protect human life, and avoid damage to vessels and transported goods, all of which are endangered by the current lack of reliable navigability.

2.52 In response to the need of preventing the continuous and increasing sedimentation of the San Juan de Nicaragua River and to restore the year round navigability of the River's lower stretches by at least small boats, in January 2006 the *Empresa Portuaria Nacional* (“EPN”), or National Port Company – which is

---

<sup>47</sup> See Administrative Resolution No. 038-2008, 22 December 2008, Art. VI (NCM, Vol. III, Annex 33).

<sup>48</sup> Award of the Arbitrator, the President of the United States, upon the validity of the Treaty of Limits of 1858 between Nicaragua and Costa Rica (hereinafter, Cleveland Award), reprinted United Nations, Report of International Awards, Vol. XXVIII (2006), p. 210 (CRM, Vol. II, Annex 7).

<sup>49</sup> Third Award of the Umpire E.P. Alexander in the boundary question between Costa Rica and Nicaragua (hereinafter, Third Award), reprinted United Nations, *Reports of International Arbitral Awards*, Vol. XXVIII (2007), p. 230 (CRM, Vol. II, Annex 10).

the State institution charged with administering the Nation’s ports, improving the country’s navigation systems, and optimizing ship traffic capacity – requested approval for a dredging project from the *Ministerio del Ambiente y los Recursos Naturales* (“MARENA”), or Ministry of the Environment and Natural Resources.<sup>50</sup>

2.53 The proposed dredging project, which is discussed in detail in Chapter 5 below, was aimed at the restoration of a safe navigation route to permit a year-round river connection between communities in the extreme south-eastern part of Nicaragua and the rest of the country, and encourage the development of commerce in the region. Specifically, EPN proposed that a 42-kilometer stretch of the river be dredged, from Punta Petaca, upstream from the bifurcation of the Lower San Juan River and Colorado River, to the mouth of the San Juan in the Caribbean Sea in order to restore a channel 2.0 meters deep, 30 meters wide in the upstream section, and 20 meters wide in the downstream section.<sup>51</sup> The estimated 1.5 million cubic meters of sediment to be extracted during the dredging project was to be deposited on the Nicaraguan bank in carefully selected sites requiring reinforcement and reforestation, and those sites were to be carefully constructed and replanted with native vegetation in order to prevent harm to surrounding areas and reduce future erosion of the Nicaraguan bank and resulting sedimentation.

---

<sup>50</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, point 3 (CRM, Vol. IV, Annex 164).

<sup>51</sup> Environmental Impact Study for Improving Navigation on the San Juan de Nicaragua River (Excerpts), September 2006, p. 5 (NCM, Vol. II, Annex 7).

2.54 After EPN requested environmental authorization from MARENA<sup>52</sup>, an intra-governmental reviewing team was formed, and EPN was furnished with the Terms of Reference for the preparation of the technical *Estudio de Impacto Ambiental*, or Environmental Impact Study (“EIS”), which is required under Nicaraguan law for the issuance of environmental permits for such projects. In accordance with the Terms of Reference, after requesting public offers for the consultancy work, EPN selected and hired the firm *Corea & Asociados S.A.* (CORASCO), a respected engineering and environmental consulting firm in Nicaragua, to help develop a dredging plan, the necessary environmental and technical analyses, and an environmental management plan to ensure that any potential negative impacts of the project would be properly prevented or mitigated.

2.55 During the environmental impact assessment process that followed and that spread over several years, which is described in detail in Chapter 5, each stage of the dredging project was carefully analyzed, as were the potential negative and positive effects that the project could have on the ecology of the San Juan de Nicaragua River and the surrounding Biosphere Reserve.<sup>53</sup> The effect of the project on the hydrological regime of the River – including the flow of the Colorado River – was also analyzed.

---

<sup>52</sup> The details of the governmental approval process regarding this project will be examined in Chapter 5.

<sup>53</sup> Environmental Impact Study for Improving Navigation on the San Juan de Nicaragua River (Excerpts), September 2006, p.1-2 (NCM, Vol. II, Annex 7).

2.56 MARENA finally issued an environmental permit through administrative Resolution No. 038-2008<sup>54</sup> at the end of 2008, after concluding that the project was not likely to have any significant adverse impact on the environment, including the environment of Costa Rica. This conclusion was based upon findings that the project, when implemented under certain required conditions, would have no material effect on the San Juan River itself or the flora, fauna, or abiotic characteristics of its zone of influence, whether on the Nicaraguan or Costa Rican side of the river, and because dredged sediments – which were to be handled pursuant to specific requirements aimed at environmental protection and restoration – were only to be deposited on the Nicaraguan side of the River. The environmental impact assessment process had also established that the project would have no material effect on the flow of the Colorado River. Moreover, it had been established that the project would have positive effects, not only for the Nicaraguan and Costa Rican people who live in the area, but also for the San Juan River itself and its zone of influence, including a reduction of erosion and sedimentation due to the careful restoration of portions of the Nicaraguan bank, as well as the restoration of the mangrove swamps near the River’s mouth and the many species that depend on the health of those swamps and the rest of the River for their well-being.<sup>55</sup> As established in Chapter

---

<sup>54</sup> See Chapter 5. See also Administrative Resolution No. 038-2008, 22 December 2008, Art. VI (NCM, Vol. III, Annex 33).

<sup>55</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA’s Department of Environmental Quality, 20 December 2010, point 20. (CRM, Vol. IV, Annex 165).



5, MARENA's conclusions have been borne out by the actual facts. Indeed, the impacts of Nicaragua's dredging program have so far been even less than those anticipated by MARENA when it authorized the project at the end of 2008, because the project has been reduced in scope.<sup>56</sup>

2.57 Due to budgetary constraints, it was not possible for EPN to acquire the cutting and suction dredger that had been contemplated in the EIS. Instead, EPN acquired artisanal dredges, some of them manufactured in Nicaragua, to perform the work.

2.58 As discussed in more detail in Chapter 5<sup>57</sup>, the scope of the project has been further reduced at least twice due to the high cost of dredging 42 kilometers. Emphasis is being placed on ensuring navigability for small and medium-sized river vessels by dredging only the most critical stretches of the river, which have been identified at eight locations along 22 kilometers of the Lower San Juan.

2.59 Despite these reductions in scope and breadth, Nicaragua's dredging project still maintains the same objective: to ensure the safe, year-round navigability of the Lower San Juan River by small river vessels, in order to connect San Juan de Nicaragua to the rest of the country. The project is the first step in restoring the navigability of the River, which was navigable by sea-faring vessels when the Treaty of Limits was signed in 1858.

---

<sup>56</sup> See paras 5.173-5.189 below.

<sup>57</sup> *Ibid.*, See also Dredging Project Technical Evaluation Analysis, National Port Authority 2011(Annual Report), 23 January 2012, p. 5 ( NCM, Vol. II, Annex 17).

## **D. ACTIVITIES IN THE CAÑO**

2.60 On 28 August 2009, EPN submitted an application to modestly expand the work approved in Resolution No. 038-2008 by adding a proposal to include the clearing by hand of vegetation and debris from the 1,560 meter length of the Harbour Head caño to a width of 30 meters (at the mouth of the caño in Harbour Head). Information was submitted to MARENA showing that the caño, which had existed for decades, as demonstrated in Chapter 6, had gradually become difficult to navigate because of the accumulation of sediment and organic debris.

2.61 The application submitted by the EPN was divided in two sections:

- “Activity No. 1: Cleaning of the Caño” – that is, “a tributary of the San Juan River that empties into the Harbour Head Lagoon” located from reference coordinates North 1208638 – East 863133 to North 1209823 – East 863450 – whose length of approximately 1,500 meters was to be cleaned to a depth of 2.5 meters up to a maximum width of 30 meters;<sup>58</sup> and
- “Activity No. 2: Cleaning, using a stationary cutting and suction dredge, of a stretch of the San Juan River” located at reference coordinates North 1208439 – East 863131, North 1208134 – East 863136, and North 1208138

---

<sup>58</sup> EPN, “Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River,” September 2009, p. 2 (NCM, Vol. II, Annex 13).

– East 863196, in order to reveal a stretch of canal 6 meters deep, 250 meters long, and 59 meters wide<sup>59</sup> where sediments had accumulated.<sup>60</sup>

2.62 EPN had concluded that these additions to the project were necessary in order to “create an alternate, more direct navigation route that would reduce the time required to travel between the different sites along the river,” and that the additions would have “a positive socioeconomic effect by permitting savings in the operation costs of boats and those of the townspeople because the consumption of fuel would be lower”<sup>61</sup>, it also concluded that the additional work would have minimal environmental impact due to “low risk and little effect,” as “the activities [were] similar to others already realized in national territory and because the direct area of influence would be the bed of the caño, the riverbed, and the sites identified for the deposition of sediments and debris.”<sup>62</sup>

2.63 Nevertheless, recognizing that the additional cleaning and dredging activities could indeed generate “both negative and positive impacts,” EPN prepared an Environmental Management Plan as a “technical methodological instrument” to ensure that the proper “corrective and compensatory measures” were implemented in compliance with Nicaraguan environmental requirements.<sup>63</sup>

---

<sup>59</sup> *Ibid.*

<sup>60</sup> See Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River", p. 1 (NCM, Vol. II, Annex 22).

<sup>61</sup> EPN, “Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River,” p. 2, September 2009. (NCM, Vol. II, Annex 13).

<sup>62</sup> *Ibid.* p. 2.

<sup>63</sup> *Ibid.* p. 2.

2.64 After EPN submitted its proposed Environmental Management Plan to MARENA, along with its request for an environmental permit authorizing the work<sup>64</sup>, MARENA conducted site visits for assessing the environmental impacts of the proposed project additions.<sup>65</sup> This part of the project was also the subject of environmental reviews by Nicaragua before it was authorized.<sup>66</sup>

2.65 On 30 October 2009,<sup>67</sup> MARENA, satisfied that the proposed additional work would cause only short-term, reversible consequences to the environment which, in any case, would be mitigated through the replacement of native vegetation, issued Administrative Resolution No. 038-2008-A1.<sup>68</sup>

2.66 This resolution expanded the original dredging project to grant EPN the environmental authorization for additional activities, under the specific conditions that had been recommended in the Technical Report, which is that the caño-clearing should be conducted using only hand-held equipment<sup>69</sup>, such as shovels and buckets (see **Figure(s) 2.3.**).

---

<sup>64</sup> *Ibid.* p. 2.

<sup>65</sup> See Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River", p. 1 (NCM, Vol. II, Annex 22); Declaration of Elsa Maria Vivas Soto, Agricultural Engineer, General Department of Environmental Quality of the Ministry of the Environment and Natural Resources, 20 December 2010 (hereinafter "Vivas Declaration"), paras. 6-13 (NCM, Vol. III, Annex 90).

<sup>66</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, paras. 23-29 (CRM, Vol. IV, Annex 165); see also Viva's Declaration, paras. 11-13 (NCM, Vol. III, Annex 90).

<sup>67</sup> Ministry for the Environment and Natural Resources (MARENA) Administrative Resolution No. 038-2008-A1, 30 October 2009. (NCM, Vol. III, Annex 34). The permit was received by EPN on 3 November 2009, as indicated by the signature visible on the bottom of the final page of the Resolution. See *ibid.*, Spanish Original, p. 4.

<sup>68</sup> Ministry for the Environment and Natural Resources (MARENA) Administrative Resolution No. 038-2008-A1, 30 October 2009. (NCM, Vol. III, Annex 34).

<sup>69</sup> *Ibid.*

**Figure(s) 2.3.** <sup>70</sup>



Trabajos de limpieza manual



Trabajos de limpieza manual

**Figure(s) 2.3.** Photograph showing hand-held equipment for the clearing of the caño

2.67 In order to clean the caño, 180 trees needed to be removed from the area directly alongside the caño, but exclusively from the Nicaraguan bank. The trees requiring removal from the area adjacent to the caño are observable from the image presented in **Figure 2.4**. As is customary in a project like this one, mitigation measures were implemented to compensate for the felling of trees, including the prompt replanting of new trees of like species.

---

<sup>70</sup> See Annex 2 of “Vivas Declaration” (NCM, Vol. III, Annex 90).

**Figure 2.4.**<sup>71</sup>



**Figure 2.4.** Photograph of trees requiring removal from the area adjacent to the caño

2.68 Nicaraguan law stipulates that all felled trees must be replaced by a larger number of new trees, which, as indicated at the provisional measures hearing and in Chapter 6, has taken place; in fact more than ten times as many new trees have been planted<sup>72</sup>, in relation to the number felled.

2.69 The actual work of clearing the *caño* was fully completed in December 2010. There has been no *caño* clearing activity since then. In late November 2010, shortly before the clearing activities were completed, MARENA sent a monitoring mission to the site to investigate whether the project was being carried out in conformity with the conditions of the permit, and whether there were any unexpected environmental impacts. To these questions, the mission

---

<sup>71</sup> Photograph of Trees requiring removal from the area adjacent to the caño, source: site visit by Ambassador Carlos Argüello on 09 September 2010, (NCM Vol. IV Annex 137).

<sup>72</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, para.31 (CRM, Vol. IV, Annex 165).

answered Yes and No. Yes, all of the conditions of the permit were being satisfied. And No, there were no unexpected environmental impacts<sup>73</sup>. As Dutch dredging experts, Professors Cees van Rhee and Huib de Vriend of the Delft Technical University, concluded in January 2011:

*“the now completed manual clearing of the caño that connects the San Juan River to the Harbor Head Lagoon caused no significant increase in flow through that caño given how small the flow rate is.”*<sup>74</sup>

2.70 Professors van Rhee and de Vriend also concluded that *“The small increases in flows through the San Juan River and the Harbor Head caño would cause no permanent environmental impacts...”*<sup>75</sup>.

2.71 Nicaraguan officials, in compliance with the Court’s Order of 8 March 2011<sup>76</sup>, have not visited the area since that date. It has nonetheless confirmed, based on information published by Costa Rica, as well as by statements made by the Vice Minister of the Environmental Ministry of Costa Rica, what it anticipated would happen, that is, that the area adjacent to the caño has already regenerated naturally<sup>77</sup>, as a result of weather conditions and the type of ecosystem. Thus, there has been no environmental harm of any kind.

2.72 As discussed in Chapter 6, the caño-clearing activities were consistent with Nicaragua’s presence in the area from immemorial time, and its

---

<sup>73</sup> CR 2011/2, p.44, para.39 (Reichler).

<sup>74</sup> Van Rhee & De Vriend, Delft University of Technology, “Morphological Stability of the San Juan River delta, Nicaragua / Costa Rica”, 4 January 2011 (hereinafter “2011 Van Rhee & De Vriend Report”), Executive Summary (NCM, Vol. IV, Annex 114).

<sup>75</sup> *Ibid.* p. 1.

<sup>76</sup> See paras. 7.7 – 7.10.

<sup>77</sup> See paras. 7.45 – 7.46.

long use and control of the caño and of the area in dispute for security and anti-crime purposes.



## CHAPTER 3

### APPLICABLE LAW

3.1 The purpose of the present Chapter is to offer a general and concise view of the law applicable to the present dispute. It will show that, while the 1858 Treaty as interpreted by various arbitral tribunals and this Court is the main instrument governing this case (Section A), some other treaties and general principles of the law concerning the use of rivers and the protection of the environment can play a complementary role for the settlement of the present dispute (Section B).

#### **A. THE 1858 TREATY AND ITS SUCCESSIVE ARBITRAL AND JUDICIAL INTERPRETATIONS**

3.2 Costa Rica recognizes that “[a]ll activities in the border region must be carried out within the scope of the provisions of the Treaty of Limits, as interpreted by the Cleveland Award.”<sup>78</sup> Nicaragua shares this view – even though it wonders why the Applicant resorts to the phrase “within the scope of the provisions of the Treaty”; a more straightforward approach is appropriate: the Treaty applies and governs the parties’ dispute. Moreover, the interpretation offered by Costa Rica is misleading in several respects.

---

<sup>78</sup> CRM, p. 219, para. 5.47.

## **1. The 1858 Treaty Establishes the Sovereignty of Nicaragua over the River San Juan de Nicaragua**

### **(a) The 1858 Treaty of Limits and its arbitral interpretation**

3.3 As Nicaragua already explained in its Counter-Memorial in the case concerning the *Dispute regarding Navigational and Related Rights*,<sup>79</sup> the Jerez-Cañas Treaty of Limits signed on 15 April 1858, was a comprehensive settlement of the long-standing dispute involving the boundary between the two countries.

3.4 The discussion about the validity of the Treaty of 1858 that was questioned by Nicaragua, led to the conclusion of the Roman-Esquivel-Cruz Arbitral Convention of 24 December 1886,<sup>80</sup> which submitted to the arbitration of the President of the United States the questions relating to the validity and interpretation of the Treaty. The question of the validity of the Treaty was answered in the affirmative by the Arbitral Award rendered by the US President, Grover Cleveland, on 22 March 1888 and, having established this, the Arbitrator continued deciding on the points of doubtful interpretation that were submitted for his consideration.<sup>81</sup>

---

<sup>79</sup> See, e.g., Counter Memorial of the Republic of Nicaragua, *"Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)*, Volume 1, 29 May 2007, p. 47, para. 1.3.23.

<sup>80</sup> CRM, Vol. II, Annex 4.

<sup>81</sup> See paras. 3.14 – 3.19 below.

3.5 In order to demarcate their boundary, the parties in 1896 concluded the Convention on Border Demarcation.<sup>82</sup> The Convention provided for the appointment by the parties of Commissions charged with “defining and marking out” the boundary<sup>83</sup> and the appointment by the President of the United States of an engineer tasked with resolving disputes between the Commissions and demarcating the border line.<sup>84</sup> For this purpose, the U.S. President appointed as Engineer-Umpire General Edward Porter Alexander, who rendered a total of five awards concerning the location of the boundary.

**(b) The recognition of Nicaragua’s sovereignty over the San Juan de Nicaragua River**

3.6 The subject-matter of the Treaty was summarized by the Court in its judgment of 13 July 2009 in the following terms:

“The 1858 Treaty of Limits fixed the course of the boundary between Costa Rica and Nicaragua from the Pacific Ocean to the Caribbean Sea. According to the boundary thus drawn the district of Nicoya lay within the territory of Costa Rica. Between a point three English miles from Castillo Viejo and the Caribbean Sea, the Treaty fixed the boundary along the right bank of the San Juan River. It established Nicaragua’s dominion and sovereign jurisdiction over the waters of the San Juan River, but at the same time affirmed Costa Rica’s navigational rights ‘con objetos de comercio’ on the lower course of the river (Article VI). The 1858 Treaty established other rights and obligations for both parties, including, *inter alia*, an obligation to contribute to the defence of the common bays of San Juan del Norte and Salinas as well as to the defence of the San Juan River in case of external aggression (Article IV), an obligation on behalf of Nicaragua to consult with Costa Rica before entering into any canalization or

---

<sup>82</sup> CRM, Vol II, Annex 8.

<sup>83</sup> *Ibid.*, Art. I.

<sup>84</sup> *Ibid.*, Arts. II & IV.

transit agreements regarding the San Juan River (Article VIII) and an obligation not to commit acts of hostility against each other (Article IX).”<sup>85</sup>

3.7 The main point is that the Treaty gives to Nicaragua the full exercise of sovereignty over the entire course of the waters of the San Juan River. Article II determines the boundary between the two countries and, at the same time, confirms the sovereignty of Nicaragua on the San Juan River and regulates the rights of the parties over the same. Specifically, Article II provides:

“The dividing line between the two Republics, starting from the Northern Sea, shall begin at the end of Punta de Castilla, at the mouth of the San Juan de Nicaragua river, *and shall run along the right bank of the said river* up to a point three English miles distant from Castillo Viejo, said distance to be measured between the exterior works of said castle and the above-named point.” (emphasis added)

3.8 Article VI expands on the consequences of locating the boundary along the right bank of the river:

“The Republic of Nicaragua shall have exclusively the dominion and sovereign jurisdiction over the waters of the San Juan River from its origin in the Lake to its mouth in the Atlantic.”<sup>86</sup>

3.9 This was formally acknowledged by the Court in its 2009 judgment:

“Article VI, after *conferring on Nicaragua full and exclusive sovereignty* (*‘exclusivamente el dominio y sumo imperio’*) over the whole of the San Juan, from its source in the lake to its mouth at the sea, grants Costa Rica, on the section of the river which follows the border between the two States (see paragraph 30 above), a perpetual right (*‘los derechos perpetuos’*) of free navigation *‘con objetos de*

---

<sup>85</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 229, para. 19.

<sup>86</sup> Costa Rica has to acknowledge this obvious fundamental principle (*see CRM*, p. 41, para. 2.19).

comercio’, according to the terms of the Spanish version of the Treaty, which is the only authoritative one, the meaning of which the Court will be required to return to below.”<sup>87</sup>

3.10 The present case does not bear upon the right of navigation belonging to Costa Rica on the river. That issue was dealt with in the Court’s judgment of 2009, which confirmed Costa Rica’s right, its object and scope and its limits. On the other hand, the full and exclusive sovereignty of Nicaragua on the whole of the San Juan is of prime importance in relation with the present dispute.

3.11 The acknowledgment of the sovereignty of Nicaragua on the whole river by the Court is in conformity with the text of the Treaty and was the mere confirmation of the position taken on repeated occasions by arbitral tribunals and, in particular in the first ‘Alexander Award’:<sup>88</sup>

“Nicaragua was to have her prized ‘sumo imperio’ of all the waters of this same outlet for commerce, also unbroken to the sea.

It is to be noted that this division implied also, of course, the ownership by Nicaragua of all islands in the river and of the left or northwest bank and headland.”<sup>89</sup>

3.12 As the Applicant recognized in the first case placed before the Court that concerned the San Juan, Costa Rica does not challenge that the river itself entirely belongs to Nicaragua: “Costa Rica at all times since the entry into force of the Treaty of Limits has recognized that the northern bank, the waters and

---

<sup>87</sup> I.C.J., Judgement, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, I.C.J. Reports 2009, p. 234, para. 37.

<sup>88</sup> For a reminder of the circumstances of the series of “Alexander Awards”, see paras. 2.37 – 2.40 above.

<sup>89</sup> First Award, p. 217 (CRM, Vol. II, Annex 9).

the bed of the San Juan belong to Nicaragua”<sup>90</sup>. There can therefore be no doubt that the San Juan indisputably is a Nicaraguan national river to which Nicaragua’s full sovereignty applies, with the only limitations provided for in the 1858 Treaty of Limits. In other words, the basic principle of international law which applies in the present case is the territorial sovereignty of Nicaragua on the waters and the bed of the river.

3.13 In other words, the decisive element is that, as Costa Rica also recognized in the Dispute regarding Navigational and Related Rights, “the rights and obligations of both riparian States with regard to the San Juan are specifically regulated by international instruments,”<sup>91</sup> that is, the Jerez-Cañas Treaty of 1858 and the Cleveland Award.

## **2. The Legal Regime of the San Juan de Nicaragua established by the 1858 Treaty**

3.14 Having found that the 1858 Treaty was valid, Cleveland had to address all “the other points of doubtful interpretation found by either of the Parties in the Treaty...” Nicaragua communicated to Costa Rica eleven “points of doubtful interpretation” that it proposed to submit to the arbitrator<sup>92</sup> while Costa

---

<sup>90</sup> Memorial of Costa Rica in the *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, 29 August 2006, p. 149, para. A4, available at <http://www.icj-cij.org/docket/files/133/15084.pdf>.

<sup>91</sup> *Ibid.*, p. 152, para. A9.

<sup>92</sup> Arbitration between the Republics of Costa Rica and Nicaragua in relation to the validity of the treaty of 15 April 1858. Report to the arbitrator, the President of the United States, by George L. Rives, Assistant Secretary of State, U.S. Department of State, *RIAA*, Vol. XXVIII, p. 193.

Rica communicated none, finding “nothing in that [the 1858] Treaty which is not perfectly clear and intelligible.”<sup>93</sup>

3.15 The Cleveland Award does not take a general position concerning the fate of the boundary in case of a change in the bed of the San Juan River. However, Nicaragua asked: “Punta de Castilla point having been designated as the beginning of the border line on the Atlantic side, and finding itself, according to the same treaty, at the mouth of the San Juan river; now that the mouth of the river has been changed from where shall the boundary start?”<sup>94</sup> In response to this question, the Arbitrator stated that: “The ownership of any accretion to said Punta de Castilla is to be governed by the laws applicable to that subject.”<sup>95</sup>

3.16 The Alexander Awards, issued between 1897 and 1900 in relation with the demarcation of the boundary<sup>96</sup>, elaborate more on this point and are of great assistance for understanding the rules applicable to the delimitation of the boundary in case of change in the river bed by erosion or accretion. Thus, in his second Award, Alexander noted:

“It should be noted, for a clearer understanding of the question at hand, that the San Juan river runs through a flat and sandy delta in the lower portion of its course and that it is obviously possible that its banks will not only gradually expand or contract but that there will be wholesale changes in its channels. Such changes may occur fairly

---

<sup>93</sup> *Ibid.*

<sup>94</sup> Nicaragua Department of Foreign Relations, Points which, according to Nicaragua are doubtful and require interpretation, in P. Perez Zeledon, Argument on the question of the validity of the treaty of limits between Costa Rica and Nicaragua, Washington D.C., 1887 (CRM, Vol. II, Annex 5, p. 36).

<sup>95</sup> Cleveland Award rendered on 22 March 1888 in Washington upon the validity of the Treaty of Limits of 1858 between Costa Rica and Nicaragua, *RIAA*, Vol. XXVIII (2006) (CRM, Vol. II, Annex 7).

<sup>96</sup> See paras. 2.37 – 2.40 above.

rapidly and suddenly and may not always be the result of unusual factors such as earthquakes or major storms. Examples abound of previous channels now abandoned and banks that are now changing as a result of gradual expansions or contractions.

Today's boundary line must necessarily be affected in future by all these gradual or sudden changes. But the impact in each case can only be determined by the circumstances of the case itself, on a case-by-case basis in accordance with such principles of international law as may be applicable.

The proposed measurement and demarcation of the boundary line will not have any effect on the application of those principles.

The fact that the line has been measured and demarcated will neither increase nor decrease any legal standing that it might have had if not been measured or demarcated.

The only effect obtained from measurement and demarcation is that the nature and extent of future changes may be easier to determine.”<sup>97</sup>

3.17 And the Arbitrator made things even clearer in his third Award, dated 1898:

“Clearly, therefore, wherever a treaty rules that the bank of a river shall be taken as a boundary, what is understood is not the temporary bank of land that emerges during exceptional high- or low-water stages, but the bank with the water at ordinary stage. And once defined by treaty, it will become permanent like the surface of the soil over which it flows. If the bank recedes the boundary line shrinks, if the bank expands towards the river, it moves forward.”<sup>98</sup>

And the Umpire concluded:

“Let me sum up briefly and provide a clearer understanding of the entire question in accordance with the principles set out in my first award, to wit, that in the practical interpretation of the 1858 Treaty, the San Juan river must be considered a navigable river. I therefore rule that the exact dividing line between the jurisdictions of the two countries is the right bank of the river, with the water at ordinary stage and navigable by ships and general-purpose boats. At that stage, every portion of the waters of the river is under Nicaraguan jurisdiction.

---

<sup>97</sup> Second Award, p. 224 (CRM, Vol. II, Annex 10).

<sup>98</sup> Third Award, p. 229 (CRM, Vol. II, Annex 11).



Every portion of land on the right bank is under Costa Rican jurisdiction. The measurement and delimitation work now being performed by the parties in the field every day defines points along this line at convenient intervals, but the border line between those points does not run in a straight line; as noted above, it runs along the banks of the river at the navigable stage in a curve with innumerable irregularities of little value which would require considerable expenditure to minutely demarcate.

Fluctuations in the water level will not alter the position of the boundary line, but changes in the banks or channels of the river will alter it, as may be determined by the rules of international law applicable on a case-by-case basis.”<sup>99</sup>

3.18 Nicaragua will draw the consequences of these clarifications in Chapter 6 below. However, it can already be noted that the boundary has been fixed and demarcated during the second half of the nineteenth century, with the idea that it would follow the natural fluctuations of the river.

3.19 More generally, several of Alexander’s conclusions are pertinent to the effects of establishing the applicable juridical regime of the River. Thus, in his first Award, of 30 September 1897, Arbitrator Alexander affirms that the interpretation to be given to the Treaty of Limits of 1858 had to be in accordance with “the way in which it was mutually understood at the time by its makers.”<sup>100</sup>

And, in that same Award, he noted that:

“This treaty was not made hastily or carelessly. Each state had born wrought up by years of fruitless negotiations to a state of readiness for war in defense of what it considered its rights, as is set forth in article 1.”<sup>101</sup>

---

<sup>99</sup> *Ibid.*, p. 230 (CRM, Vol. II, Annex 11).

<sup>100</sup> First Award, p. 216 (CRM, Vol. II, Annex 9).

<sup>101</sup> *Ibid.*, p. 216.

3.20 It is therefore obvious that the 1858 Treaty, as interpreted successively by the Cleveland and the Alexander's awards, constitutes the cornerstone of the whole legal regime applicable to the San Juan River and the activities of the Parties in relation to the river. In particular, as Nicaragua will establish in the next Chapters, it follows from the Treaty thus interpreted that,

- Nicaragua enjoys full sovereignty over the disputed area;
- consequently, it is entitled to execute works to improve navigation on the San Juan River with a view to re-establishing the situation that existed at the time the 1858 Treaty was concluded;
- these works include the dredging of the San Juan River; moreover,
- Nicaragua has a right to free navigation on the Colorado until the conditions of navigability existing at the time the 1858 Treaty was concluded are re-established;
- for its part, Costa Rica is under an obligation to respect the sovereignty and territorial integrity of Nicaragua, as defined by the 1858 Treaty, and
- the only rights it enjoys on the San Juan River are those defined by the Treaty.

#### **B. THE LIMITED ROLE OF PRINCIPLES AND RULES OF GENERAL INTERNATIONAL LAW**

3.21 Since the 1858 Treaty of Limits applies, the fundamental applicable principle of general international law is that of Nicaragua's territorial sovereignty over the bed and waters of the San Juan River, with the sole restrictions or augmentations provided in the Treaty.

3.22 This does not mean that other norms and principles of general international law, whether customary or included in treaties to which both Nicaragua and Costa Rica are parties, do not apply. Indeed, relevant rules of

general international, and especially “secondary” rules of international law, may apply as far as they do not contradict the relevant provisions contained in the 1858 Treaty as interpreted by the subsequent arbitral awards. Therefore, the Treaty being the main source of the applicable law, general international law applies to incidental questions not dealt with by the Treaty and not to the core issues of the case.

3.23 This basic guideline must be kept in mind when one examines Costa Rica’s views concerning the application of some alleged general principles of international law which either do not apply in the present case or do not possess the scope Costa Rica ascribes to them (1) or of treaties other than the Treaty of Limits (2).

### **1. The Subsidiary Role of General Principles**

3.24 In its 2009 Judgment in the case concerning Navigational and related rights on the San Juan river, the Court considered that it was not “required to take a position in [that] case on whether and to what extent there exists, in customary international law, a régime applicable to navigation on ‘international rivers’.”<sup>102</sup> “Consequently,” the Court decided that it had “no need to consider whether, if these provisions did not exist, Costa Rica could nevertheless have

---

<sup>102</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 23, para. 34.

relied for this purpose on rules derived from international, universal or regional custom.”<sup>103</sup>

3.25 What is true for navigational and related rights (and obligations) also holds true for other rights and obligations dealt with in – or resulting from – the Treaty of Limits which must be interpreted accordingly.

3.26 In its Counter-Memorial, Costa Rica heavily relies on some “general principles” which it interprets misleadingly. It also ignores the fact that these “general principles” may only be applied in the context of the 1858 Treaty and the subsequent Awards. This is the case in particular of:

- the principle of non-harmful use of territory;
- the obligation to notify and consult about works carried out by a State on its own territory;
- the veto right Costa Rica claims on the improvement works made by Nicaragua; or
- the obligation to conduct a proper environmental impact assessment.

3.27 The applicability and scope of these principles in the present case will be discussed in more detail in the following chapters of this Counter-Memorial. However, some general considerations are in order.

**(a) The principle of the non-harmful use of the territory**

3.28 It is certainly true that States are under an obligation “to ensure that activities within their jurisdiction and control respect the environment of other

---

<sup>103</sup> *Ibid.*, p. 23, para. 36.

States”<sup>104</sup>. However, this principle is not vested with the absolute and peremptory character Costa Rica attributes to it<sup>105</sup>.

3.29 According to Principle 2 of the 1992 Rio Declaration,

“States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”<sup>106</sup>

3.30 However, as explained by learned commentators, “Principle 2 is neither an absolute prohibition on environmental damage, nor does it confer on states absolute freedom to exploit natural resources.”<sup>107</sup>

3.31 The “no-harm principle” imposes on States a duty of due diligence to “take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof.”<sup>108</sup> This is confirmed by the ILC’s commentary on Article 3 of its Draft Articles on Prevention of Transboundary Harm from Hazardous Activities:

“The obligation of the State of origin to take preventive or minimization measures is one of due diligence. It is the conduct of the State of origin that will determine whether the State has complied with

---

<sup>104</sup> I.C.J., Advisory Opinion, 8 July 1996, *Legality of the Threat or Use of Nuclear Weapons*, I.C.J. Reports 1996, pp. 241-242, para. 29. See CRM, pp. 211-212, para. 5.29.

<sup>105</sup> See, e.g., CRM, p. 208, para. 5.22: “States are under an obligation to ensure that [activities that risk damaging a neighbouring State’s territory] within their jurisdiction and control do not cause damage to the environment of other States or areas beyond their national jurisdiction.”

<sup>106</sup> *Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN doc. A/CONF.151/26 (Vol. I), Annex I, Principle 2.

<sup>107</sup> P. Birnie, A. Boyle & C. Redgwell, *International Law & the Environment*, Oxford, Oxford University Press, 3<sup>rd</sup> ed., 2009, p. 146, see also p. 115.

<sup>108</sup> Article 3, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, annexed to Resolution 62/68 of the General Assembly, 8 January 2008.

its obligations under the present articles. The duty of due diligence involved however is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In that eventuality, the State of origin is required, as noted above, to exert its best possible efforts to minimize the risk. In this sense it does not guarantee that the harm would not occur.”<sup>109</sup>

3.32 Similarly, Article 7 of the 1997 UN Watercourses Convention instruct watercourse States, when they utilize an international watercourse in their territories, to “take all appropriate measures to prevent the causing of significant harm to other watercourse States.” As explained by the ILC in its commentary, “[t]he Commission, in this article, is setting forth a process aimed at avoiding significant harm as far as possible while reaching an equitable result in each concrete case.”<sup>110</sup>

3.33 However, in the present case, the modalities of application of this general principle stems from the 1858 Treaty as interpreted by the Cleveland Award, whose point 3(6) provides that:

The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement, *provided* such works of improvement do not result in the occupation or flooding or damage of Costa Rica territory, or in the destruction or serious impairment of the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same.-The Republic of Costa has the right to demand indemnification for any places belonging to her on the right bank of the River San Juan which may be occupied without her consent and for any land on the same bank which may be flooded or

---

<sup>109</sup> ILC Commentary on the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 154, Commentary on Article 3, para. 7; *see also* para. 10.

<sup>110</sup> ILC commentary to draft article 7 (*Yearbook of the International Law Commission*, 1994, Vol. II, Part Two, p. 103, para 1).

damaged in any other way in consequence of works of improvement.<sup>111</sup>

3.34 As will be shown in Chapter 5 below, Nicaragua has fully complied with this obligation of conduct thus defined.

**(b) The obligation to notify and consult**

3.35 The same holds true concerning the alleged obligation to notify and consult under general international law which Costa Rica presents as being categorical and absolutely general when it asserts that “Nicaragua is in breach of its obligation under general international law to notify and consult with a neighbouring State in regard to activities that risk damaging that State’s territory.”<sup>112</sup> Here again Costa Rica abusively interprets and expands the scope of the principle and ignores the fact that this principle too is reflected and organized in a specific way in the Treaty of Limits as subsequently interpreted.

3.36 It is probably true that States are under an obligation to notify and consult with potentially affected States “on activities that may have a significant adverse transboundary environmental effect”,<sup>113</sup> as is provided for in Article 19 of the Declaration of Rio and recalled in Article 8(1) of the ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities adopted in 2001.<sup>114</sup>

---

<sup>111</sup> Cleveland Award, point 3.4. (CRM, Vol. II, Annex 7).

<sup>112</sup> CRM, p. 208, para. 5.22.

<sup>113</sup> *Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN doc. A/CONF.151/26 (Vol. I), Annex I, Principle 19.

<sup>114</sup> Article 8(1) of Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 159; *see also* the ILC’s Commentary on the Draft Articles on Prevention of Transboundary Harm from Hazardous

But that threshold – which Costa Rica mentions when quoting this provision<sup>115</sup> and from time to time in its Memorial, but does not deign to comment on anywhere – is far from being crossed in the present case.

3.37 Moreover, here again, this obligation is framed by the 1858 Treaty of Limit, whose Article VIII – and Article VIII only – imposes on Nicaragua a limited duty to consult Costa Rica if it envisages to make new grants for canal purposes involving the San Juan River; for the rest (maintenance or improvement of the navigation) only the limitations in Article VI apply.<sup>116</sup>

3.38 A fortiori, it cannot be alleged that the 1858 Treaty provides Costa Rica with a veto right or requires a prior agreement of the Parties concerning works of improvement of the River. In the Lake Lanoux case, the Arbitral Tribunal noted that:

To admit that jurisdiction in a certain field can no longer be exercised except on the condition of, or by way of, an agreement between two States, is to place an essential restriction on the sovereignty of a State, and such restriction could only be admitted if there were clear and convincing evidence.<sup>117</sup>

If the contracting Parties had wished to establish the necessity for a prior agreement, they would not have confined themselves to mentioning in Article 11 [of the Treaty of Bayonne of 26 May 1866 concerning the use of the waters of Lake Lanoux] only the obligation to give notice. The necessity for prior notice from State A to State B is implicit if A is unable to undertake the work envisaged without the agreement of B; it would, then, not have been necessary to mention

---

Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 160, commentary on Article 8, para. 6.

<sup>115</sup> CRM, p. 200, para. 5.5.

<sup>116</sup> See Cleveland Award, paras. 3(10) and (11) (CRM, Vol. II, Annex 7).

<sup>117</sup> *Lake Lanoux Arbitration (France v. Spain)*, Award, 16 November 1957, *International Law Reports*, Vol. 24, p. 129, para. 11.



the obligation of notice to B, if the necessity for a prior agreement with B had been established.<sup>118</sup>

3.39 Similarly, in the present case, Article VIII of the 1858 Treaty institutes a limited obligation to consult to be borne by Nicaragua in the case of new contracts of canalization involving the San Juan River.<sup>119</sup> If the object of the Treaty also had been to establish an obligation for a prior agreement between the Parties in the case of the “works of improvement” contemplated in Article VI, the Treaty would not have failed to expressly provide for it, as it did in Article VIII.

3.40 This interpretation was again fully confirmed by the Court in its Judgment in the *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)* where it stated:

“The Treaty imposes no express general obligation on either of the Parties to notify the other about measures it is taking relating to navigation on the river. It contains a requirement of agreement in Article VI and a requirement of consultation in Article VIII which imply prior contact between the Parties. Under Article VI the two Parties are required to agree if they wish to impose any taxes in the situation contemplated by that provision. Under Article VIII, if the Government of Nicaragua is proposing to enter into an arrangement for canalization or transit on the San Juan, it must first consult with

---

<sup>118</sup> *Ibid.*, p. 129, para. 13.

<sup>119</sup> Article VIII provides:

If the contracts of canalization or transit entered into by the Government of Nicaragua previous to its being informed of the conclusion of this treaty should happen to be invalidated for any reason whatever, Nicaragua binds herself not to enter into any other arrangement for the aforesaid purposes without first hearing the opinion of the Government of Costa Rica as to the disadvantages which the transaction might occasion the two countries; provided that the said opinion is rendered within the period of 30 days after the receipt of the communication asking for it, if Nicaragua should have said that the decision was urgent; and, if the transaction does not injure the natural rights of Costa Rica, the vote asked for shall be only advisory.

the Government of Costa Rica about the disadvantages the project might occasion between the two Parties.”<sup>120</sup>

**(c) The absence of veto right in general international law**

3.41 More generally, Costa Rica claims a veto right on the improvement works – in particular the dredging of the River – made by Nicaragua, unless it receives absolute guarantees that it will not endure any harm as a result of these works. Costa Rica does not enjoy such a veto under general international law and it is clearly excluded by the Treaty which, in any case, constitutes the law of the Parties.

3.42 Commenting Article 1 of its Articles on Prevention of Transboundary Harm from Hazardous Activities<sup>121</sup> the ILC writes:

“States likely to be affected are given the right of engagement with the State of origin in designing and, where appropriate, in the implementation of a system of management of risk commonly shared between or among them. *The right thus envisaged in favour of the States likely to be affected however does not give them the right to veto the activity or project itself.*”<sup>122</sup>

3.43 Moreover, as rightly noted by Dame Rosalyn Higgins, “[w]ith one early exception [the Madrid Declaration of 1911], none of the [International Law Association] or Institut [de Droit International] resolutions require prior

---

<sup>120</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 251, para. 93; see also p. 252, para. 97.

<sup>121</sup> Article 1 reads as follows: “The present articles apply to activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences.”

<sup>122</sup> ILC Commentary on the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 150, Commentary on Article 1, para. 6 (emphasis added).

permission for change to the flow of water, whether as to line of its flow or as to its quantum or content.”<sup>123</sup>

3.44 The proper law applicable to this case is entirely in line with this principle since, as noted in the Cleveland Awards, it is only in case of a consultation in accordance with Article VIII <sup>124</sup> that “in cases where the construction of the canal will involve an injury to the natural rights of Costa Rica, her opinion or advice, as mentioned in Article VIII of the treaty, should be more than ‘advisory’ or ‘consultative’.”<sup>125</sup> The present case, however, does not concern the construction of a canal and no “natural rights” of Costa Rica are at stake.

**(d) The obligation to conduct a proper environmental impact assessment**

3.45 As Costa Rica puts it, “a proper environmental impact assessment [hereinafter “EIA”] is a prerequisite” that stems from the duty of the States to ensure that “activities within their jurisdiction or control do not cause damage to the environment of other States.”<sup>126</sup> One central reason for this principle is that

---

<sup>123</sup> R. Higgins, *Problems and Process, International Law and How We Use It*, Oxford, Oxford University Press, 1994, p. 135. See also A. Boyle, “The principle of cooperation: the environment”, in C. Warbrick & V. Lowe (eds.), *The United Nations and the Principles of International Law: Essays in Memory of Michael Akehurst*, London, Routledge, 1994, p. 124.

<sup>124</sup> See para. 3.38, *supra*.

<sup>125</sup> Cleveland Award, para. 3(11) (CRM, Vol. II, Annex 7).

<sup>126</sup> CRM, para. 5.22, citing the Rio Declaration on Environment and Development (1992), Principle 2 (“States have...the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction”). See also, e.g., 1992 Convention on Biological Diversity, Art. 3 (same); Declaration of the United Nations Conference on the Human Environment, Stockholm (16 June 1972), Principle 21 (same); I.C.J., Advisory Opinion, 8 July 1996, *Legality of the Threat or Use of Nuclear Weapons*, I.C.J. Reports 1996, pp. 241-242, para. 29 (“The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the

“[r]ational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment.”<sup>127</sup>

3.46 The Court recently had occasion in the Pulp Mills case to declare that an EIA is a requirement under general international law that “must be conducted prior to the implementation of a [given] project.”<sup>128</sup> The Court thus held:

“[I]t may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works.”<sup>129</sup>

3.47 Nicaragua does not challenge that, as Costa Rica correctly states, “[a] State is obliged, as a matter of general international law, to assess the extent to which activities within its jurisdiction will cause harm to other States, particularly in areas or regions of shared environmental conditions”<sup>130</sup> – that is, conduct a transboundary EIA. Although the questions relating to the dredging of the San Juan river are *lex specialis* between the Parties, Nicaragua conducted an

---

environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.”).

<sup>127</sup> Declaration of the United Nations Conference on the Human Environment, Stockholm (16 June 1972), Principle 14, quoted in CRM, para. 5.22.

<sup>128</sup> *Pulp Mills*, para. 205. See also CRM, paras. 3.75 (discussing the requirement that “an environmental impact assessment be undertaken prior to the instigation of any work”) and 5.18 (characterizing an EIA prior to the initiation of works as an “obligation”).

<sup>129</sup> *Pulp Mills*, para. 204.

<sup>130</sup> CRM, para. 5.22.

EIA prior to the initiation of the minor works of dredging on the San Juan River. This study was conducted in compliance with the internal law of Nicaragua and did not imply any renunciation of its rights under the Treaty and Awards. The study relating to this dredging project analysed its potential environmental impacts and conduct an analysis of it and concluded that the projected dredging would entail no damage to its rights. This study was made publicly available<sup>131</sup>, including to Costa Rica.<sup>132</sup>

## **2. The Relationship between the Treaty of Limits and the Other Treaties Invoked by Costa Rica**

3.48 While Costa Rica sticks to a rigid application of the 1858 Treaty – as it wrongly interprets it – as far as the boundary line is concerned, it tries by all possible – and impossible! – means, to neutralize the application of the Treaty as interpreted by the subsequent arbitral awards, when it comes to discussing the lawfulness of the improvement works undertaken by Nicaragua.

3.49 In Chapter V of its Memorial, on alleged “Nicaragua’s breaches of the environmental protection regime”, Costa Rica discusses at some length a variety of Nicaragua’s alleged breaches of several treaties – the Ramsar Convention of 2 February 1971, the Convention on the Conservation of Biodiversity and Protection of Priority Wildlife Areas in Central America of 5

---

<sup>131</sup> See paras. 5.32 – 5.33 below.

<sup>132</sup> See para. 4.31 below.

June 1992, the Agreement over the Border Protected Areas between Nicaragua and Costa Rica (International System of Protected Areas for Peace [SI-A-PAZ] Agreement) of 15 December 1990 and the Convention on Biological Diversity of 21 May 1992 – but omits to deal with the relations these instruments have together on the one hand, and with the Treaty of Limits, on the other hand.

3.50 The present Chapter is not the appropriate place to refute Costa Rica’s allegations of breaches of these instruments.<sup>133</sup> However, some remarks on their scope are in order.

3.51 Generally speaking, it must be noted that these instruments are general treaties. Therefore, their relationship with the Treaty of Limits is governed by the principle *lex specialis generalibus derogant*, which means that “whenever two or more norms deal with the same subject matter, priority should be given to the norm that is more specific”<sup>134</sup>.

3.52 On the basis of the 1858 Treaty of Limits, Nicaragua exercises full sovereignty over the San Juan River. As a result, and in conformity with the express interpretation of the Treaty given by the Cleveland Award, Nicaragua may freely make the works “necessary to prevent the Bay of San Juan del Norte from being obstructed; to keep the navigation of the River or Port free and

---

<sup>133</sup> See Chapter 5, *infra*.

<sup>134</sup> Conclusions of the work of the Study Group on the Fragmentation of International Law: Difficulties arising from the Diversification and Expansion of International Law, *Report of the Commission to the General Assembly on the Work of its Fifty-Eight Session* (2006) (A/61/10), p. 408, para. 251, conclusion 5. See also P.C.I.J., Judgment, 30 August 1924, *Mavrommatis Palestine Concessions case*, Series A, No. 2, p. 31.

unembarrassed, or to improve it for the common benefit.”<sup>135</sup> The only limitations to this sovereign right are those resulting from treaties binding upon the Parties or well established general principles of international law, when they are not in contradiction of the provisions of the 1858 Treaty as interpreted by the subsequent arbitral awards. As Nicaragua will show in the subsequent Chapters of this Counter-Memorial, its acts have been in full conformity with these rules and principles, reasonably interpreted.

---

<sup>135</sup> Cleveland Award, point 3.4 (CRM, Vol. II, Annex 7).





## CHAPTER 4

### NAVIGATION ON THE SAN JUAN DE NICARAGUA RIVER

4.1 The present Chapter will focus upon navigation on the San Juan River and activities Nicaragua is entitled to undertake to enable and improve such navigation. The Chapter will also examine the impact on the navigability of the San Juan of the road being constructed by Costa Rica along the river's right bank, and Costa Rica's efforts to cut Nicaragua off from access to the Caribbean.

4.2 Despite the 1858 Treaty, the 1888 Cleveland Award, and the 2009 Judgment of this Court, Costa Rica appears to take umbrage whenever Nicaragua asserts its by now well established sovereign rights over the River, especially in regard to reasonable regulation and improvement of navigation. In this case, Costa Rica seeks to halt activities by Nicaragua in its own territory intended to further these lawful objectives.

4.3 Thus Costa Rica complains of "Nicaragua's Dredging Works on the San Juan River"<sup>136</sup> and the "Cutting of Meanders"<sup>137</sup> of the San Juan – all activities that take place in Nicaragua's sovereign territory, as established by the 1858 Treaty and the Cleveland Award, and which are expressly permitted, and in fact encouraged, if not required, by that Award. In its Submissions, Costa Rica asks the Court to diminish Nicaragua's freedom to restore the San Juan's navigability by imposing numerous qualifications and restrictions that make a

---

<sup>136</sup> CRM, Chapter III.C.

<sup>137</sup> *Ibid.*, Chapter V.D (5).

mockery of the Cleveland Award and of the notion of sovereignty itself.<sup>138</sup> In fact, Nicaragua is only doing what a responsible sovereign State would do, and what is contemplated by the relevant rules of international law, as the present Chapter will show.

4. 4 As was true of the provisional measures requested by Costa Rica, the remedies it requests in the case in chief are based on two false premises: First, that some of Nicaragua's acts of which Costa Rica complains occurred in Costa Rican territory; and second, that Nicaragua is not entitled to dredge the San Juan de Nicaragua River, over which it has full sovereignty, so as to remove navigational obstructions and restore access to the sea. The present Chapter will address the second of these premises. The first premise is refuted in Chapter 6.

#### **A. NICARAGUA'S RIGHT TO DREDGE THE RIVER TO IMPROVE ITS NAVIGABILITY**

4. 5 This section will first describe the phenomena that have resulted in the shrinkage of the lower San Juan River, and the corresponding increase in size of its present day principal distributary, the Colorado branch of the San Juan. It will then recall the origins of Nicaragua's dredging project. The section will conclude by demonstrating that Nicaragua has the right to dredge the San Juan to improve its navigability under the 1858 Treaty and the Cleveland Award.

---

<sup>138</sup> See *ibid.*, pp. 303-305, especially Submissions 1(e), 2(b) & 2(c).

## 1. Factual and Historical Background

4. 6 The San Juan de Nicaragua River carries a large sediment load.<sup>139</sup> Most of this sediment originates in Costa Rica<sup>140</sup> and is carried into the San Juan by tributaries joining the river at its right bank, *e.g.*, the San Carlos and the Sarapiquí Rivers. The accumulation of this silt in the terminal stretch of the San Juan has rendered that area, including the former entrance to the port of San Juan de Nicaragua (formerly Greytown) and the port itself, unrecognizable from the descriptions in the Cleveland award. Neither can Alexander's description be transposed to the present. In fact, those features are today not only unrecognizable, but nonexistent. For all practical purposes, Nicaragua can neither reach the Caribbean Sea via the San Juan River, nor gain access to the San Juan from the sea. In his second report to President Cleveland, George L. Rives, Assistant Secretary of State, records that "the entrance [to the Harbor of Greytown] became difficult and finally closed. This occurred in about 1862."<sup>141</sup>

4. 7 Yet the San Juan carries a significant quantity of water. Where does this water flow, if not through the mouth of the San Juan into the Caribbean? It

---

<sup>139</sup> *Ibid.*, p. 249, para. 5.99, citing the Thorne Report (CRM, Vol. I, Appendix 1, p. II-16).

<sup>140</sup> *Ibid.*, pp. 248-249, para. 5.99, stating that "[a]round 83% of the water supplied by the catchment downstream of Lake Nicaragua, that feeds the San Juan, comes from Costa Rica. It follows that most of the sediment load that reaches the San Juan also is fed in this way."

<sup>141</sup> Rives Second Report, 2/03/1888 (hereinafter "Second Rives Report"), (transcription) p. 5 (NCM, Vol.II, Annex 1). Rives was quite accurate, as discussed below.

flows through the Colorado branch, or distributary,<sup>142</sup> of the San Juan, through Costa Rican territory, into the Caribbean.

4. 8 There is no mystery about the process involved; it affects all significant rivers that carry substantial loads of sediment. In simple terms, as the rate of the river's flow slows near its mouth, sediment that had been suspended in the water drops to the river bed and accumulates there, elevating the bed of the river. The river's water, following the law of gravity, seeks out a lower course, a steeper gradient. If it finds such a course, the water will follow it increasingly until only a small portion of the original flow remains in the bed of the river. This is what has occurred in respect of the San Juan and its Colorado branch, respectively.

4. 9 Illustrations of this phenomenon abound.<sup>143</sup> Without constant dredging<sup>144</sup> and the construction of regulatory works by the U.S. Army Corps of Engineers, for example, the Mississippi River would have long since abandoned its lower course – including the City of New Orleans – in favor of the steeper gradient of the Atchafalaya River. The Atchafalaya, like the Colorado, is a

---

<sup>142</sup> Costa Rica recognizes that the Colorado is a distributary, indeed “the largest distributary of the San Juan”, then immediately points out that it “flows wholly within Costa Rican territory,” citing para. 7 of the third article of the Cleveland Award. CRM, p. 103, para. 3.70. Costa Rica does not go on to draw conclusions from this statement.

<sup>143</sup> McPhee mentions the Yellow River, the Mekong, the Indus, the Po, the Volga, the Tigris and the Euphrates, and the Nile. John McPhee, *The Control of Nature*, p. 54, Farrar Strus Giroux, New York, 1989 (hereinafter “McPhee”), available at [http://www.newyorker.com/archive/1987/02/23/1987\\_02\\_23\\_039\\_TNY\\_CARDS\\_000347146](http://www.newyorker.com/archive/1987/02/23/1987_02_23_039_TNY_CARDS_000347146) (last visited 16 June 2012).

<sup>144</sup> There are normally five dredges operating at Southwest Pass, the mouth of the Mississippi, including the largest dredge in the fleet of the U.S. Army Corps of Engineers, the hopper dredge *Wheeler*. The *Wheeler* “deal[s] with shoaling problems that occur during high and low water.” See [http://www.mvn.usace.army.mil/od/nav\\_wheeler.asp](http://www.mvn.usace.army.mil/od/nav_wheeler.asp) (last visited 15 June 2012).

distributary: it takes water from the river, rather than adding water to it, which a tributary does. Nicaragua is only doing one of the things the Corps of Engineers is doing, dredging, and is doing it on a scale that is so minor that it would not be noticed in the Mississippi – and is scarcely noticeable in the San Juan. Although entirely within its rights, Nicaragua has not taken the other step that the Corps of Engineers found it necessary to take in order to keep seventy per cent of the Mississippi flowing down its original course to the sea, pursuant to instructions from the U.S. Congress: the construction of massive control structures to prevent the Atchafalaya River from capturing the flow of the Mississippi River,<sup>145</sup> much as the Colorado has captured the flow of the San Juan.

4. 10 According to Assistant Secretary of State George L. Rives, to whom President Cleveland delegated his powers in the arbitration between Costa Rica and Nicaragua,<sup>146</sup> “The Colorado, ever since 1860 has been the main stream. In that year, the waters were diverted from the San Juan proper into the Colorado, and now by far the greater part of the waters of the present stream finds its outlet through that river.”<sup>147</sup> Rives was writing in March 1888. He does not elaborate on how the waters were “diverted” from the San Juan “proper” into the Colorado. The conditions for such a diversion had possibly been building over time, with the deposition of sediment in the river’s mouth and delta area generally, either though

---

<sup>145</sup> See [http://www.mvn.usace.army.mil/recreation/rec\\_oldrivercontrol.asp](http://www.mvn.usace.army.mil/recreation/rec_oldrivercontrol.asp) (last visited 12 June 2012).

<sup>146</sup> Cleveland Award, penultimate preambular paragraph (CRM, Vol. II, Annex 7).

<sup>147</sup> Second Rives Report, p. 5 (NCM, Vol. II, Annex 1).

entirely natural processes or with the added industry of man. The conditions can reach a tipping point, so that high water can begin spilling into the new channel – the Colorado, in this case. Once that process starts, the “diversion” can occur very quickly. This has nearly happened several times in the case of the Mississippi, during flood events that have threatened the integrity of the Atchafalaya control structures.<sup>148</sup>

4. 11 The capture of the San Juan by the Colorado was rapid in geologic terms, and today remains nearly complete. A dispatch sent by the Consul of the United States in San Juan del Norte on 26 February 1859 describes the changes then taking place in the harbor of Greytown:

The harbor of this port has for several months past, been filling up and the entrance to it gradually growing narrower and shallower, until none but the lighter draft vessels can enter it. I was told by the pilot of the port this morning that yesterday afternoon there was but fifteen feet water at the mouth, where six months ago the soundings showed twenty-five feet!<sup>149</sup>

4. 12 This report from a United States official on the ground disproves Costa Rica’s contention that “at least since 1850 similar results have been determined regarding the percentages of discharges flowing through the Colorado and San Juan rivers after the Colorado Delta, whereby something of the order of

---

<sup>148</sup> McPhee describes one of the most serious of these events, which occurred in 1973. Flooding nearly destroyed the structure, which weighs some two hundred thousand tons. This would have sent most of the flow of the Mississippi down the Atchafalaya River. McPhee, p. 26.

<sup>149</sup> Despatches from United States consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 3), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C. (NCM, Vol. II, Annex 2).

10% goes to the Río San Juan and around 90% goes to the Río Colorado.”<sup>150</sup> On the contrary, it is clear that this situation did not obtain at the time the 1858 Treaty of Limits was concluded but only began to develop thereafter, even as early as 1859. That in 1851 most of the San Juan’s flow still followed the course of the lower San Juan, not its Colorado distributary, is also confirmed by the Bülow map discussed and reprinted below.

4. 13 The situation in 1858 is indicated by a map from that year prepared by order of the Nicaraguan Government and annexed to Costa Rica’s Memorial.<sup>151</sup> The map clearly shows most of the flow of the San Juan following its lower course to the sea, with a smaller quantity following the Colorado. If this had not been the case, Costa Rica’s right under the Treaty to navigate on the San Juan for purposes of commerce through the Bay at the Greytown Harbor, in either direction, would have been of little value.

4. 14 Indeed, a major premise of the 1858 Treaty was that the San Juan was navigable to its outlet into the Caribbean. The only port was there, and it was still a port of great importance in 1858, as is clear from General Alexander’s First Award. Speaking of Punta Arenas at the mouth of the harbor, Alexander noted: “On it were located the wharves, workshops, offices, etc., of Vanderbilt’s great transit company, conducting the through line from New York to San Francisco

---

<sup>150</sup> CRM, p. 36, para. 2.7.

<sup>151</sup> *Map of the Republic of Nicaragua*, compiled by Maximiliano Sonnestern by order of the Government, 1858 (CRM, Vol. V, Annex 168).

during the gold excitement of the early fifties. Here the ocean and river steamers met and exchanged passengers and cargo.”<sup>152</sup>

4. 15 Thus the navigability of the San Juan to its mouth was of great significance for commerce in 1858, and had direct consequences for the location of the border. This is clear from Alexander’s First Award, where the arbitrator states: “But throughout the treaty the river is treated and regarded as an outlet of commerce. This implies that it is to be considered as in average condition of water, in which condition alone it is navigable.”<sup>153</sup> Indeed, Alexander observed that:

the scheme of compromise [between the parties] stands out clear and simple.

Costa Rica was to have as a boundary line the right or southeast bank of the river, considered as an outlet for commerce . . . .

Nicaragua was to have her prized ‘sumo imperio’ of all the waters of this same outlet for commerce, also unbroken to the sea.<sup>154</sup>

4. 16 As if to punctuate the importance of communication with the sea, Alexander further observed that the boundary line “cannot follow either of them [*i.e.*, the Colorado or the Taura branch], for neither is an outlet for commerce, as neither has a harbor at its mouth.”<sup>155</sup>

4. 17 The substantial capture of the San Juan by the Colorado was noted by a former President of Costa Rica, Mr. Cleto Gonzales Viquez. He reported that

---

<sup>152</sup> First Award by the Umpire E.P. Alexander rendered on 30 September 1897 in San Juan del Norte, Nicaragua, *RIAA*, Vol. XXVIII, p. 219 (CRM, Vol. II, Annex 9).

<sup>153</sup> *Ibid.*, pp. 218-219.

<sup>154</sup> *Ibid.*, p. 217.

<sup>155</sup> *Ibid.*



in 1861 “the River San Juan has mostly changed its course to run through the branch of the Colorado.”<sup>156</sup>

4.18 These changes are clearly observable from the three images presented in **Figure 4.1.**, a map prepared by Baron A. Bülow in 1851 shortly before the Jerez-Cañas Treaty was concluded, an excerpt of the map prepared by Maximilian Sonnestern in 1858 showing the delta at the time the Treaty was concluded, and a satellite image from 2010.

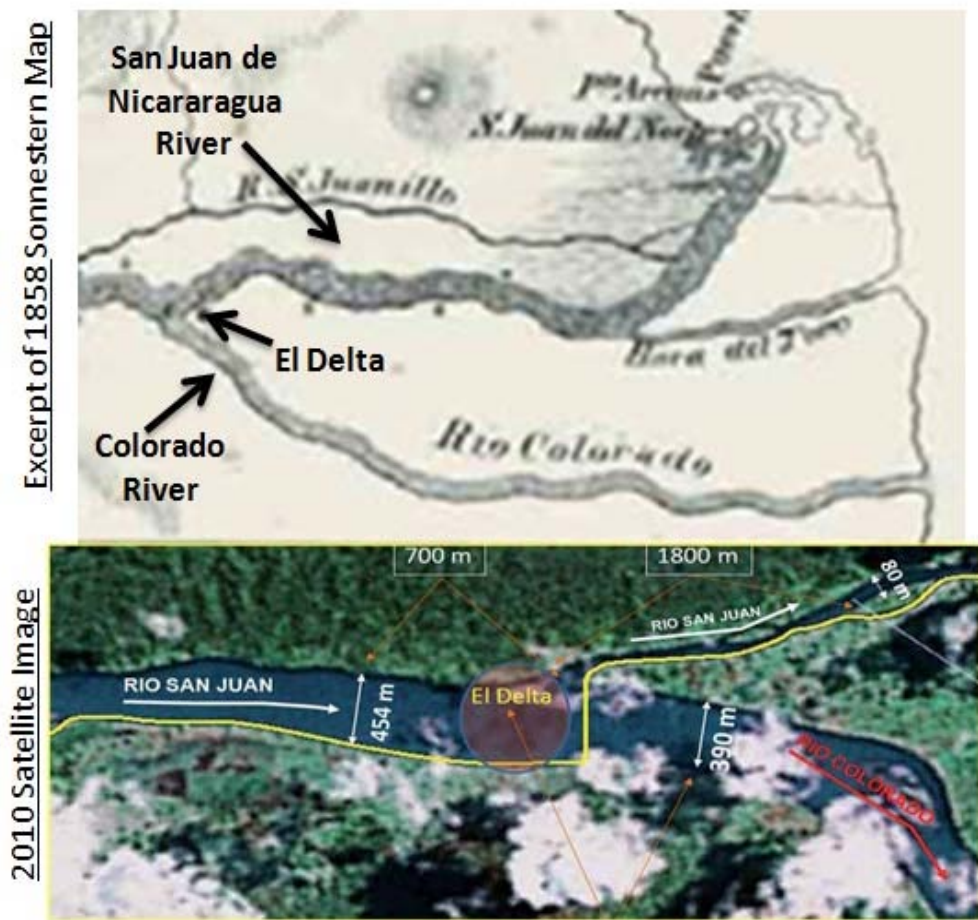
---

<sup>156</sup> Cleto González Víquez, *Temblores, Terremotos, Inundaciones y Erupciones volcánicas en Costa Rica (1608-1910)*, Tipografía de Avelino Alsina, San José, Costa Rica, 1910. (NCM Vol. II, Annex 6) (excerpt).

Figure (s) 4.1.<sup>157</sup>



<sup>157</sup> See NCM, Vol. IV, Annex 119(A), see also Annex 119 (C) containing a satellite image issued by LAND INFO (pictures were taken between 2009-2012) of the San Juan River, with geographic-reference information; *Map of the Republic of Nicaragua*, compiled by Maximiliano Sonnestern by order of the Government, 1858 (CRM, Vol. V, Annex 168).



**Figure(s) 4.1.** Comparison of 2010 Satellite Image and 1851/1858 maps

4. 19 A comparison shows that while in the mid-19<sup>th</sup> century most of the San Juan’s flow remained in the historic main channel until it reached the sea, with a much smaller quantity flowing down the Colorado distributary, in 2010 the situation was the reverse: most of the San Juan’s water, around ninety percent,<sup>158</sup>

<sup>158</sup> CRM, Vol. IV, Annex 158, excerpting a study submitted by Nicaragua to the Court during the Hearings on Provisional Measures, January 2011, indicating that as of August, 2006, approximately 11% of the flow of the San Juan discharged through the lower portion of the river to the Caribbean Sea while the remaining 89% “flows through the Colorado River and empties into the Caribbean Sea at Barra del Colorado.” Costa Rica does not challenge these figures. See CRM, p. 34, para. 2.4.

has now been captured by the Colorado, and flows by that route into the Caribbean Sea at Barra del Colorado, Costa Rica. What remains in the historic bed of the lower San Juan is a pale shadow of the flow depicted in 1851 or in the 1858 map prepared by order of the Nicaraguan Government. It is insufficient not only for navigation, but also to prevent the accumulation of still more sediment, further occluding what was once the mouth of the river and a thriving port. Yet Costa Rica complains about Nicaragua's efforts to slow down this process through small-scale dredging operations.

4. 20 These complaints fly in the face not only of President Cleveland's award but also of the Treaty itself. As would be expected, the latter is clearly based on the circumstances existing when it was concluded, on 15 April 1858. This is obvious from a number of provisions of the Treaty, not least Article II itself, which delimits the border. This central provision begins as follows: "The dividing line between the two Republics, starting from the Northern Sea [*i.e.*, the Caribbean], shall begin at the end of Punta de Castilla, at the mouth of the San Juan de Nicaragua river . . . ." <sup>159</sup> The "end of Punta de Castilla" had long since been "swept over by the Caribbean Sea" by Alexander's time <sup>160</sup> and has not been located by the Parties in the intervening years since then. The "mouth of the San Juan de Nicaragua river" is no longer well-defined or even static. In fact, it did not

---

<sup>159</sup> CRM, Vol. II, Annex 1, p. 5, Art. II, at p. 9.

<sup>160</sup> "The exact spot which was the extremity of the headland of Punta de Castillo April 15, 1858, has long been swept over by the Caribbean Sea . . . . [I]t can not now be certainly located." First Award by the Umpire E.P. Alexander, *op. cit. supra*, p. 220.

have a defined location even at the time of the Cleveland Arbitration. Assistant Secretary of State George L. Rives,<sup>161</sup> made the following observations in his Second Report:

In 1858 there was still a good entrance to the Harbor, and one side of this entrance was formed by the extremity of the Punta de Castilla. But even at that time this tongue of land was occasionally broken through by the sea; although so long as there was an open entrance to the Harbor, it was through that channel that the waters of the river flowed into the sea.

Since 1858 that state of things has entirely changed. There is now no such thing as a fixed Harbor entrance or a fixed Harbor mouth. The waters of the river enter the sea at any place where they can easily break through the sand heaped up by the sea; and where there was a single tongue of land, there is now a chain or group of shifting islands.<sup>162</sup>

4. 21 It is therefore clear that in order to enjoy its rights under the 1858 Treaty, Nicaragua is entitled to restore the navigability of the river to the Caribbean Sea. Nicaragua's right to execute these works was clearly assumed by President Cleveland when, in answering a question put by Nicaragua, he stated that:

4. The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement...<sup>163</sup>

4. 22 Costa Rica itself says it supports the improvement of navigation on the entirety of the San Juan. In a Note of 5 May 2006, the Foreign Minister of Costa Rica stated: "I wish to specify that Costa Rica has the greatest desire that

---

<sup>161</sup> Cleveland Award, penultimate preambular paragraph (CRM, Vol. II, Annex 7).

<sup>162</sup> Second Rives Report, p.6 (NCM, Vol. II, Annex 1).

<sup>163</sup> Cleveland Award, Third Art., para. 6 (CRM, Vol. II, Annex 7).

the navigation of the San Juan River be expedited in all of its extension, for the primordial benefit of the inhabitants of the zone.”<sup>164</sup>

4. 23 One result of the major shift in the flow of the San Juan from its historic outlet, at what was then the port of San Juan del Norte, to the Colorado distributary is that while the San Juan is no longer navigable to the sea by craft of any appreciable size, and is not navigable to the sea by any craft for much of the year,<sup>165</sup> the Colorado is easily navigable to the sea year-round by most vessels – except those of Nicaragua.

4. 24 Costa Rica has militarized the point at which the Colorado distributary takes off from the main stem of the San Juan,<sup>166</sup> and has placed police posts at the mouth of Rio Colorado and at the mouth of the San Carlos and Sarapiquí rivers,<sup>167</sup> to prevent Nicaragua from using the Colorado as a transit route to the sea. The paradoxical result is that Costa Rican tourist boats may navigate up the Colorado and into the San Juan,<sup>168</sup> but no Nicaraguan vessels of any kind may navigate down the Colorado to the sea, because Costa Rica prevents

---

<sup>164</sup> Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-187-06, 5 May 2006 (CRM, Vol. III, Annex 43). *See also* CRM, p. 103, para. 3.71.

<sup>165</sup> *See, e.g.*, Affidavit of Juan Francisco Gutiérrez Espinoza (Military) (NCM, Vol. III, Annex 85) & Affidavit of Manuel Salvador Mora Ortiz (Military) (NCM, Vol. III, Annex 86), describing the difficulty of navigating even in small craft in the area of the mouth of the river.

<sup>166</sup> El Nuevo Diario, Nicaragua "Encourages Costa Ricans to Join the military reserves on the anniversary of the abolition of the Costa Rican army", 1 December 2010 (NCM, Vol III, Annex 92 (2)).

<sup>167</sup> During the Provisional Measures hearings the Agent of Nicaragua described this situation as follows: "Costa Rica has cut off the possibility of any Nicaraguan vessels entering the Colorado . . . They are installing chains and other mechanisms to impede any attempts of navigation by Nicaraguan vessels." CR 1011/2, 11 January 2011, pp. 9-10, para. 9 (Argüello Gómez).

<sup>168</sup> *See* the Court's judgment in the case concerning the *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, I.C.J. Reports 2009, p. 213, at p. 269, para. 156.

them from doing so. It will be shown in part D of this Chapter that Costa Rica is not within its rights in preventing Nicaragua from navigating to the sea through the Colorado, confining Nicaraguan vessels to a fluvial cul-de-sac. What is more, it seems evident that Costa Rica itself, through its own dredging program, is playing a role in capturing the flow of the San Juan and diverting it to the Colorado, leaving the navigation on the Colorado as the only means of accessing the sea.

4. 25 While as outlined above the deposition of sediment in river delta areas is a well-known phenomenon, it is an open question whether the current division of flow as between the lower San Juan and its Colorado distributary, which has remained essentially the same since around 1860 – over 150 years – would not have at least begun to change back to the regime that obtained in 1858 due to natural processes but for human intervention. Such intervention has indeed occurred, in the form of a long-standing dredging program by Costa Rica.

4. 26 As early as 21 April 1908, the Costa Rican Public Works Directorate received a report from engineer Luis Fournier concerning the Palmas Spring canal project as well as a study on the connection of Norte Tortuguero Lagoon with Simón Lagoon of the Colorado River.<sup>169</sup> Funds were authorized in 1916 for works to connect the two lagoons with a channel having the capacity for

---

<sup>169</sup> See Excerpt of "DICTAMEN JURIDICO 351, (C-351-2006), Mauricio Castro Lizano, Deputy Attorney General (Procurador Adjunto)", 31 August 2006 available at: [http://www.pgr.go.cr/scij/busqueda/normativa/pronunciamiento/pro\\_ficha.asp?param6=1&nDictamen=14094](http://www.pgr.go.cr/scij/busqueda/normativa/pronunciamiento/pro_ficha.asp?param6=1&nDictamen=14094) (*last visited* 20 July 2012). ( NCM, Vol. III, Annex 30 (1)).

navigation by ships.<sup>170</sup> Further legislation was adopted in 1924 and 1925 concerning the improvement of inland navigation along the eastern coast. The 1925 law (Law No. 69 of 6 February 1925) provided for a study of the possibility of connecting the Northern Zone and the Tortuguero Plains with a port at any point along the coast from the Colorado River to Moín, some 110 kilometers to the south.<sup>171</sup> Engineer W. Sprung, who conducted the study, noted the advantages of Moín as a natural port.<sup>172</sup> In 1961, its Public Works Ministry put forward the “Preliminary Canals Project for the Atlantic Lagoon” based on a 1960 proposal by Consultécnica, Ltd.. The proposed canal was to connect Moín with Barra de Colorado through a navigable waterway 112 kilometers long. In a 1965 letter, the Costa Rican Minister of Transport, Ricardo Echandi Z., refers to a program of canalization, “in other words the opening of channels for the inland waters of the Mohín [Moín] Bay and San Juan River, to resolve in part the demand for export and import . . . .”<sup>173</sup> Costa Rican Decree No. 3729 of 3 May 1974 declared the inauguration of a system of navigation in a 112 kilometer-long system of natural and artificial canals between Moín and Barra de Colorado, including five different terminals. Based on this information, INETER developed a map showing this navigation system, which appears at Annex 130. Finally, the Costa Rican agency JAPDEVA has invested in the maintenance of the northern canals, due to the large

---

<sup>170</sup> *Ibid.*

<sup>171</sup> *Ibid.*, p 2.

<sup>172</sup> *Ibid.*

<sup>173</sup> Letter from Ricardo Echandi Z., Minister of Transport, to the Manager of the Institute of Lands and Colonies, San José, 11 February 1965 (NCM, Vol. III, Annex 37).



amounts of sediment deposited there.<sup>174</sup> The maintenance of these waterways for navigation is carried out by continuous suction dredging and other maintenance activities.<sup>175</sup>

4. 27 There is thus ample evidence of an intensive Costa Rican program of dredging and canalization along its eastern coast. This program connects the Colorado with the port of Moín, facilitating the water's journey to the sea. It may well ensure the continued capture of the flow of the San Juan by the Colorado, much as the continuous dredging in the lower reaches of the Mississippi helps to ensure the continued flow of water to New Orleans and out to the Gulf of Mexico. Yet at no time did Costa Rica inform Nicaragua of its dredging programs, notwithstanding its demands that Nicaragua provide information to Costa Rica regarding Nicaragua's minor cleaning activities that are rights derived from the 1858 Treaty and subsequent Awards.<sup>176</sup> Since Costa Rica has not provided Nicaragua with any information with respect to the dredging of the Colorado and its outlets, it is not possible to determine accurately the amount of water this has further diverted to the Colorado from the San Juan River proper. What is certain is that it has significantly added to the diversion of the waters already provoked by the uncontrolled deforestation and agricultural and industrial development in

---

<sup>174</sup> See Excerpt of "Northern Channels (Tortuguero)", available at: [http://www.japdeva.go.cr/adm\\_desarrollo/proyectos\\_regionales/canales.html](http://www.japdeva.go.cr/adm_desarrollo/proyectos_regionales/canales.html) ( NCM, Vol. III, Annex 30 (2))

<sup>175</sup> *Ibid.*

<sup>176</sup> See Chapter 3 above; *further see* paras. 5.1 – 5.3.

Costa Rican territory. The uncontrolled deforestation is clearly observable from an excerpt of the satellite image presented in Figure 4.2.

**Figure 4.2.**<sup>177</sup>



**Figure 4.2.** Excerpt of Satellite image issued by LAND INFO

## **2. The Origins of Nicaragua’s Dredging Project**

4. 28 For its part, Nicaragua determined that in light of the situation described above, action was necessary to improve navigation on the lower San Juan.<sup>178</sup> The government agency responsible for river transportation and ports, the *Empresa Portuaria Nacional de Nicaragua* (“EPN”), began planning the dredging

---

<sup>177</sup> See Land Info Image of River (C) (pictures were taken between 2009-2012) of the San Juan River, with geographic-reference information (NCM, Vol. IV, Annex 119 (C)).

<sup>178</sup> Letter from Mr. Norman Caldera Cardenal, Former Minister of Foreign Affairs of Nicaragua to Mr. Alejandro Fiallos, Executive President of the National Ports Company, Reference MRE/DM/037/01/06, 10 January 2006, p. 1 (stating that dredging the river was “a task of prime importance and urgency”) (NCM, Vol. III, Annex 39).

project in 2004.<sup>179</sup> The details of the governmental approval process regarding this project will be examined Chapter 5. The following summary will touch briefly on the main points to provide a basis for the discussion of Nicaragua's right to dredge in the following subsection of this Chapter.

4.29 In January 2006, EPN submitted an application to MARENA, Nicaragua's Ministry of Environment, for authorization to carry out the project.<sup>180</sup> MARENA formed a governmental team of technical experts to review EPN's application, which provided EPN with detailed Terms of Reference for the preparation of the Environmental Impact Study ("EIS") required for environmental authorization of such a project.<sup>181</sup> EPN submitted an initial version of the EIS to MARENA in July 2006,<sup>182</sup> but it was found to be inadequate because it lacked sufficient technical information to support the conclusions reached concerning the possible environmental impacts of the project.<sup>183</sup> EPN submitted a

---

<sup>179</sup> See Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 2 (CRM, Vol. IV, Annex 164).

<sup>180</sup> See Administrative Resolution No. 038-2008, 22 December 2008, p. 1, para. 1 (NCM, Vol. III, Annex 33).

<sup>181</sup> Specific Terms of Reference for the Preparation of the Environmental Impact Study for the Project "Dredging of the San Juan River", Ministry of the Environment and Natural Resources (MARENA). (hereinafter "Terms of Reference") (NCM, Vol. II, Annex 9).

<sup>182</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, para. 15 (CRM, Vol. IV, Annex 165).

<sup>183</sup> *Ibid.*

revised EIS in September of 2006 together with detailed technical annexes.<sup>184</sup>

This, too, was found wanting, resulting in further revisions by EPN.<sup>185</sup>

4.30 The final EIS was subjected to further technical review by the expert team, which ultimately found that the project would cause no significant, irreversible impacts on the environment.<sup>186</sup> On the basis of the experts' findings, MARENA issued the permit for the project to proceed in December 2008.<sup>187</sup> Among MARENA's findings was that there was "convincing evidence in [the] Environmental Impact Study and supporting documentation . . . that the dredging of the San Juan River would not significantly affect the flow of the Colorado River in Costa Rica, which would be reduced by a few percentage points at most, and even less in the rainy season . . . [and] would not harm the navigability of the Colorado River."<sup>188</sup> The permit entered into force upon EPN's signature of the same on 9 July 2009.<sup>189</sup> The cleaning work began on 18 October 2010.<sup>190</sup>

---

<sup>184</sup> Environmental Impact Study for Improving Navigation on the San Juan de Nicaragua River (Excerpts), September 2006. (hereinafter "Environmental Impact Study") (NCM, Vol. II, Annex 7); *see also* Project Design Study (Excerpts) September 2006 (hereinafter "Project Design Study") (NCM, Vol. II, Annex 8).

<sup>185</sup> *See* Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, para. 17 (CRM, Vol. IV, Annex 165).

<sup>186</sup> *See* Technical Opinion, Environmental Impact Study for the Project "Improvement of Navigation on the San Juan de Nicaragua River," 28 November 2008 (hereafter "Technical Opinion") (NCM, Vol. II, Annex 12).

<sup>187</sup> Administrative Resolution No. 038-2008, 22 December 2008 (NCM, Vol. III, Annex 33).

<sup>188</sup> Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, para. 20(f) (CRM, Vol. IV, Annex 165). Ms. Espinoza is the Environment Ministry official who signed the formal resolution granting the permit to proceed with the dredging project.

<sup>189</sup> Administrative Resolution No. 038-2008, 22 December 2008, p. 1, para. 1 (NCM, Vol. III, Annex 33).

<sup>190</sup> CRM, p. 102, para. 3.70.

4. 31 Costa Rica complains of not having been notified of Nicaragua’s minor dredging, or cleaning, program.<sup>191</sup> Yet if Costa Rica lacked information about the program, it would not have been possible for Mr. René Castro Salazar, the former Costa Rican Minister of Foreign Affairs and Worship, to have told the environment committee of Costa Rica’s Legislative Assembly in September 2010 that:

Costa Rican experts developed a volume calculation model that projects the impact on the volume of the Colorado River from the different types of projects and dredging operations in the San Juan River. Without going into details, I can say that the results of these studies are in general tranquilizing for the country since all the models analyzed calculate volume reductions of less than 12%. Moreover, for the announced \$7 million investment, the reduction of volume would be even smaller and, therefore, will not produce the alarming environmental and economic impact that some media have suggested. Nobody has been able to prove volume calculations or reductions close to 60% as published in some media.<sup>192</sup>

4. 32 Costa Rica’s technical study actually concludes that the diminution in flow in the Colorado will be less than 4.5%.<sup>193</sup>

4. 33 As is implicit in the Foreign Minister’s statement, Costa Rica has also “recognize[ed] . . . Nicaragua’s right to dredge the San Juan . . . .”<sup>194</sup> But as

---

<sup>191</sup> See, e.g., CRM, p. 105, para. 3.76; Provisional Measures hearings, CR 2011/3, p. 24, para. 9 (Crawford).

<sup>192</sup> Speech of Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship before the Environmental Commission of the Legislative Assembly, 8 Sep. 2010, pp. 5-6 (NCM, Vol. II, Annex 24).

<sup>193</sup> C.S. Diseño, “Study of flow behavior in the bifurcation San Juan River – Colorado River,” p. 5. Spanish version submitted to the Court by Costa Rica on 7 January 2011; English translation submitted in Nicaragua’s judges’ folders on 11 January 2011 and herewith (NCM, Vol. II, Annex 11).

<sup>194</sup> Provisional Measures hearings, CR 2011/3, p. 25, para. 13 (Crawford).

will be shown below, this right is by no means limited to reduction of the volume of the Colorado by 12%, since as shown in the previous section, Nicaragua has the right under the 1858 Treaty and the Cleveland Award to restore the flow in the lower San Juan, to the situation that prevailed in 1858 when the Treaty was concluded. That is, Nicaragua has the right to restore navigation into and out of the San Juan River by ocean-going vessels.

### 3. Nicaragua's Right To Dredge

4. 34 The need for Nicaragua to dredge the stretch of the San Juan between the Colorado and the sea has been shown above and in Chapter 2. Nicaragua also has the right to undertake such dredging.

4. 35 Nicaragua's right to dredge the San Juan River is an aspect of its sovereignty over that watercourse, which is confirmed in both the 1858 Treaty<sup>195</sup> and the 1888 Cleveland Award.<sup>196</sup> As the Court noted in the *Navigational and Related Rights Case*, Article 6 of the Treaty provides in part that: "The Republic of Nicaragua shall have the exclusive dominion and sovereignty [*exclusivamente el dominio y sumo imperio*] over the waters of the River San Juan from their issue out of the lake to their discharge into the Atlantic Ocean."<sup>197</sup> While most of the "waters of the River San Juan" today "discharge into the Atlantic Ocean" through the Colorado tributary of the San Juan, Nicaragua does not claim sovereignty

---

<sup>195</sup> Cleveland Award, (CRM, Vol. II, Annex 7)..

<sup>196</sup> Cleveland Award, Third Art., paras. 4 & 6 (CRM, Vol. II, Annex 7).

<sup>197</sup> The Court referred to this authority as Nicaragua's "dominion and sovereign jurisdiction" in the *Navigational and Related Rights Case*, Judgment of 13 July 2009, para. 19.

over the Colorado. As will be explained in section D below, however, Nicaragua does claim a right to navigate on the Colorado, both from the San Juan to the Caribbean and from the Caribbean to the San Juan. Once Nicaragua succeeds in re-opening an outlet to the sea through the lower San Juan, Costa Rica will also be able to enjoy its rights of navigation on that portion of the San Juan for its tourist and other commercial vessels.

4. 36 Nicaragua's sovereignty over the river carries with it certain rights and obligations. These spring from the *lex specialis* governing the river – the 1858 Treaty, the Cleveland Award and the Alexander Awards – as well as general international law, including the doctrine of sovereignty itself.

4. 37 The right of Nicaragua to dredge the San Juan River was clearly recognized by President Grover Cleveland in his 1888 Award. The arbitral agreement between Costa Rica and Nicaragua provided in Article VI for the submission to the arbitrator of points of doubtful interpretation in relation to the 1858 Treaty. Nicaragua submitted eleven such points, or questions, to President Cleveland.<sup>198</sup> Points 4, 5 and 6 read as follows:

4. Nicaragua consented, by Article IV, that the Bay of San Juan, which always exclusively belonged to her and over which she exercised exclusive jurisdiction, should be common to both Republics; and by Article VI she consented, also, that Costa Rica should have, in the waters of the river, from its mouth on the Atlantic up to three English miles before reaching Castillo Viejo, the perpetual right of free navigation for purposes of commerce. Is Costa Rica bound to concur with Nicaragua in the expense necessary to prevent the Bay from being obstructed, to keep the

---

<sup>198</sup> CRM, Vol. II, Annex 5, p. 33.

navigation of the river and port free and unembarrassed, and to improve it for the common benefit? If so,

5. In what proportion must Costa Rica contribute? In case she has to contribute nothing –

6. Can Costa Rica prevent Nicaragua from executing, at her own expense, the works of improvement? Or, shall she have any right to demand indemnification for the places belonging to her on the right bank, which may be necessary to occupy, or for the lands on the same bank which may be flooded or damaged in any other way in consequence of the said works?<sup>199</sup>

4. 38 In answer to questions put by Nicaragua, President Cleveland states as follows in the Third Article of his Award:

4. The Republic of Costa Rica is not bound to concur with the Republic of Nicaragua in the expenses necessary to prevent the Bay of San Juan del Norte from being obstructed; to keep the navigation of the River or Port free and unembarrassed, or to improve it for the common benefit.

5. The Republic of Costa Rica is not bound to contribute any proportion of the expenses that may be incurred by the Republic of Nicaragua for any of the purposes above mentioned.

6. The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement, provided such works of improvement do not result in the occupation or flooding or damage of Costa Rica territory, or in the destruction or serious impairment of the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same. The Republic of Costa Rica has the right to demand indemnification for any places belonging to her on the right bank of the River San Juan which may be occupied without her consent, and for any lands on the same bank which may be flooded or damaged in any other way in consequence of works of improvement.<sup>200</sup>

4. 39 Thus President Cleveland's award recognizes Nicaragua's right to execute works of improvement designed to "prevent the Bay of San Juan del

---

<sup>199</sup> *Ibid.*, pp. 36-37.

<sup>200</sup> Cleveland Award, Third Art., paras. 4-6 (CRM, Vol. II, Annex 7).



Norte from being obstructed, to keep the navigation of the River or Port free and unembarrassed or to improve it for the common benefit.”<sup>201</sup> The only provisos are that “such works of improvement . . . not result in the occupation or flooding or damage of Costa Rica territory, or in the destruction or serious impairment of the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same.”<sup>202</sup> If such effects are caused, “[t]he Republic of Costa Rica has the right to demand indemnification for any places belonging to her on the right bank of the River San Juan which may be occupied without her consent, and for any lands on the same bank which may be flooded or damaged in any other way in consequence of works of improvement.”

4. 40 Costa Rica, evidently finding intolerable the fact that it “cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement,” has constructed a tortured argument by which it seeks to deny Nicaragua the rights that President Cleveland attributed to it by interpreting beyond recognition the word “provided”.<sup>203</sup> This argument is shown to be without merit in Chapter 5. The position, as stated by President Cleveland, is clear: Nicaragua has the right to dredge; Costa Rica has the right to claim compensation for the effects enumerated by Cleveland, but not to prevent or veto such works of improvement.

---

<sup>201</sup> *Ibid.*, para. 4.

<sup>202</sup> *Ibid.*, para. 6.

<sup>203</sup> CRM, p. 221, para. 5.49.

4. 41 The import of President Cleveland's answers could not be clearer. Dredging being the principal means of "keep[ing] the navigation of the River . . . free and unembarrassed," the President's answers plainly recognize Nicaragua's right to dredge the San Juan in order to restore the navigability of its lower reaches. Moreover, President Cleveland does not say that these "works of improvement" may not affect Costa Rica, even adversely. He says only that Nicaragua may execute such works provided they do not result in the "destruction or serious impairment of the navigation of" the San Juan. Nicaragua's present dredging program will not impair but rather restore partially the navigation of the San Juan and by its dimensions is incapable of producing effects that would come anywhere near "destruction or serious impairment of the navigation of" the Colorado, as Costa Rica's own Foreign Minister has recognized.<sup>204</sup>

4. 42 Indeed, it is difficult to see how even a complete reversal of the present flow regime would result in effects such as those referred to by President Cleveland. His knowledge that in 1860 a change in the flow regime occurred, producing a division of flow as between the lower San Juan and the Colorado that bore little relation to that in existence when the Treaty was concluded was the reason for his emphasizing that "[t]he boundary line between the Republics of Costa Rica and Nicaragua, on the Atlantic side, begins at the extremity of Punta

---

<sup>204</sup> Speech of Mr. Rene Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, September 8, 2010., pp. 5-6 (NCM, Vol. II, Annex 24).

de Castilla at the mouth of the San Juan River, *as they both existed on the 15<sup>th</sup> day of April 1858.*<sup>205</sup> It is also the most logical explanation for his having set the threshold for the right to claim compensation as high as he did, eschewing standards such as “appreciable”, “significant” or even “substantial” in favor of “destruction or serious impairment”. Thus Costa Rica’s submission that the Court order that Nicaragua “not engage in any dredging operations or other works in the area if and to the extent that these may cause significant harm to Costa Rican territory (including the Colorado River)”<sup>206</sup> is misplaced, in particular as it relates to the Colorado River.

4. 43 Costa Rica goes even further in the body of its Memorial, stating: “Costa Rica does not oppose Nicaraguan works of improvement, provided *no material harm* will be suffered by Costa Rica,”<sup>207</sup> and “Costa Rica has the right to the suspension of [Nicaragua’s dredging and related] works until it is made clear that Costa Rica’s territory, including the Colorado River, *will not be harmed.*”<sup>208</sup> This alleged Costa Rican “right of suspension” is simply the “right to prevent” works on the River which Costa Rica had claimed during the arbitration and which was specifically denied in the Award of President Cleveland. The alleged “right to suspension”, which finds support nowhere in the Treaty or the Cleveland Award, is tantamount to a claim of a right of veto. This is shown in Chapter 3 not

---

<sup>205</sup> Cleveland Award, Third Art. , para. 1 (emphasis added).

<sup>206</sup> CRM, p. 305, Submission 2(c).

<sup>207</sup> *Ibid.*, p. 225, para. 5.57 (emphasis added).

<sup>208</sup> *Ibid.*, p. 225, para. 5.58 (emphasis added).

to exist in general international law, and is shown to be without any basis in the Treaty or subsequent instruments in Chapter 5. Costa Rica goes further still in its demand that Nicaragua's environmental impact assessments regarding the dredging project "must also determine that there will be *no impact* on the current flow of the Colorado River . . . ." <sup>209</sup>

4. 44 It is not Nicaragua's purpose to destroy or seriously impair Costa Rica's navigation on the Colorado River. However, Nicaragua is firmly of the view that her rights under the 1858 Treaty, as interpreted in the Cleveland Award, are measured by the physical conditions that obtained as of the date the Treaty was concluded: 15 April 1858. President Cleveland's Award, informed as it was by the thorough reports of Assistant Secretary Rives, clearly intends as much. For example, in answer to Nicaragua's question concerning her first point of doubtful interpretation, President Cleveland stated: "The boundary line between the Republics of Costa Rica and Nicaragua, on the Atlantic side, begins at the extremity of Punta de Castilla at the mouth of the San Juan de Nicaragua River, *as they both existed on the 15<sup>th</sup> day of April 1858.*" (Emphasis added.) Nicaragua is therefore fully entitled to proceed with the dredging of the lower San Juan with a view to restoring the historic flow of that reach of the river, re-establishing a harbor for seagoing vessels, and restoring a year-round outlet to the sea.

---

<sup>209</sup> *Ibid.*, p. 104, para. 3.73, quoting from a Note from Costa Rica's Minister of Foreign Affairs to his Nicaraguan counterpart of 27 August 2009 (emphasis added) .

4. 45 Furthermore, in restoring the navigability of the lower San Juan to the sea, Nicaragua would only be engaging in a practice that is well-accepted by States.<sup>210</sup> Costa Rica itself has expressed “the greatest desire that the navigation of the San Juan River be expedited in all of its extension”,<sup>211</sup> and Nicaragua, as the territorial sovereign, has every right to take steps toward the achievement of this goal for the benefit of both States and their peoples.

**B. THE IMPACTS ON NAVIGABILITY OF THE SAN JUAN DE NICARAGUA RIVER CAUSED BY COSTA RICA’S CONSTRUCTION OF A ROAD ON THE RIGHT BANK**

4. 46 As Nicaragua brought to the Court’s attention in its Application of 21 December 2011 instituting proceedings in the case concerning *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Costa Rica is responsible for a variety of actions that have caused and continue to cause harm to the San Juan River and thus to Nicaragua. Costa Rica has allowed the land adjacent to its bank of the River to be devastated by deforestation for agricultural, industrial, and extractive developments, which – in addition to allowing for the introduction of chemicals and other contaminants into the San Juan River through runoff – has had and continues to have a significant impact on the sedimentation of the River.

---

<sup>210</sup> For a reflection of this broad acceptance, *see, e.g.*, International Law Association, Helsinki Rules on the Uses of the Waters of International Rivers, Article XVIII, *Report of the Fifty-Second Conference, Helsinki, 1966*, p. 484, International Law Association, London, 1966.

<sup>211</sup> Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-187-06, 5 May 2006 (CRM, Vol. III, Annex 43). *See also* CRM, p. 103, para. 3.71.

4.47 The most immediate threat to the River and its environment, however, is posed by Costa Rica's construction of the so-called Juan Rafael Mora Porras 1856 Highway,<sup>212</sup> much of it in extremely close proximity to the right, or southern, bank of the San Juan River. Specifically, Costa Rica has undertaken the construction of its highway from a point known as Los Chiles in the west, all the way to the Delta where the Colorado River splits off from the San Juan.<sup>213</sup> According to a report produced by several Costa Rican governmental agencies in April 2012 – including the Ministry of Environment, Energy and Telecommunications, as well as the National Conservation Area System, the Ministry of Public Works and Transportation, the National Road Council, and the National Risk Prevention and Emergency Response Commission – the construction includes “an extension of approximately 160 kilometers,”<sup>214</sup> much of which is in an zone that “encompasses important areas committed to environmental protection,” including wetlands, which “generally are of critical importance as they provide ecosystem services and regulatory support that underpin the management of water resources”<sup>215</sup> (see **Figure 4.3.**).

---

<sup>212</sup> The name commemorates the Costa Rican invasion and occupation of Nicaraguan territory, including the San Juan River and Lake Nicaragua, during the period when Nicaragua was hard pressed fighting off the invasion of the American adventurer William Walker. See Chapter 2, *supra*; see also Counter Memorial of the Republic of Nicaragua, “*Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)*”, Volume I, 29 May 2007, paras 1.2.40 – 1.2.47.

<sup>213</sup> *Application Instituting Proceedings*, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, para. 5.

<sup>214</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 5 (NCM, Vol. IV, Annex 116).

<sup>215</sup> See CRM, p. 250, para. 5.103.

Figure 4.3.<sup>216</sup>

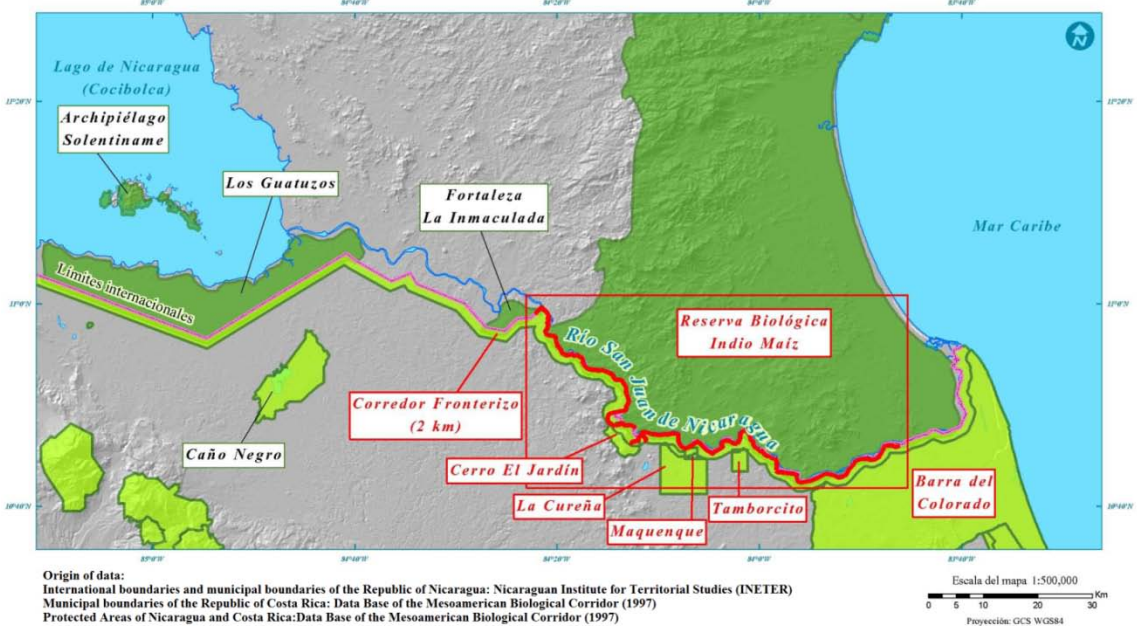


Figure 4.3. Location of Juan Rafael Mora Porras Highway

4. 48 In addition to causing substantial harm to the scenic value and eco-tourism potential of the San Juan River, these works, which involve more than 900 pieces of machinery operated by at least 35 construction companies,<sup>217</sup> have resulted in the dumping into the River of substantial volumes of sediments and debris – soil, uprooted vegetation, and felled trees – produced by the clearing and

<sup>216</sup> Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “Ruta de la Caretera,” 25 March 2012, slide 4, available at [http://lagosdenicaragua.org/index.php?option=com\\_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0](http://lagosdenicaragua.org/index.php?option=com_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0) (last visited 16 July 2012).

<sup>217</sup> Crhoy.com, “Path construction supervisors informed problems and the lack of oversight”, available at <http://www.crhoy.com/supervisores-de-trocha-senalaron-problemas-e-inexistencia-de-controles/>, 11 June 2012 (NCM, Vol. III, Annex 111); available at <http://www.crhoy.com/supervisores-de-trocha-senalaron-problemas-e-inexistencia-de-controles/>); see also La Nación, Costa Rica “Conavi Built a Dirt Road along the Border without a Single Design Plan”, 23 May 2012. (NCM, Vol. III, Annex 103 ).

leveling of land for the road bed.<sup>218</sup> Furthermore, the felling of trees and the removal of topsoil and vegetation close to the bank of the San Juan River is facilitating both erosion and runoff during rains, which are leading to the transfer of even greater amounts of sediments into the River.<sup>219</sup>

4. 49 The annexes to Costa Rica's own Memorial establish these facts. In the report prepared by the Ramsar Advisory Mission that visited Costa Rica in November 2011 (which is discussed in detail in Chapter 5), Ramsar's scientists warned that "[d]eforestation of the [*Humedal Caribe Noreste*] should be avoided so as to prevent the erosion and reduction of aquifer recharge."<sup>220</sup> Despite this warning, Costa Rica has deforested large swaths of territory in the course of

---

<sup>218</sup> *Application Instituting Proceedings*, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, para. 6.

<sup>219</sup> *Ibid.*; see also 2012 Van Rhee & De Vriend Supplemental Report, Chapter 3.2 (NCM, Vol. I, Appendix 2), which draws conclusions from various documents, including INETER, Summary of Measurement of liquid and suspended solids content during the years 2006, 2011 and 2012. (NCM, Vol. II, Annex 16):

The main origin of the suspended sediments is surface erosion in the catchment area of the river. In this respect, the road construction project over a long distance on Costa Rican territory parallel and very close to the River should be mentioned. Over a large area, substantial vegetation has been removed and no measures have been taken to keep sediment-laden surface runoff during heavy rainfall from flowing into the river (Costa Rican Environmental Management Plan, 2012; CFIA Report, 2012). This influx will have a notable effect on the total sediment concentration in the river and will increase sedimentation. It is not unlikely that the decrease in river flows measured in 2011 and 2012 are related to this influence of the road construction (INETER, 2012).

<sup>220</sup> Ramsar Secretariat, "Ramsar Advisory Mission Report No. 69, North-eastern Caribbean Wetland of International Importance (*Humedal Caribe Noreste*), Costa Rica," 17 December 2010 (hereinafter "Ramsar Report No. 69"), in CRM, Vol. IV, Annex 147, p. 89. The version of the report presented in Costa Rica's annexes does not include page numbers. For this reason, citations to the report in this Counter-Memorial refer to the page number of CRM, Vol. IV in which the report appears.



constructing its highway. Examples of this destruction<sup>221</sup> can be seen in **Figure(s) 4.4.** showing photographs<sup>222</sup> which were presented to the Central American Court of Justice by environmental NGOs FUNDENIC-SOS and FONARE in 2012:

**Figure(s) 4.4.**



---

<sup>221</sup> Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Ruta de la Carretera*,” 25 March 2012, image of site 25, available at [http://lagosdenicaragua.org/index.php?option=com\\_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0](http://lagosdenicaragua.org/index.php?option=com_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0) (last visited 16 July 2012).

<sup>222</sup> Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Audencias Públicas*,” 10 May 2012, slide 17, available at [http://lagosdenicaragua.org/index.php?option=com\\_content&view=article&id=134&Itemid=63](http://lagosdenicaragua.org/index.php?option=com_content&view=article&id=134&Itemid=63) (last visited 16 July 2012).



**Figure(s) 4.4.** Photographs showing large swaths of deforested territory

4. 50 As stated in Costa Rica’s Environmental Management Plan for the highway, which was prepared retrospectively in April 2012 after much of the road had already been constructed, tree removal and “forest disturbance” have been observed in various stretches, including some in which “the road runs parallel to the San Juan River.”<sup>223</sup> Aware of the risk this poses, the belated Environmental Management Plan states that “[p]lantations with native local species should be established to protect river and brook banks, particularly in areas without any forest cover, on the entire land strip between the road and the San Juan River.”<sup>224</sup>

4. 51 The Ramsar personnel responsible for Report No. 69 also warned that “[t]o maintain the current ecological conditions of the wetland, the surface

---

<sup>223</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, pp. 9-10 (NCM, Vol. IV, Annex 116). *See also* Association of Federated Engineers and Architects of Costa Rica (CFIA Report), 8 June 2012 (hereinafter “CFIA Report”), pp. 11, 17-18, 26 (NCM, Vol. IV, Annex 117).

<sup>224</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 19 (NCM, Vol. IV, Annex 116).

run-off patterns should be restored”.<sup>225</sup> Thus, according to Ramsar, altering surface run-off patterns can affect the ecological conditions of wetlands, including those of the waterbodies responsible for sustaining those wetlands. In the case of Costa Rica’s *Humedal Caribe Noreste*, it is the San Juan River that feeds and sustains the wetland.<sup>226</sup> Nevertheless, rather than maintaining or restoring natural surface run-off patterns as recommended by Ramsar, Costa Rica has drastically altered them through the construction of its highway<sup>227</sup>, which has increased sediment-laden<sup>228</sup> runoff<sup>229</sup> into the San Juan River:

**Figure(s) 4.5.**



---

<sup>225</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 90.

<sup>226</sup> See, e.g., CRM, p. 251, para. 5.105; Thorne, p. II-19.

<sup>227</sup> Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Audencias Públicas*,” 10 May 2012, slide 15, available at [http://lagosdenicaragua.org/index.php?option=com\\_content&view=article&id=134&Itemid=63](http://lagosdenicaragua.org/index.php?option=com_content&view=article&id=134&Itemid=63) (last visited 16 July 2012).

<sup>228</sup> *Ibid.*, slide 22.

<sup>229</sup> See also Figure 5.5 below.



**Figure(s) 4.5.** Photographs showing drastic alteration of natural surface runoff patterns and sediment run-off into the San Juan de Nicaragua River

4. 52 As Costa Rica’s Environmental Management Plan acknowledges, the road construction has involved “[e]arthmoving works altering the ecosystem

and directly or indirectly affecting water dynamics.”<sup>230</sup> This has included, specifically, “moderate sedimentation in waterbodies as a result of surface runoff during construction processes.”<sup>231</sup> This is exacerbated by the fact that, “[i]n some sectors, no soil conservation works were implemented to minimize local water and soil impacts.”<sup>232</sup> As a result, Costa Rica’s post hoc Environmental Management Plan recommends that a drainage system and sediment traps be installed immediately “to prevent sediments from leaving work areas and reaching nearby bodies of water.”<sup>233</sup> The 8 June 2012 report of the Federated Association of Engineers and Architects of Costa Rica (“CFIA” per its Spanish acronym) came to the same conclusion. It found, after conducting two separate site visits, that appropriate drainage systems were lacking in many areas,<sup>234</sup> and that the land had been cut and filled in a “disorganized” manner.<sup>235</sup>

4. 53 Indeed, as the Environmental Management Plan acknowledges, the road has been constructed in such a way that there are slopes that do not have

---

<sup>230</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, pp. 9-10 (NCM, Vol. IV, Annex 116).

<sup>231</sup> *Ibid.*, p. 19. In addition to sediments, runoff has also led to the transmittal of solid and liquid waste from construction processes, including lubricants and hydrocarbons, thereby polluting nearby bodies of water. *Ibid.*

<sup>232</sup> *Ibid.*, pp. 9 & 22.

<sup>233</sup> *Ibid.*, pp. 20 & 22.

<sup>234</sup> CFIA Report, pp. 5, 6, 9 & 10 (NCM, Vol. IV, Annex 117). *See also* La Nación, “Serious errors expose trail to risk of collapse during the rainy season,” 28 May 2012 (NCM, Vol. III, Annex 107).

<sup>235</sup> CFIA Report, p. 10 (NCM, Vol. IV, Annex 117). *See also* La Nación, “Serious errors expose trail to risk of collapse during the rainy season,” 28 May 2012 (NCM, Vol. III, Annex 107).

“safe and stable gradients” and are “devoid of vegetation.”<sup>236</sup> As a result, there is an increased risk of “focused erosion processes” and “instability in some slopes.”<sup>237</sup> This prompted the government officials responsible for the Environmental Management Plan to insist that “[s]lopes should have safe and stable gradients,” and that, “[i]n cases where slopes devoid of vegetation are created, complementary slope-stabilizing measures should be taken”.<sup>238</sup>

4. 54 The lack of such measures has already caused harm to the San Juan River. According to Dr. Mathias Kondolf, there is evidence of “extensive disturbance” at many sites, “creating steep eroding slopes that deliver sediment directly to the channel of the Río San Juan.”<sup>239</sup> Indeed, there is photographic evidence of “raw, eroding slopes,” some of them “clearly show[ing] tongues of coarse sediment, reflecting the transport of sediment by surface runoff from the disturbed area directly into the channel” of the San Juan.<sup>240</sup>

4. 55 The report by the Costa Rican Association of Engineers and Architects also concludes that construction activities may have been undertaken too close to the San Juan River,<sup>241</sup> and that debris was left too close to the River. For instance, the following image and captions appear at page 13 of the report:

---

<sup>236</sup> See Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 23 (NCM, Vol. IV, Annex 116). See also CFIA Report, pp. 15-17 (noting the existence of high, nearly vertical slopes without protection of any kind) (NCM, Vol. IV, Annex 117).

<sup>237</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 22 (NCM, Vol. IV Annex 116).

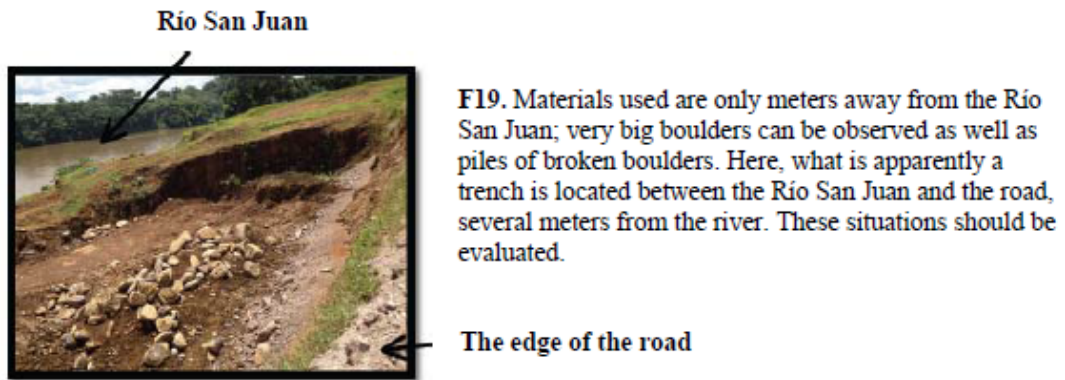
<sup>238</sup> *Ibid.*, p. 23.

<sup>239</sup> See Kondolf, Section 2.14 (NCM, Vol. I, Appendix 1.)

<sup>240</sup> *Ibid.*

<sup>241</sup> CFIA Report, pp. 9, 13, 16, 18 & 27 (NCM, Vol. IV, Annex 117).

**Figure 4.6**



**Figure 4.6** Photograph showing debris left next to the San Juan de Nicaragua River

4. 56 A report by the National Laboratory of Materials and Structural Models (“LANAMME”) of the University of Costa Rica prepared in 2012 establishes that inappropriately sandy materials have been used. This poses a significant environmental risk because such materials are easily displaced by traffic, wind, and water<sup>242</sup> and their inevitable transfer to the San Juan River will exacerbate sedimentation.

4. 57 These and other problems stem from the fact that Costa Rica undertook its highway construction efforts with no blueprints whatsoever, let alone an environmental impact assessment.<sup>243</sup> As the report by the Costa Rican Association of Engineers and Architects puts it, there were no “plans or

<sup>242</sup> La Nación,, “Serious errors expose trail to risk of collapse during the rainy season,” 28 May 2012 (NCM, Vol. III, Annex 107).

<sup>243</sup> See Press release from CONAVI to the public of 25 May 2012, admitting that the standard procedures were not followed, and the project was not “subjected to the procedures for development of infrastructure projects that take into account, for example, stages of conceptualization, feasibility, design, and management of the work.” (NCM, Vol. III, Annex 105).

preliminary studies.” Rather, Costa Rica undertook the project “without a single plan to indicate the path that was to be opened, or what its characteristics should have been.” The report concludes that constructing a road in this manner inevitably results in “increased costs, environmental problems, and a rapid deterioration of the project.”<sup>244</sup>

4. 58 In addition to constituting a violation of international law, as established in Chapter 9, Costa Rica’s incompetent (lack of) planning and unprofessional execution of the massive construction effort also involved a conscious disregard of yet another of the recommendations made by Ramsar in Report No. 69. In that report, the Ramsar Advisory Missions warned that “[i]t is important to carry out rigorous environmental impact assessments for any project or activity that might affect the hydrology and hydrodynamics of the Caribe Noreste Ramsar Site and the Refugio de Vida Silvestre Río San Juan Ramsar Site.”<sup>245</sup>

4. 59 As the Central American Court of Justice recently ruled – unanimously – Costa Rica, in initiating its project without the prior studies and analysis required not only under the relevant professional standards<sup>246</sup> but also

---

<sup>244</sup> CFIA Report, p. 25 (NCM, Vol. IV, Annex 117). *See also* La Nación, “Serious errors expose trail to risk of collapse during the rainy season,” 28 May 2012 (highlighting a lack of geotechnical or topographical information) (NCM, Vol. III, Annex 107).

<sup>245</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 89.

<sup>246</sup> *See* [crhoy.com](http://crhoy.com), “Engineers Association: ‘Emergency Decree does not justify absence of engineering principles’,” 30 May 2012 in which the Executive Director of the Costa Rican Association of Engineers and Architects is quoted as characterizing the project as not having followed “the proper steps of engineering,” having not been “adequately designed and planned.”



under regional and international law,<sup>247</sup> has caused harm to the San Juan River and the related ecosystem,<sup>248</sup> and created a high risk of environmental damage by exposing the shared basin to “serious and unpredictable risks,” which the members of the Court were able to observe first-hand during their visit to the area on the 12 January 2012.<sup>249</sup> The harms that have already resulted and will continue to result from increased runoff and erosion caused by this unplanned and massively irresponsible project are not only environmental in nature (although they certainly are that, as discussed in Chapter 9). They also exacerbate the existing problem of sedimentation in the San Juan River that caused Nicaragua to undertake its dredging program to restore – at least to a minimal level – the navigability of the lower stretches of the River. Costa Rica’s Association of Engineers and Architects confirms this conclusion. It finds that the road construction project may negatively impact the ability of Costa Ricans to navigate the River.<sup>250</sup>

4. 60 Thus, while complaining about Nicaragua’s dredging program, which is a treaty right of Nicaragua, Costa Rica has undertaken its own environmentally unsound activities that render that program even more necessary. By increasing sedimentation in the River, Costa Rica has impeded the progress of

---

available at <http://www.crhoy.com/colégio-de-ingenieros-decreto-de-emergencia-no-justificancia-de-principios-de-ingenieria/> (NCM, Vol. III, Annex 108).

<sup>247</sup> See Excerpt of the “Judgment of Central American Court of Justice” available at [http://www.fonare.org/index.php?option=com\\_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18](http://www.fonare.org/index.php?option=com_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18), 3 July 2012, para. 4 (NCM, Vol. II, Annex 23).

<sup>248</sup> See *ibid.*, para. 7.

<sup>249</sup> See *ibid.*, para. 5.

<sup>250</sup> See CFIA Report, p. 26 (NCM, Vol. IV, Annex 117).

Nicaragua's dredging efforts, forcing Nicaragua to re-dredge the same stretch of the River to keep up with increased sediment loads caused by Costa Rica.<sup>251</sup>

4. 61 Although it is undisputed that the great majority of the water in the San Juan River – and a great majority of the sediments present in that water – originate from Costa Rica,<sup>252</sup> Costa Rica insists that the sediments it supplies to the River occur naturally.<sup>253</sup> To this end, Costa Rica has retained Professor Colin Thorne of Nottingham University, whose expert report was submitted as sole support on this question in Costa Rica's Memorial. Professor Thorne argues that, “[w]hile deforestation and agricultural intensification [on the Costas Rican side of the San Juan River] have elevated sediment yields locally, there is no evidence to suggest that sediment loads in the main river have increased significantly, due to anthropogenic impacts.”<sup>254</sup> Professor Thorne thus concludes that “in comparison to natural drivers of erosion such as high relief, steep slopes, erodible volcanic soils, and extreme events (earthquakes, volcanic eruptions, hurricanes, and other intense rainfall events), anthropogenic influences [on the sediment load of the San Juan River] are likely to be relatively minor.”<sup>255</sup>

4. 62 There are several problems with Professor Thorne's analysis.<sup>256</sup>

---

<sup>251</sup> See, e.g., “Dredging Project Technical Evaluation, National Port Authority, Analysis 2011, 23 January 2012, (hereinafter “EPN 2011 Annual Report”) p. 2 (NCM, Vol. II, Annex 17); see also *INETER*, Summary of Measurement of liquid and suspended solids content during the years 2006, 2011, 2012 (NCM, Vol. II, Annex 16).)

<sup>252</sup> See CRM, pp. 248-249, para. 5.99; Thorne, pp. vi & II-14 – II-16.

<sup>253</sup> CRM, pp. 248-250, paras. 5.99-5.102.

<sup>254</sup> Thorne, p. vi.

<sup>255</sup> *Ibid.*, p. II-18.

<sup>256</sup> See Kondolf, Sections 2.13-2.14 (NCM, Vol. I, Appendix 1).

4. 63 For instance, the “natural drivers of erosion” to which he refers can interact with human influences, leading to increased sedimentation. In particular, “intense rainfall events”, while natural, cause substantial runoff from areas that have been deforested or otherwise rendered prone to depositing increased sedimentation into recipient bodies of water. Thus, the intense rainfall that seasonally characterizes the San Juan region has a multiplier effect on sedimentation washed into the River by virtue of Costa Rica’s deforestation, vegetation-clearing, and other works attendant to road construction along the right bank. Likewise, while it is true that “high relief” and “steep slopes” can exist naturally, they can also be the result of human activities – as they have been in the case of the new Costa Rican road, which has involved substantial “[e]arthmoving works,”<sup>257</sup> including the creation of “disorganized cuts and fills,”<sup>258</sup> many of them bare of all vegetation,<sup>259</sup> which have substantially altered the landscape. The resulting sediment loads in runoff from the right bank into the River are therefore directly tied to “anthropogenic influences”.

4. 64 This fact is related to another fundamental problem with Professor Thorne’s analysis: although he visited the San Juan region in July 2011, well after Costa Rica began constructing its 160-kilometer-long highway along the River,

---

<sup>257</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 9 (NCM, Vol. IV, Annex 116).

<sup>258</sup> *E.g.*, CFIA Report, p. 10 (NCM, Vol. IV, Annex 117).

<sup>259</sup> *See* Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 23 (NCM, Vol. IV, Annex 116); CFIA Report, pp. 15-17 (noting the existence of high, nearly vertical slopes without protection of any kind) (NCM, Vol. IV, Annex 117).

and finalized his report in October 2011 after much of the construction had began, his report is silent on the impact of the road. This is a striking omission. As Costa Rica's Environmental Management Plan and the report of its Association of Engineers and Architects both recognize, the road is causing and will continue to cause substantial sedimentation in the River. The fact that Professor Thorne ignored that significant "anthropogenic influence" renders his opinion irrelevant.<sup>260</sup>

4. 65 It is simply not plausible that Costa Rica's massive construction effort alongside 160 kilometers of the San Juan River, which was undertaken without proper planning and adequate environmental protections, is not having a harmful effect on the San Juan River. As Dr. Kondolf explains, because Costa Rica's road runs along the river, "sediment eroded from the land cleared for its construction has a direct path into the river channel," making it "a sediment source that is well connected to the receiving waters. There is," therefore "*every reason to believe* that this extensive disturbance directly adjacent to the Río San

---

<sup>260</sup> See Kondolf, Section 2.14 (NCM, Vol. I, Appendix 1):

By the time of Professor Thorne's site visit and overflight in July 2011, the Costa Rican road was already well under construction. While it had not reached the disputed area of lower Río San Juan delta (near the Caño, etc.), it is unlikely that Professor Thorne would not have learned of such a massive disturbance during his work in 2011. Either Professor Thorne's Costa Rican clients did not inform him of this disturbance, or he chose not to mention it in his report. In the former case, it indicates that Professor Thorne was not working with complete information....In the latter case, leaving out such a potentially important increase in sediment supply to the river, renders the Thorne's report's geomorphic analysis incomplete at best.

Juan has contributed substantial volumes of sediments directly into the river,”<sup>261</sup> and that it will continue to do so unless the many problems resulting from Costa Rica’s careless activities are addressed. Indeed, that effect and the risk of future harm have been confirmed not only by the Central American Court of Justice and Nicaragua’s experts in this case, but also by various entities within and affiliated with Costa Rica itself.

### **C. NICARAGUA’S RIGHT TO NAVIGATE ON THE COLORADO BRANCH OF THE SAN JUAN DE NICARAGUA RIVER**

4. 66 It has been shown in section A above that the effect of Costa Rica’s activities and claims is to confine Nicaragua to a navigation cul-de-sac: Nicaragua is not able to navigate on the San Juan to the sea because the outlet to the sea is blocked for much of the year, and when it is not blocked it is navigable only by small craft; yet Costa Rica attempts to prevent Nicaragua from dredging the lower reach of the San Juan to allow navigation to the sea by requesting the Court to prevent this; and Costa Rica has put in place its own physical obstacles across the entrance to the Colorado River to prevent Nicaraguan vessels from reaching the sea by this route or navigating on the river at all, and enforces this blockade with its own armed patrol boats berthed at a military base at the entrance.<sup>262</sup>

---

<sup>261</sup> *Ibid* (emphasis added).

<sup>262</sup> See El Nuevo Diario, Nicaragua "Encourages Costa Ricans to Join the military reserves on the anniversary of the abolition of the Costa Rican army", 1 December 2010 ( NCM, Vol III, Annex 92(2)).

4. 67 The object and purpose of the 1858 Treaty – with respect to navigation in the San Juan River – was to guaranty navigation from the river to and from the Atlantic Ocean (Caribbean Sea). In his third Award, General Alexander clarified “that in the practical interpretation of the 1858 Treaty, the San Juan river must be considered a navigable river...with the water at ordinary stage and navigable by ships and general-purpose boats.”<sup>263</sup> At the time of the signing of the Treaty Nicaragua did not have “the full possession of all her rights in the port of San Juan”, and thus Article 5 of the Treaty provided in pertinent part as follows:

As long as Nicaragua does not recover the full possession of all her rights in the port of San Juan del Norte, the use and possession of Punta de Castilla shall be common and equal both for Nicaragua and Costa Rica; and in the meantime, and as long as this community lasts, the boundary shall be the whole course of the Colorado river.

4. 68 This provision of the Treaty seems tailor-made for the present situation. Nicaragua does not have, and has not had since the early 1860s, “the full possession of all her rights in the port of San Juan del Norte” nor the possibility of navigation from the river to the sea. There is no port, at present, and there has not been one for more than a century. Nicaraguan vessels of any size and draught have no access to the sea, and have not had for the same period. Today, it is only when the San Juan’s flow is at its annual peak that even small craft are able to

---

<sup>263</sup> Third Award p. 224 (CRM, Vol. II, Annex 11).

make their way from the terminus of the river to the sea, or from the sea into the Harbor Head Lagoon.<sup>264</sup>

4. 69 The consequence under the 1858 Treaty of this state of affairs is clear: “the boundary shall be the whole course of the Colorado river.” While such a temporary change in the boundary is something to which Nicaragua is and has been entitled under Article V, Nicaragua for the time being seeks only the free navigation on the Colorado River to the sea that such a temporary change in the boundary would carry with it. However, should Costa Rica continue to maintain its blockade of the entrance to the Colorado, Nicaragua reserves the right to petition the Court for a recognition that “the boundary shall be the whole course of the Colorado river” until such time as Nicaragua “recover[s] the full possession of all her rights in the port of San Juan del Norte”.

4. 70 In addition to the 1858 Treaty, Nicaragua’s right to freedom of navigation on the Colorado distributary of the San Juan to its outlet in the Caribbean Sea is fully supported by general international law.<sup>265</sup>

4. 71 Costa Rica’s prevention of Nicaraguan vessels from reaching the sea via the Colorado is unlawful in general international law. It runs contrary to centuries of State practice. Yet the only defense of Costa Rica’s exclusion of

---

<sup>264</sup> See generally the affidavits of Juan Francisco Gutiérrez Espinoza (Military), 15 December 2010 (NCM, Vol. III, Annex 85) & Manuel Salvador Mora Ortiz (Military) 15 December 2010 (NCM, Vol. III, Annex 86), describing the difficulty of navigating even in small craft in the area of the mouth of the river.

<sup>265</sup> See, e.g., Article 109 of the Final Act of the Congress of Vienna, 9 June 1815, Austria, France, Great Britain, Portugal, Prussia, Russia and Sweden, 1 MPT pp. 519, 567; French text in 64 CTS p. 453.

Nicaraguan vessels from the Colorado that can be found in the Memorial is a bare statement, unsupported by authority, contained in a reference to a meeting of the OAS Permanent Council. Referring to a speech by the President of Nicaragua, Costa Rica states that the President said he “would ask the International Court of Justice to grant Nicaragua navigational rights on the Colorado River, a river belonging wholly to Costa Rica and over which Nicaragua has no navigational rights.”<sup>266</sup> There is no argument in Costa Rica’s Memorial regarding this bald assertion that “Nicaragua has no navigational rights” on the Colorado, and no substantiation for it is offered. This is surprising, because in making this flat statement, Costa Rica is swimming against a strong and deep current of international law.

4. 72 For the foregoing reasons, Costa Rica is not entitled to prevent Nicaragua from navigating on the Colorado branch of the San Juan River.

4. 73 This Chapter has shown that a major premise of the 1858 Treaty of Limits is the navigability of the San Juan de Nicaragua River to the sea, for the benefit of commerce by both Nicaragua and Costa Rica. To ensure these benefits to both Parties, the Treaty allows Nicaragua to maintain or restore the lower San Juan to the conditions of navigability that existed when the Treaty was concluded, on 15 April 1858. The Chapter has also demonstrated that such a right is recognized in the 1888 Cleveland Award.

---

<sup>266</sup> CRM, p. 80, para. 3.29.



4. 74 Among the consequences of Nicaragua's right to maintain and restore the navigability of the lower San Juan is Nicaragua's right to dredge the river for these ends. This Chapter has shown that Nicaragua's current dredging program is in full conformity with its rights under the 1858 Treaty and the 1888 Cleveland Award. The Chapter has further demonstrated that Costa Rica's precipitous construction of a road along the right bank of the San Juan, leaving an ugly gash on the landscape and resulting in construction debris, soil and sediment being washed into the San Juan River, exacerbates the deposition of sediment in the bed of the San Juan and enhances the need for Nicaragua's dredging program.

4. 75 Finally, the Chapter has recalled that under the Treaty of Limits Nicaragua has the right to navigate on the Colorado branch of the San Juan River, at least until Nicaragua is once again able to navigate to the sea via the San Juan. Nicaragua also has this right of navigation under general international law. Thus, Costa Rica's blockage of all Nicaraguan transit on the Colorado is unlawful.



## **CHAPTER 5**

### **NICARAGUA HAS COMPLIED WITH ITS OBLIGATIONS**

#### **UNDER INTERNATIONAL ENVIRONMENTAL LAW**

5.1 Costa Rica addresses the question of the Nicaraguan dredging program as one exclusively regulated by general principles of international law and, in particular, those relating to the environment. It fails to take due account that Nicaragua's rights to dredge the river and the conditions under which this may be effected are regulated first and foremost by the 1858 Treaty and the Cleveland Award of 1888 as explained in chapter 3 above. These instruments confer special rights to Nicaragua for the maintenance and improvement of the navigation of the River that include, among others, Nicaragua's right to dredge the river without need of consultation or approval by Costa Rica. Furthermore, Nicaragua has made clear in this Counter Memorial (e.g. Chapter 4) that the dredging program presently in place represents a very minor exercise of its rights to improve the navigation of the River to the level it had in 1858.

5.2 The present chapter will address Costa Rica's allegations that Nicaragua's dredging program has not complied with international environmental law. It will do so by showing that Nicaragua's internal law coincides and in fact is even more demanding than international environmental law, and that in complying with its internal law, Nicaragua has also met all international requirements.

5.3 The analysis and rebuttal of Costa Rica's claims on their own merits in this Chapter, in no way means that Nicaragua is accepting – on the international level – obligations that deprive it of its Treaty rights *vis à vis* Costa Rica. With this explanation and reservation, Nicaragua will address the charges leveled by Costa Rica against Nicaragua of not having complied with its obligations under International Environmental Law in implementing the modest dredging program it has put in place in place in the San Juan River. These charges are without merit, as the present Chapter will show. Costa Rica's allegations are either irrelevant, as with its claims concerning notification and consultation in the environmental impact assessment process, or unfounded, as in the case of “environmental damage” that Nicaragua is alleged to have caused.

#### **A. INTRODUCTION**

5.4 The present Chapter will show that Nicaragua has not violated its environmental obligations in any way, as it: (B) conducted an extensive environmental impact assessment prior to initiating its activities; (C) breached no obligations of notification or consultation, whether under the Ramsar Convention or otherwise; and (D) has fully complied, in and around the area in dispute, with what Costa Rica refers to as “the substantive environmental protection regime” applicable there, because (E) Nicaragua's activities have caused no damage to Costa Rica and pose no risk of future harm. Thus, Nicaragua's activities, which

are based in its internal law, are in full conformity with the applicable environmental law.

## **B. NICARAGUA CONDUCTED A THOROUGH ENVIRONMENTAL IMPACT ASSESSMENT**

5.5 As established in Chapter 3, although general international law requires States to conduct environmental impact assessments prior to implementing projects that may cause transboundary harm, each State must determine through its own environmental laws and regulations the content and scope of EIAs required for projects that will take place within its jurisdiction.<sup>267</sup> Thus, an overview of the applicable Nicaraguan laws relating to environmental impact assessment is provided here. By complying with the rigorous EIA requirements set out in that regulatory regime, Nicaragua has met any international requirement to conduct “a proper environmental impact assessment in order to prevent or minimise transboundary harm.”<sup>268</sup>

### **1. Overview of Environmental Regulations in Nicaragua**

5.6 Protection of the environment is of central importance to Nicaragua. Indeed, the Constitution of the Republic explicitly provides that the Nicaraguan people have the right to live in a healthy environment and requires the

---

<sup>267</sup> I.C.J., Judgment, 20 April 2010, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *I.C.J. Reports 2010*, p. 83-84, para. 205.

<sup>268</sup> See CRM, p. 209, para. 5.23.

Government to guarantee that right by ensuring the preservation, conservation, and restoration of the environment and natural resources.<sup>269</sup>

5.7 Nicaragua's constitutional protection of the environment is enforced through a legal framework designed to ensure responsible environmental management, conservation of natural resources, and sustainable development. An essential part of this legal framework is Law 217 and its revisions in Law 647. Law 217, the General Law on the Environment and Natural Resources, was enacted in 1996 and broadly establishes standards, mandates, and principles for the conservation, protection, improvement, and restoration of Nicaragua's environment and natural resources.<sup>270</sup> Included in Law 217 is the requirement that a precautionary approach be taken in managing activities that have the potential to impact the environment, and when there is any doubt about the impact or negative environmental consequences of an action or omission, preventative measures must be taken, even where there is no scientific evidence that harm will occur.<sup>271</sup>

5.8 The Government of Nicaragua ensures compliance with Law 217 and its revisions through the administration of the Sistema de Evaluación de Impacto Ambiental, or the Environmental Impact Assessment Program ("EIA Program"), which is one of the key responsibilities of Nicaragua's Ministry of the Environment and Natural Resources ("MARENA" per its Spanish acronym), the

---

<sup>269</sup> Constitution of the Republic of Nicaragua, Art. 60; *see also* Art. 102 (NCM, Vol. III, Annex 27).

<sup>270</sup> Nicaraguan Law No. 217, Art. 1 (NCM, Vol. III, Annex 29).

<sup>271</sup> *Ibid.*, Art. 4, 3; Nicaraguan Law 647, Art. 2 (NCM, Vol. III, Annex 32).

agency responsible for ensuring the conservation, protection, and sustainable use of Nicaragua's environment and natural resources.

5.9 Under the EIA Program, which is coordinated through MARENA's Department of Environmental Quality, Nicaragua's authorities ensure not only that the environmental impacts of all projects are properly and adequately analyzed before they may commence, but also that all projects, once authorized, are carried out in compliance with all applicable environmental requirements. In this way, MARENA ensures that all projects authorized in Nicaragua comply with the rigorous standards set forth in Nicaragua's environmental laws and regulations.

5.10 Specifically, pursuant to the EIA Program, any project with the capacity to materially impact the environment must be approved by MARENA before it can begin.<sup>272</sup> This is true even of very small projects, so long as they are capable of significantly affecting the environment. Any proposed project located in an environmentally sensitive or protected area – including the San Juan River Wildlife Reserve – requires authorization from MARENA.<sup>273</sup> Parties that undertake projects without proper approval are subject to sanction, which can range from administrative penalties (such as fines and injunctions) to criminal sanctions, including imprisonment. Although different categories of projects are subject to different review procedures, all projects capable of affecting the

---

<sup>272</sup> Nicaraguan Law No. 217, Art. 25 (NCM, Vol. III, Annex 29).

<sup>273</sup> Nicaraguan Decree 01-2007, Art. 54 (NCM, Vol. III, Annex 31).

environment are subjected to a review process that is calibrated to ensure that the potential environmental impacts are identified and analyzed and that the steps necessary to avoid unacceptable environmental consequences are implemented.

The foundational elements of any review include the following:

- The process begins when the proponent of the project sends a request for a permit to MARENA.
- Having received the request, MARENA must conduct at least one inspection of the site of the proposed project, although it may conduct as many as it sees fit and may require the project proponent to provide whatever further information is necessary for adequate review and analysis.<sup>274</sup>
- After the review process is complete, MARENA issues a resolution either granting or denying the requested permit. MARENA will only grant a permit when it has determined that the project will not cause significant change to any environmental component, whether biotic, abiotic, socioeconomic, cultural, or aesthetic.<sup>275</sup>
- A resolution authorizing a particular project will itemize all of the obligations of the party responsible for the project in order to prevent unacceptable environmental impacts.<sup>276</sup>

---

<sup>274</sup> Nicaraguan Decree 45-94, Art. 9 (NCM, Vol. III, Annex 28).

<sup>275</sup> *Ibid.*, Art. 3(g).

<sup>276</sup> Nicaraguan Law 217, Art. 28 (NCM, Vol. III, Annex 29).



- MARENA is authorized to sanction parties who fail to comply with the requirements established in the environmental permits issued to them.<sup>277</sup>
- In every permit, MARENA retains the power to modify environmental requirements as necessary and to demand the cessation – either temporary or permanent – of a project that is found to be in violation of the conditions for its environmental authorization.

5.11 Under the EIA Program, certain categories of projects, including dredging works involving the use of specific types of equipment, require a formal technical analysis of environmental impacts. For all projects for which MARENA authorization was requested before 22 March 2007, the required analysis was governed by Decree 45-94: Rules on Permits and Environmental Impact Assessment.<sup>278</sup> That Decree establishes the following additional procedural requirements:

- An intra-governmental reviewing team must be assembled, including whichever officials have relevant expertise given the specific characteristics of the proposed project. The purpose of this mandatory

---

<sup>277</sup> *Ibid.*, Art. 26.

<sup>278</sup> Nicaraguan Decree 45-94 (NCM, Vol. III, Annex 28). The Decree was superseded by Decree 76-2006 on 22 March 2007. Given Nicaragua's constitutional prohibition on the retroactive application of new laws, the new rules did not affect the permitting of the dredging project or any of its additions, as authorization of the project was initially sought in January 2006, before Decree 76-2006 entered into force. *See* Constitution of the Republic of Nicaragua, Art. 38 (NCM, Vol. III, Annex 27). All the requirements described herein continue to apply under the new regulations, which merely increase the requirements for future projects, further protecting the environment.

intra-governmental cooperation is to ensure that all aspects and potential impacts of the project – environmental and otherwise – are considered during the evaluation of the project. MARENA oversees and coordinates the intra-governmental team.<sup>279</sup>

- After a review of the preliminary information provided by the project proponent, the intra-governmental team develops Terms of Reference to guide the formal technical analysis of the proposed project.<sup>280</sup>
- The proponent of the project must utilize the Terms of Reference in preparing an Environmental Impact Study (“EIS”), which must present the technical and scientific information necessary to identify, predict, evaluate, and control the environmental impacts of the proposed project.<sup>281</sup> The proponent must revise, augment, or clarify the EIS in whatever way requested by the intra-governmental reviewing team.<sup>282</sup>
- The proponent must also submit an Environmental Impact Document, which must report the findings of the EIS in non-technical language that is comprehensible to a layperson.<sup>283</sup>
- The Environmental Impact Document must be made available to the MARENA delegation responsible for the territory at issue and the mayor of the municipality or municipalities where the proposed project

---

<sup>279</sup>Nicaraguan Decree 45-94, Art. 7 (NCM, Vol. III, Annex 28).

<sup>280</sup>*Ibid.*, Art. 10.

<sup>281</sup>*Ibid.*, Art. 3(c).

<sup>282</sup>*Ibid.*, Art. 11.

<sup>283</sup>*Ibid.*, Art. 3(d).

is to take place.<sup>284</sup> This requirement is intended to ensure that the local impacts of projects are adequately considered and that the interests of local communities are taken into account.

- The Environmental Impact Document must also be made available to the public. Notice must be published in at least two newspapers with national circulation, informing the public of how it can access the Environmental Impact Document for review and comment.<sup>285</sup> The intra-governmental team must review all comments within ten business days.<sup>286</sup>
- Once a final version of the EIS is submitted, together with all public comments and additional requested information,<sup>287</sup> the intra-governmental team must conduct a technical review<sup>288</sup> and issue a Technical Opinion incorporating all relevant information and explaining the team's findings and recommendations.
- If, in the opinion of the intra-governmental team, the proponent has satisfactorily demonstrated that the proposed project is safe and does not pose a threat of unacceptable environmental impacts, MARENA will issue a resolution granting the requested environmental permit.

---

<sup>284</sup> *Ibid.*, Art. 14.

<sup>285</sup> *Ibid.*, Art. 15.

<sup>286</sup> *Ibid.*, Art. 16.

<sup>287</sup> The process and timeline are stayed whenever the reviewing team requests additional information from the project proponent, and they remain so until the requested information is provided. *Ibid.*, Art. 17.

<sup>288</sup> *Ibid.*, Art. 17.

The permit will include any environmental requirements that MARENA deems appropriate. Such a resolution indicates that MARENA is satisfied with the project from an environmental perspective, contingent on compliance with all environmental obligations.<sup>289</sup>

- After issuing a resolution granting a permit, MARENA retains jurisdiction over the project to ensure that it is implemented in accordance with all specified requirements. Violation of the requirements included in the resolution is grounds for sanction, including an order cancelling the authorization and halting the project.<sup>290</sup>

5.12 Like all governmental officials in Nicaragua, MARENA personnel are obligated to observe the requirements detailed above.

## **2. MARENA’s Assessment of the Proposed Dredging Project**

### **Prior to Authorization**

5.13 Costa Rica’s assertions that Nicaragua’s environmental impact assessment of the dredging project was somehow “inadequate”<sup>291</sup> or “incomplete”<sup>292</sup> are not borne out by the facts. As will be demonstrated below, Nicaragua fully assessed the proposed project, including its potential

---

<sup>289</sup> *Ibid.*, Art. 3(g) & 18.

<sup>290</sup> *Ibid.*, Art. 20-21.

<sup>291</sup> *See* CRM, pp. 300-301, para. 7.11(1)(i).

<sup>292</sup> *Ibid.*, p. 210, para. 5.25.

transboundary impacts; and, based on an extensive technical evaluation, concluded that it did not pose a threat of harm to the people, property, or environment of Costa Rica, including the navigability of Costa Rica's rivers. As such, there is no basis for Costa Rica's assertion that Nicaragua has violated its obligation under international law to conduct an environmental impact assessment.

**(a) The Project**

5.14 The National Port Company ("EPN" per its Spanish acronym) – a state-owned Nicaraguan entity – began planning a project to dredge the lower San Juan River in 2004.<sup>293</sup> The impetus for the project was the need to ensure the navigability of the lower stretch of the River by small vessels,<sup>294</sup> which was necessary to provide the residents of the towns of San Carlos, Sábalos, El Castillo, and particularly San Juan de Nicaragua<sup>295</sup> with access to basic public services like access to adequate transport and infrastructure (including hospitals), which is guaranteed by Nicaragua's Constitution.<sup>296</sup> As the Deputy Mayor of San Juan de Nicaragua observed in December 2005, the drying up of the lower stretches of the river, particularly in the summer months, has hindered trade between his town and the town of San Carlos, forcing residents of San Juan de Nicaragua to rely upon

---

<sup>293</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 2 (CRM, Vol. IV, Annex 164).

<sup>294</sup> *Ibid.*, paras. 1-2. Even Costa Rica has expressed a "desire for navigation of the San Juan River to be facilitated along the San Juan." See CRM, p. 103, para. 3.71 & Vol. III, Annex 43.

<sup>295</sup> EPN 2011 Annual Report, p. 2 (NCM, Vol. II, Annex 17).

<sup>296</sup> Constitution of the Republic of Nicaragua, Art. 105 (NCM, Vol. III, Annex 27).

Costa Rica for their purchases, increasing dependency and the cost of transactions.<sup>297</sup>

5.15 Making the Lower San Juan navigable year-round would also allow Nicaragua to benefit from the area's ecotourism potential, including its San Juan River Wildlife Reserve and Indio-Maíz Biological Reserve, both pristine natural environments that Nicaragua has worked hard to preserve.<sup>298</sup>

5.16 Indeed, since making the Lower San Juan accessible to ecotourism is one of Nicaragua's primary objectives, it has taken pains to ensure that the dredging project is conducted in such a way that the natural environment is protected and preserved. This is reflected in the thorough EIA that it required the project to undergo.

#### **(b) The Request for Environmental Authorization**

5.17 In January 2006, after senior Nicaraguan government officials visited San Juan de Nicaragua and other municipalities located along the lower stretches of the San Juan River, Nicaragua concluded that the dredging of the

---

<sup>297</sup> Letter from Mr. Norman Caldera Cardenal, Former Minister of Foreign Affairs of Nicaragua to Mr. Alejandro Fiallos, Executive President of the National Ports Company, Reference MRE/DM/037/01/06, 10 January, 2006, p. 1 (NCM, Vol. III, Annex 39).

<sup>298</sup> In the case concerning the "*Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*" the Court recognized that "... Nicaragua, in adopting certain measures which have been challenged, in the Court's opinion, is pursuing the legitimate purpose of protecting the environment", I.C.J., Judgment, 13 July 2009, *Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, p.250, para.89.

River was “a task of prime importance and urgency,”<sup>299</sup> which was necessary to “bring development to [the Nicaraguan] people and facilitate navigation along the river.”<sup>300</sup>. Accordingly, on 18 January 2006, the Executive President of EPN informed MARENA that the dredging project was needed to “facilitate navigation and promote commerce,” and asked MARENA to prepare the necessary Environmental Impact Study.<sup>301</sup>

5.18 The formal application for the project was submitted to MARENA on 25 January 2006.<sup>302</sup>

5.19 On 3 February 2006, Hilda Espinoza Urbina, Head of MARENA’s Department of Environmental Quality responded to EPN’s letter of 18 January 2006. She observed that Decree 45-94, “which defines the administrative procedures for the issuance of Environmental Permits,” only allows MARENA to provide the Terms of Reference upon which an EIS must be based; the EIS itself “must be prepared by the proponent of the project and/or the party responsible for the execution of the project.”<sup>303</sup> She also stated that, although MARENA would

---

<sup>299</sup> Letter from Mr. Norman Caldera Cardenal, Former Minister of Foreign Affairs of Nicaragua to Mr. Alejandro Fiallos, Executive President of the National Ports Company, Reference MRE/DM/037/01/06, 10 January, 2006, p. 1 (NCM, Vol. III, Annex 39).

<sup>300</sup> *Ibid.*, p. 2.

<sup>301</sup> Letter from Mr. Alejandro Fiallos Navarro, Executive President of National Ports Company to Mr. C. Arturo Harding Lacayo, Ministry for the Environment and Natural Resources, 18 January 2006, p. 1 (NCM, Vol. III, Annex 40).

<sup>302</sup> See MARENA Administrative Resolution No. 038-2008, 22 December 2008, p. 1, para. 1 (NCM, Vol. III, Annex 33).

<sup>303</sup> Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Ports Company, 03 February 2006 (NCM, Vol. III, Annex 41).

coordinate the drafting of the Terms of Reference as soon as sufficient information had been provided, “the Environmental Impact Study is a prerequisite for the granting of an Environmental Permit.”<sup>304</sup>

5.20 On 20 February 2006, representatives of EPN and MARENA met at the Ministry of Foreign Affairs (MINREX). At the meeting, MARENA explained its obligations under Nicaraguan environmental laws with respect to the proposed project.<sup>305</sup> MARENA also provided EPN with a list of professional environmental engineers with experience preparing environmental impact studies who might be able to assist EPN in preparing the EIS.<sup>306</sup>

---

On 20 March 2006, Director Espinoza Urbina rejected EPN’s request that MARENA provide an estimate of the costs and time that were likely to be required for the preparation of the necessary studies (for which EPN, not MARENA, was responsible) and guidance on factors for evaluating the bids of technical consultants. She explained that – despite the “importance [of the project] for the nation” – it would be inappropriate for MARENA to become “involved in matters pertaining strictly to the investor interested in launching a project, which would make [MARENA] us both judge and jury, which would not be healthy for proper decision-making.” Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Ports Company, Reference DGCA-HEU-C 189-03-2006, 20 March 2006 (NCM, Vol. III, Annex 45).

<sup>304</sup> Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro, Executive President of National Ports Company, 03 February 2006 (NCM, Vol. III, Annex 41).

<sup>305</sup> See Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Ports Company, Reference DGCA-HEU-C 189-03-2006, 20 March 2006 (NCM, Vol. III, Annex 45).

<sup>306</sup> *Ibid.*



### **(c) The Formation of the Intra-Governmental Team**

5.21 On 28 February 2006, MARENA's Minister began coordinating the assembly of the required intra-governmental review team. In particular, the Minister contacted the governmental personnel responsible for protected areas,<sup>307</sup> the Southeast Nicaraguan Biosphere,<sup>308</sup> the quality of the San Juan River,<sup>309</sup> natural resources and biodiversity,<sup>310</sup> national boundaries and maps,<sup>311</sup> and transportation and infrastructure,<sup>312</sup> requesting their presence at the initial meeting on 6 March 2006 to discuss the Terms of Reference for the proposed dredging project. On 3 March 2006, the Director of Water Resources was also invited to participate.<sup>313</sup>

---

<sup>307</sup> Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Bayardo Quintero, Director General for Protected Areas, Reference CSG-091-02-06, 28 February 2006 (NCM, Vol. III, Annex 42 (1)).

<sup>308</sup> Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Dr. Iván Ortega Director, Secretariat of the Southeast Nicaragua Biosphere Reserve, Reference CSG-091-02-06, 28 February 2006 (NCM, Vol. III, Annex 42(2)).

<sup>309</sup> Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Dr. Juan José Romero Coordinator, PROCUENCA Río San Juan, Reference Ref. CSG-091-02-06, 28 February 2006 (NCM, Vol. III, Annex 42(3)).

<sup>310</sup> Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Engineer Arcadio Choza Head of the General Directorate for Natural Resources and Biodiversity, Reference Ref. CSG-091-02-06, 28 February 2006 (NCM, Vol. III, Annex 42(4)).

<sup>311</sup> Letter from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Claudio Gutierrez, Executive Director, INETER, Reference DM-CSG-101-02-06, 28 February 2006 (NCM, Vol. III, Annex 43(1)).

<sup>312</sup> Letter from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Ricardo Vega Jackson, Minister MTI, Reference DM-CSG-101-02-06, 28 February 2006 (NCM, Vol. III, Annex 43(2)).

<sup>313</sup> Memorandum from Arcadio Choza, Director General of MARENA's Department of Natural Resources and Biodiversity, to Silvia Martínez E., MARENA Director of Water Resources, 3 March 2006 (NCM, Vol. III, Annex 44).

5.22 Ultimately, a team of seven officials from various governmental institutions was formed to evaluate EPN's request. This intra-governmental team, which was overseen and coordinated by technical experts from MARENA's Department of Environmental Quality, included representatives and technical experts from:

- The Executive Secretariat for the Preservation of the Southeast Nicaraguan Biosphere;
- The Nicaraguan Institute for Territorial Studies ("INETER" per the Spanish acronym);
- The Department for Water Transportation of the Ministry of Transportation and Infrastructure and
- MARENA's Territorial Delegation for the San Juan River.<sup>314</sup>

**(d) The Terms of Reference**

5.23 Shortly thereafter, on 9 March 2006, MARENA transmitted to EPN the official Terms of Reference for the dredging project.<sup>315</sup> The Terms of Reference explained that the proposed project was required to be reviewed in light of all applicable legal instruments, including:

labor laws; those for the protection of geographic, environmental and municipal spaces; quality standards, technical standards, and environmental

---

<sup>314</sup> See MARENA Administrative Resolution No. 038-2008, 22 December 2008, p. 1, para. 3 (NCM, Vol. III, Annex 33).

<sup>315</sup> Terms of Reference (NCM, Vol. II, Annex 9).

standards; protected and sensitive areas; protection of endangered species; use and control of marine and lake areas; and international agreements.<sup>316</sup>

5.24 EPN was also directed that, “[i]n the absence of national legislation, international legislation will be used as a guide.”<sup>317</sup> Further, the Terms of Reference made clear that EPN had to “consider that the site where the project will be developed is recognized as a wetland of international importance...under the Convention on Wetlands (IRAN, 1971) known as the Ramsar Convention.”<sup>318</sup>

5.25 The Terms of Reference also mandated that EPN’s Environmental Impact Study “[e]mphasize the following aspects, without limiting the analysis to them”: (1) potential hydrological changes; (2) impacts on water quality caused by the re-suspension of sediments; (3) ecosystem losses, the alteration of aquatic habitats, and harm to fishing; (4) impacts on endangered and economically important species; and (5) impacts stemming from the deposition of dredged sediments.<sup>319</sup>

#### **(e) The First Site Inspection**

5.26 On 21 March 2006, the intra-governmental team joined with EPN representatives to conduct the first technical site inspection of the proposed dredging locations and sediment disposal sites. This visit lasted from 21-25 March 2006, during which time the reviewing team inspected the 42 kilometers of the

---

<sup>316</sup> *Ibid.*, p. 1.

<sup>317</sup> *Ibid.*

<sup>318</sup> *Ibid.*

<sup>319</sup> *Ibid.*, p. 6.

River where dredging was proposed, “in order to obtain evidence to facilitate the evaluation of the Environmental Impact Study to be prepared for the project, as well as possible sites for the deposition of dredged materials.”<sup>320</sup> They also consulted with the Mayor of San Juan de Nicaragua and persons with substantial knowledge of the area, such as park rangers responsible for monitoring the Southeast Nicaraguan Biosphere, the leadership of the Nicaraguan Army stationed in the zone, and local residents.

5.27 MARENA’s inspection report concluded that “[c]onditions for navigation along the [San Juan] River have been deteriorating in recent years” due to large sediment loads originating primarily from Costa Rica, reducing the depth of the River in some places “to only 30 or 40 centimeters.” This made it “impossible and very dangerous” for “most boats utilized by local townspeople for transportation or to move goods and merchandise” to navigate the River.<sup>321</sup> According to the report, the situation was worst in the stretch of the River beginning approximately two kilometers upstream of the site known as “Punta Chingo Petaca” until the mouth of Nicaragua’s San Juanillo River.<sup>322</sup> In some locations, the team observed “sandbanks emerging on both sides of the River, and in some sites, in the center of the channel.” The inspection report further noted that “[d]uring the most intense months of the summer, between April and the first

---

<sup>320</sup> Ministry of the Environment and Natural Resources (MARENA), Report on site visit to the San Juan River Dredging Project, Ministry of the Environment and Natural Resources (MARENA), from 21- 25 March 2006 (NCM, Vol. II, Annex 18).

<sup>321</sup> *Ibid.*

<sup>322</sup> *Ibid.*

two weeks of May, there are areas of the River where almost no water flows, causing the people who travel in boats to have to push them.”<sup>323</sup>

5.28 The report further observed that navigational difficulties were also especially severe immediately downstream from the delta where the Colorado River splits off from the San Juan. In this region, the navigation channel was located on the left-hand side of the River, since there was “an extensive area where a large quantity of sediment has accumulated” on the right-hand side. Downstream from that point, the navigation channel varied, moving from the left-hand side to the center and sometimes the right-hand side of the River.<sup>324</sup>

5.29 Based on its on-site inspection and consultations with knowledgeable individuals, the intra-governmental reviewing team reported that, “having conducted the on-site visit throughout the entire area experiencing critical navigation issues, which principally affect the populations of San Juan de Nicaragua, El Castillo, and San Carlos who use the river as a transport route . . . the development of the project should be one of the priorities of the Government.”<sup>325</sup>

---

<sup>323</sup> *Ibid.*

<sup>324</sup> *See ibid.* The team found that the last 8.5 kilometers of the River before its exit into the Caribbean Sea enjoyed better flow – with depths between 3-4 meters year-round – and, according to the people familiar with the area, did not pose navigation problems or present an obvious need for dredging.

<sup>325</sup> *Ibid.*

5.30 Regarding sites for the deposit of dredged sediments, the reviewing team identified possible sites along the left (that is, Nicaraguan) bank of the River, taking into account the characteristics of the San Juan River Wildlife Reserve.<sup>326</sup> The deposition sites considered by the reviewing team were all believed to be located in areas where agro-forestry development had taken place, a fact that MARENA noted in the inspection report needed to be verified in the EIS, pursuant to the zoning of the Management Plan for the protected area.<sup>327</sup> Thus, the intra-governmental reviewing team reported that “[t]hrough observations of the left-hand side of the River it had identified sites or areas affected by human intervention which could potentially be used as deposit sites during the dredging project,” and that these sites would be evaluated in further detail in the EIS.<sup>328</sup> Subsequently, a meeting of the reviewing team took place at EPN’s offices on 28 March 2006.<sup>329</sup>

5.31 A second site visit was conducted from 11-15 July 2006.<sup>330</sup>

---

<sup>326</sup> *Ibid.*

<sup>327</sup> *Ibid.*

<sup>328</sup> *Ibid.*

<sup>329</sup> See Letter from Engineer Noel S. Salinas Alvarado, Technical Manager, National Ports Company to Members of the Institutional Commission, Río San Juan Dredging Project, Engineer Milton Medina MARENA Delegate, Engineer Sergio Cordonero INETER delegate, Reference GT-0237-03-2006, 25 March 2006 (NCM, Vol. III, Annex 46).

<sup>330</sup> See Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Port Authority, Reference DGCA-HEU-C-413-07-2006, 03 July 2006 (1) (NCM, Vol. III, Annex 47(1)); Memorandum from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Dr. Ivan Ortega G. Director of the

**(f) The Public Consultation and Comment Period**

5.32 As noted above, in addition to an EIS, a project proponent must also provide an Environmental Impact Document, which is a non-technical description of the project that can be understood by lay people. EPN provided its Environmental Impact Document to MARENA on 7 August 2006. It included: (1) a description of the proposed project, including its purpose, scope, location, area of influence, and the details of the activities to be undertaken; (2) an analysis of possible environmental impacts and proposed measures to prevent, mitigate, or remediate negative impacts; (3) a discussion of risks and vulnerabilities that would exist if the project were not undertaken, if it were undertaken without proper environmental management, and if it were undertaken with an Environmental Management Plan; and (4) a proposed Environmental Management Plan, including environmental monitoring, contingency plans, landscape restoration and environmental education programs.<sup>331</sup>

5.33 After the reviewing team determined that the Document was sufficient, it was made publicly available for review and comment from 9-16 August 2006 at numerous locations, including MARENA's central offices in Managua, the offices of the MARENA Territorial Delegation for the San Juan

---

Secretariat of the Biosphere Reserve of Southeast Nicaragua , Reference DGCA-HE-324-07- 06, 04 July 2006 (2) (NCM, Vol. III, Annex 47(2)).

<sup>331</sup> See CORASCO, Executive Summary; Environmental Impact Document "Improvement for Navigation on the Nicaragua San Juan river "(Delta- Nicaragua San Juan River Stretch) August 2007, pp. 2-7 (NCM, Vol. II, Annex 10).

River in San Carlos, and the Town Hall of San Juan del Norte. In addition, to ensure that it was widely known that the Environmental Impact Document was publicly available, on 7 August 2006, EPN published notices of where it could be found in *La Prensa* and *El Nuevo Diario*, the most widely circulated national newspapers in Nicaragua<sup>332</sup> as required under Decree 45-94<sup>333</sup> MARENA's Director of Environmental Evaluation and Protection also coordinated with MARENA's central offices, its delegation for the San Juan River, the mayors of San Juan del Norte and El Castillo, and EPN to ensure that the public consultation period was properly conducted and that all comments were received by the intra-governmental reviewing team.<sup>334</sup>

5.34 Further, during the consultation period, EPN and its technical consultants made presentations, including in San Juan de Nicaragua. After one such presentation and resulting discussion, the City Council of San Juan de

---

<sup>332</sup> Press Notice of the of Availability of the Environmental Impact Document for the Project "Dredging of the San Juan River," published in *La Prensa* and *El Nuevo Diario*, 7 August 2006 (NCM, Vol. III, Annex 91).

<sup>333</sup> Nicaraguan Decree 45-94, Art. 15 (NCM, Vol. III, Annex 28).

<sup>334</sup> See Memorandum from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Adelina Ramírez, Documentation Center MARENA, Reference DGCA-EM-M291, 02 August 2006 (NCM, Vol. III, Annex 48(1)); Memorandum from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to José Luis Galeano, MARENA Delegate Río San Juan, Reference DGCA – EM – M292, 02 August 2006 (NCM, Vol. III, Annex 48(2)); Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Mr. Francisco Díaz Rivas, Municipality El Castillo, Reference DGCA – EM – C208, 02 August 2006 (NCM, Vol. III, Annex 48(3)); Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Mr. César Collado Parada, Municipality San Juan del Norte Reference DGCA – EM – C209, 02 August 2006 (NCM, Vol. III, Annex 48(4)); Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Alejandro Fiallos, engineer, Reference DGCA-EM-C210, 02 August 2006 (NCM, Vol. III, Annex 48(5)).



Nicaragua stated that, cognizant of the need to “minimize, protect, and restore the negative impacts that the project might cause to the ecological environment of the river,” its “local authorities, the public, and the representatives of institutions present [at the consultation session had] been satisfied...[and] there was no disagreement from the population, since a project of great importance for the development of [that] municipality [was] becoming a reality.”<sup>335</sup> Indeed, the minutes of the 9 August 2010 meeting that took place in San Juan de Nicaragua record that the local representatives had asked for the dredging project for years, and that its development would constitute fulfillment of a promise that had been “made so many times.”<sup>336</sup> Various other comments and observations were received from the public, as well as from the Director of the Executive Secretariat for the Preservation of the Southeast Nicaraguan Biosphere. The intra-governmental team reviewed all the comments and took them into consideration.<sup>337</sup>

5.35 On 13 September 2006, the intra-governmental review team met with EPN and eleven consultants from Corea & Asociados S.A. (“CORASCO”), a professional Nicaraguan environmental consulting and engineering firm that was engaged by EPN to prepare the EIS.<sup>338</sup>

---

<sup>335</sup> Certification of the Municipal Council of San Juan de Nicaragua, 10 August 2006 (NCM, Vol.III, Annex 79(2)).

<sup>336</sup> Minutes of the Public Consultation in San Juan de Nicaragua, 9 August 2006 (NCM, Vol. III, Annex 79(1)).

<sup>337</sup> Technical Opinion, 28 November 2008, pp. 8-9 (NCM, Vol. II, Annex 12).

<sup>338</sup> See Letter from Alejandro Fiallos Navarro Executive President, National Port Authority to Mr. Tito Sequeira Minister, Ministry for the Environment and Natural Resources (MARENA),

**(g) The Third Site Inspection**

5.36 The intra-governmental reviewing team, together with representatives from EPN and CORASCO, conducted a third inspection of the site from 17-20 September 2006, which was largely focused on identifying optimum deposit sites. The team found that, because of their close proximity to wetlands, certain sites would require the construction of barriers to prevent the wet dredged material from shifting into areas where it could disrupt the flora and fauna present in nearby areas.<sup>339</sup> In other instances, the team concluded that sites proposed by CORASCO needed to be replaced with other sites because of their location in protected areas where the deposition of dredged materials posed a risk to the wetlands.<sup>340</sup> The report made clear that even the alternative sites could be utilized only under strict conditions in order to protect the environment. For instance, the report noted that EPN would only be authorized to deposit a certain volume of dredged sediment at each site, in order to avoid unnecessary impacts to surrounding areas. Only small areas were to be cleared for accessing the sites, not broad cleared pathways, and the barriers required to contain deposited sediments had to be installed prior to any use of the deposit sites for dredged materials.<sup>341</sup>

---

Reference PE-AFN-0855-0-06, 3 October 2006 and attachments thereto (NCM, Vol. III, Annex 53).

<sup>339</sup> Report of Inspection Visit, Project "Improvement of Navigability of the San Juan River", from 17 to 20 September 2006, p. 1 (NCM, Vol. II, Annex 19).

<sup>340</sup> *Ibid.*, pp. 1-2.

<sup>341</sup> *Ibid.*, pp. 2-4.

## **(h) The EIS**

5.37 EPN submitted its first version of the EIS to MARENA on 18 July 2006.<sup>342</sup> On 21 September 2006, CORASCO, on behalf of EPN, submitted to MARENA's Vice Minister two compact disks containing electronic versions of the revised Environmental Impact Study (including annexes thereto) and the Environmental Impact Document, indicating that these documents contained "all of the information and analysis of the different specialists who participated in the preparation of the Environmental Impact Study." CORASCO also stated that its personnel were available to provide any clarifications that might be required.<sup>343</sup>

5.38 In addition, the following day, EPN provided to the Director of MARENA's Department of Environmental Quality copies of the revised EIS, Environmental Impact Document, and "annexes containing separately the information prepared by each member of the CORASCO team."<sup>344</sup> Three days later, on 25 September 2006, EPN also provided MARENA with "a copy of the Design for the Improvement of Navigation in the San Juan River of Nicaragua"<sup>345</sup>

---

<sup>342</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 20 December 2010, para. 15 (CRM, Vol. IV, Annex 165).

<sup>343</sup> Letter from Ing. Leonardo Zacarias Coreo T. General Manager Coreo y Asociados S.A. (CORASCO) to Liliam Osejo Sacasa, Deputy Minister Environment and Natural Resources (MARENA), 21 September 2006 (NCM, Vol. III, Annex 49).

<sup>344</sup> Letter from Ing. Noel S. Salinas Alvarado Technical Manager, National Port Authority to Hilda Espinoza U. General Directorate of Environmental Quality Control, Ministry for the Environment and Natural Resources (MARENA) Reference GT-0791-09-2006, 22 September 2006 (NCM, Vol. III, Annex 50).

<sup>345</sup> Letter from Ing. Noel S. Salinas Alvarado Technical Manager, National Port Authority to Cristóbal Sequeira, Ministry for the Environment and Natural Resources (MARENA) Reference GT-0794-09-2006, 25 September 2006 (NCM, Vol. III, Annex 51).

(the “Project Design Study”<sup>346</sup>). Collectively, this documentation both: (1) described the plan for the project and existing environmental conditions; and (2) included detailed analyses of possible environmental impacts, including whether and to what extent the dredging would cause changes in the relative flows of the San Juan and Colorado Rivers, or harm to water quality or aquatic organisms, and the likely environmental impact of the deposition of dredged sediments on the Nicaraguan bank.

5.39 As described in the EIS, the proposed project included dredging aimed at ensuring the year-round existence of a usable navigation channel along the final 42 kilometers of the River, from Punta Petaca, upstream from the Colorado River, to the mouth of the San Juan, all within the limits of the San Juan River Wildlife Reserve.<sup>347</sup> The EIS explained that the project was necessary to ensure the navigability of the Lower San Juan in order to promote commercial development and to serve the populations of certain nearby towns, including San Juan de Nicaragua.<sup>348</sup>

5.40 The EIS provided detailed information regarding the existing environmental conditions in and around the San Juan River, including in Costa Rica. This included relevant flow rates, water and sediment quality, the geological and hydrological characteristics of the region, a survey of the flora and vegetation

---

<sup>346</sup> Project Design Study, September 2006 (NCM, Vol. II, Annex 8).

<sup>347</sup> Environmental Impact Study, September 2006, pp. 1, 4, 7 & 10-13 (NCM, Vol. II, Annex 7).

<sup>348</sup> *Ibid.*, p. 7.

species in the project's area of influence, and information on the region's biodiversity.<sup>349</sup>

5.41 The EIS reported that the areas that would be directly affected by the dredging included the portions of the River to be dredged and the sites where dredged sediments would be deposited. As to the area of possible "indirect impact" of the project, the EIS stated that this included "100 m[eters] on either side of the river, starting from the central axis" of the River, which could be affected either positively or negatively.<sup>350</sup>

5.42 The EIS then identified and analyzed the potential environmental impacts of the project, and provided an Environmental Management Plan based on these analyses. The substantial technical annexes to the EIS, together with the Project Design Study, included supplemental information aimed at the same analysis.

5.43 Specifically, with regard to hydrological issues, the Project Study Design analyzed a large quantity of measurement data to determine the possible changes in flows as a consequence of the proposed dredging project. Based on the quantitative analysis of the data, the EIS and Project Study Design concluded that the proposed dredging activities would have a minimal impact, as less than 5% of the flow of the San Juan River, which at present was diverted into the Colorado

---

<sup>349</sup> *Ibid.*, pp. 29-132.

<sup>350</sup> *Ibid.*, p. 30.

River, would revert back to the San Juan,<sup>351</sup> with even less of an effect in the rainy season.<sup>352</sup> This conclusion is consistent with a study subsequently prepared by Costa Rica, which similarly found that the project would diminish the flow of the Colorado River by less than 4.5%.<sup>353</sup>

5.44 Regarding the probable impact of dredging on water quality and aquatic organisms, the EIS assessed sediment quality and particle size in both the riverbed and dissolved in the water at various key points in the River. Using a “cause-effect matrix” in conjunction with data about sediment quality and particulate size, the EIS concluded there would be no long-term negative effect on any water quality parameter or aquatic life as a result of the dredging project. This was because the majority of the sediments from the river bottom that would be released into the water column during the dredging would quickly resettle, with the remainder being of such character and composition that it would not present a risk of environmental harm.<sup>354</sup> Moreover, the EIS demonstrated that the increased flow of water in the Lower San Juan River as a result of the dredging would be

---

<sup>351</sup> *Ibid.*, pp. 10-13 & 71-73; Project Design Study, pp. 16-18 (NCM, Vol. II, Annex 8); *see also* Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 7 (CRM, Vol. IV, Annex 164).

<sup>352</sup> *See* Affidavit of Hilda Espinoza Urbina, Director General of MARENA’s Department of Environmental Quality, 20 December 2010, para. 20(f) (CRM, Vol. IV, Annex 165).

<sup>353</sup> C.S. Diseño, “Study of flow behavior in the bifurcation San Juan River – Colorado River,” p. 5 (NCM, Vol. II, Annex 11).

<sup>354</sup> Environmental Impact Study, pp. 10-13, 59-67, 169-172 & 198-204 (NCM, Vol. II, Annex 7). *See also* Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 8 (CRM, Vol. IV, Annex 164).

beneficial to aquatic species because it would increase oxygen levels in the water.<sup>355</sup>

5.45 Regarding the potential environmental impact of the deposition of dredged sediments, the EIS and Project Study Design reflected the work that had been conducted by EPN, CORASCO, MARENA, and the other members of the intra-governmental reviewing team in the three official site visits and numerous working meetings that preceded the submission of the revised EIS. Together, they had designed a protective protocol for the deposition of dredged sediments in barriered sites at carefully selected locations on the Nicaraguan side of the River, all at least 50 meters from the riverbank. That protocol was incorporated into the revised EIS submitted to MARENA in late September 2006, as demanded by the intra-governmental reviewing team, in order to ensure that sediments extracted during dredging activities would not return to the River or harm the environment or nearby communities.<sup>356</sup>

5.46 Costa Rica alleges that the coordinates provided in the EIS indicate that Nicaragua intended to deposit extracted sediments on Costa Rican territory.<sup>357</sup> This is not accurate. As can be observed from the following map, all 24 of the deposit sites proposed in the EIS – which provided exact reference coordinates –

---

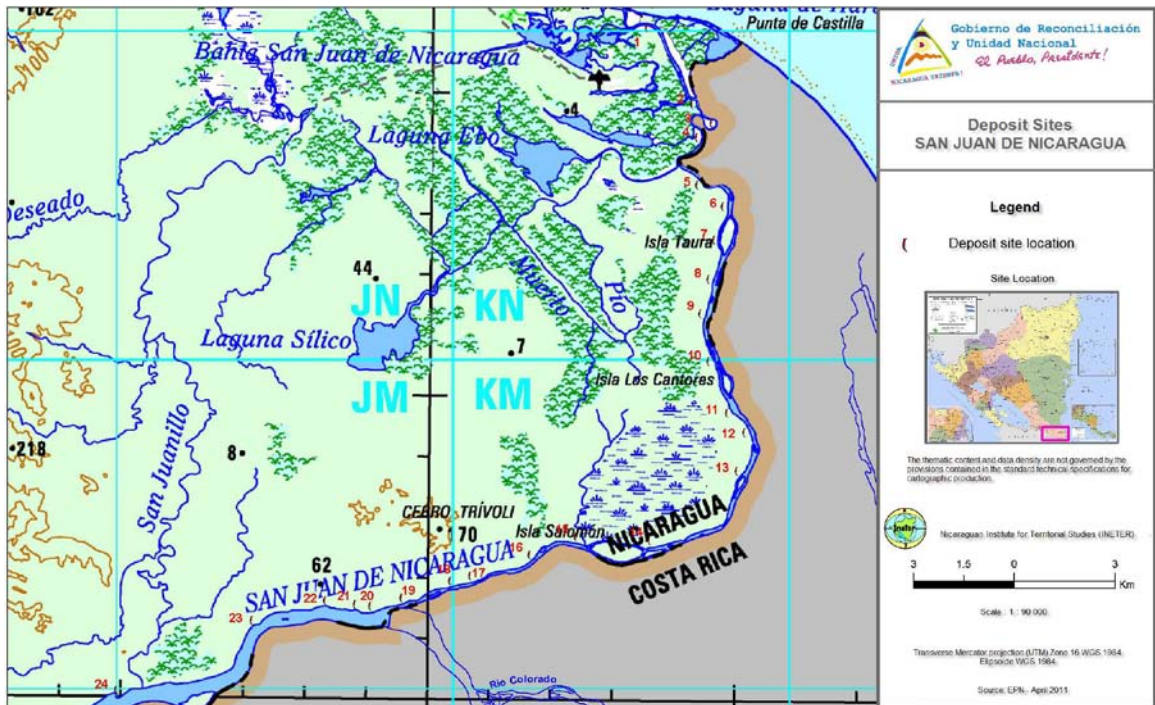
<sup>355</sup> See Environmental Impact Study, pp. 169-170 & 198-200 (NCM, Vol. II, Annex 7).

<sup>356</sup> *Ibid.*, pp. 22-28, 169-170, 173-174, 188-198, 207-212 & 222-223. See also Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 9 (CRM, Vol. IV, Annex 164).

<sup>357</sup> CRM, p. 107, para. 3.79.

are located on the left-hand and indisputably Nicaraguan bank of the River (see **Figure 5.1.**).

**Figure 5.1.**



**Figure 5.1.:**Map of Deposit Sites Proposed in September 2006 EIS

5.47 As the foregoing makes clear, Costa Rica is incorrect in asserting that “the Nicaraguan EIS conducted in relation to the dredging works on the San Juan is incomplete, as it did not consider the transboundary impacts of those works.”<sup>358</sup> As an initial matter, the EIS included a detailed compilation and analysis of existing environmental conditions in and around the San Juan River,

<sup>358</sup> *Ibid.*, p. 210, para. 5.25; see also pp. 243-244, para. 5.89 (“The 2006 EIS failed to address a number of key issues, including the necessary evaluation of the cross-border effects of the dredging program on Costa Rican territory.”).



including those present in Costa Rica. Moreover, the EIS and related documentation considered the potential impact of the dredging works on the relative flow of the relevant rivers, and concluded that the proposed dredging project would not materially affect the flow of the Colorado River – a conclusion later confirmed by Costa Rica’s own technical experts. The EIS also considered the potential impacts of the dredging works on water quality, aquatic organisms, and the river ecosystem generally, concluding that the proposed works did not pose a threat<sup>359</sup> and that the project in fact promised to produce salutary results. To the extent that Costa Rica’s complaint is based on the argument that Nicaragua should have considered the transboundary impacts of the deposition of dredged sediments on Costa Rican territory, the argument is entirely beside the point, as no such deposition was ever planned, intended, or carried out in fact.

5.48      Regardless, the relevant issue is not whether the EIS itself was sufficient (which it most certainly was), but rather whether Nicaragua’s environmental impact assessment process as a whole – which included the EIS but much more as well – adequately analyzed potential environmental impacts in order to assess, among other things, the extent to which the proposed dredging project would affect the people, property, and environment of Costa Rica. That is, Costa Rica is not only wrong as a factual matter when it argues that “Nicaragua’s EIS in respect of the works on the San Juan is manifestly inadequate, insofar as it

---

<sup>359</sup> As is discussed below, Costa Rica’s expert, Professor Thorne, has recently confirmed this conclusion. See Section D, *infra*.

fails to take account of potential transboundary impacts that the dredging works might have”<sup>360</sup>; it is also legally incorrect, as it is the adequacy of the EIA process, not of the EIS, that matters. The EIA process continued well after the revised EIS and related documentation were submitted to MARENA for review by the intra-governmental reviewing team.

5.49 For instance, on 28 September 2006, a meeting took place at CORASCO’s offices, attended by 16 people from CORASCO, EPN and the intra-governmental reviewing team.<sup>361</sup> The CORASCO engineers responsible for the Project Design Study that had been submitted to MARENA on 25 September 2006 made a presentation, explaining “all the aspects of the design of the navigation channel between Punta Petaca and San Juan de Nicaragua, a length of approximately 42 kilometers.”<sup>362</sup> Afterwards, the specialists who developed the EIS presented on their respective areas of expertise. During this meeting, MARENA stressed that the findings of CORASCO’s specialists had to be included in the Environmental Management Plan included in the final EIS. To that end, MARENA instructed EPN to conduct a detailed review in order to guarantee that their observations were fully included.<sup>363</sup>

5.50 At the conclusion of the meeting, another visit to the site was discussed in order to “verify the results and conclusions of both studies, especially

---

<sup>360</sup> CRM, p. 226, para. 5.62.

<sup>361</sup> See Letter from Ing. Leonardo Zacarías Corea T. General Manager Corea y Asociados S.A. (CORASCO) to Ing. Noel S. Salinas Alvarado Technical Manager, National Port Authority, 2 October 2006 and attendance list attached thereto (NCM, Vol. III, Annex 52).

<sup>362</sup> *Ibid.*, p. 1.

<sup>363</sup> *Ibid.*

regarding the deposit sites.”<sup>364</sup> CORASCO reported that all relevant information had been included in the EIS, including the dimensions, contours, storage capacity, characteristics, and georeferencing of each deposit site, as well as laboratory data regarding the soil in each site and its classification, particle size, and support capacity.<sup>365</sup> Nevertheless, a further site visit to the planned deposit sites was scheduled for the week of 9-13 October 2006, in order to give all participants sufficient time to review the documents and become familiarized with the relevant materials prior to the inspection.<sup>366</sup>

5.51 CORASCO proceeded to conduct the review of the documentation requested by MARENA, incorporating necessary changes into the EIS and Environmental Impact Document, which MARENA had returned to EPN to be signed by the consultants and legal representative of CORASCO.<sup>367</sup>

5.52 On 5 October 2006, EPN submitted a revised EIS, which had been revised and updated pursuant to the recommendations provided by the intra-governmental reviewing team during the 28 September 2006 meeting. EPN also submitted a notarized record containing a list of the CORASCO personnel who had worked to prepare the EIS, as required under the Terms of Reference.<sup>368</sup> Shortly thereafter, MARENA provided copies of the revised EIS and its annexes

---

<sup>364</sup> *Ibid.*, pp. 1-2.

<sup>365</sup> *Ibid.*, p. 2.

<sup>366</sup> *Ibid.*

<sup>367</sup> *Ibid.*

<sup>368</sup> Letter from Ing Alejandro Fiallos Navarro Executive President, National Port Authority to Cristóbal Sequeira Minister, Ministry of Environment and Natural Resources (MARENA), 5 October 2006, including attachments (NCM, Vol. III, Annex 54).

to the members of the intra-governmental reviewing team for their review and comment.<sup>369</sup>

**(i) The Fourth Site Inspection**

5.53 The reviewing team conducted its fourth site inspection from 11-16 October 2006, with the principal purpose of inspecting each of the 21 sites proposed for the depositing of dredged materials on land.<sup>370</sup> The team had decided to reconsider three of the sites that had been previously ruled out, ruling that they could only be utilized if they were at least 15 meters from the bank of the San Juan River, in order to leave the banks protected with existing vegetation, and if an environmental supervisor was present during their use in order to ensure compliance with all requirements.<sup>371</sup> At EPN's request, the team also considered seven additional sites.

5.54 The intra-governmental reviewing team ultimately decided that some of the sites should be moved for environmental reasons. For instance, a new site was established between prior sites No. 4 and No. 5, which would allow for

---

<sup>369</sup> Letter from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Mr. Jurgén Sengelman Director DGTA/MTI, Reference DGCA-EM-C258, 10 October 2006 (NCM, Vol. III, Annex 55(1)); Letter from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Mr. Luis Palacios Director for Water Resources INETER, Reference DGCA-EM-C259, 10 October 2006 (NCM, Vol. III, Annex 55(2)); Memorandum from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to José Luis Galeno Director SERB – SENMARENA, Reference DGCA-EM-M 396, 11 October 2006 (NCM, Vol. III, Annex 55(3)); Memorandum from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Iván Ortega Director for Protected Areas, MARENA, Reference DGCA-EM-M 397, 11 October 2006 (NCM, Vol. III, Annex 55(4)).

<sup>370</sup> Report of Site Inspection Conducted 11-16 October 2006, p. 1 (NCM, Vol. II, Annex 20).

<sup>371</sup> *Ibid.*

deposit farther away from the mouth of the San Juanillo River. The decision to add this site was prompted largely by the recommendation of a specialist in fishery biology that the mouth of San Juanillo “is one of the principal locations for the nesting, reproduction, and production of primary nutrients for the food chains of various types of fish requiring calm waters.”<sup>372</sup> The alternate site was also chosen because it had already been affected by human intervention, since it contained certain wooden structures and other “improvements” that had been overgrown by vegetation and no longer had any economic value.<sup>373</sup>

5.55 The team also decided to eliminate site No. 9 because it included “compact secondary herbaceous vegetation typical of a tropical wetland,” substituting it with alternative site No. 9-A. The new site was located approximately 700 meters away and was chosen because it was concluded that, given the characteristics of the vegetation present, depositing dredged materials would have less of an impact.<sup>374</sup> The report of the site inspection provided specific recommendations for the development of site No. 9-A, including that the vegetation existing along the bank of the River should be protected to guard against erosion.<sup>375</sup>

5.56 These changes are depicted on the following map, which includes the location of all sites, including the new sites identified during the October 2006

---

<sup>372</sup> *Ibid.*, p. 2.

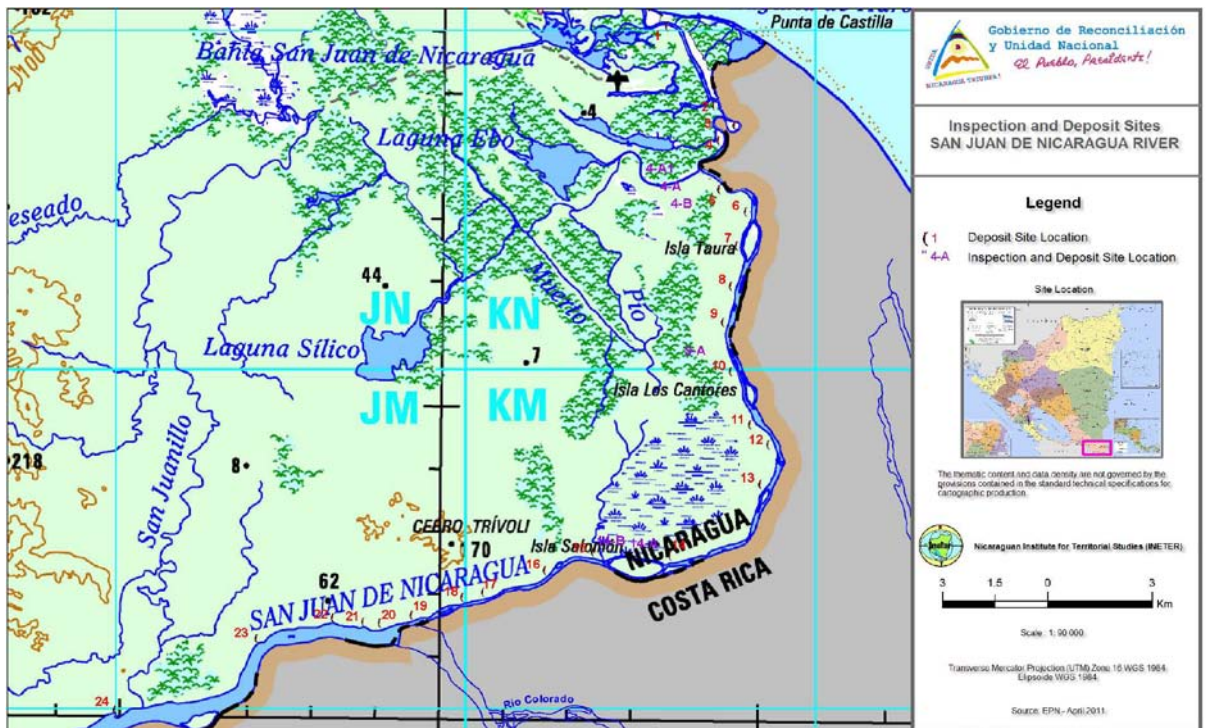
<sup>373</sup> *Ibid.*

<sup>374</sup> *Ibid.*

<sup>375</sup> *Ibid.*

inspection in purple (see **Figure 5.2.**). As is readily apparent, there is no basis for Costa Rica’s allegation that EPN, MARENA, or any other Nicaraguan entity intended to create deposition sites on Costa Rican territory.<sup>376</sup>

**Figure 5.2.**



**Figure 5.2.** Map of All Deposit Sites Analyzed During October 2006 Site Inspection

5.57 During the site inspection, the reviewing team also made observations regarding protective actions that would be required at certain sites. Specifically, it found that sites No. 18 and No. 19 contained flows of water that needed to be protected, and concluded that the boundaries of the sites should be

<sup>376</sup> See CRM, p. 107, para. 3.79.

carefully delimited and that protective barriers should be installed to prevent deposited dredged materials from making their way into the water<sup>377</sup>

**(j) Continued Environmental Impact Assessment**

5.58 After its fourth site visit, the intra-governmental team continued to review the relevant documentation, as revised and augmented by EPN and CORASCO, and presented their observations and comments to MARENA beginning in late October 2006. For instance, on 25 October 2006, Iván Ortega Gasteazoro, the General Director of Protected Areas, submitted his written comments, observing that the EIS was “acceptable,” but recommending certain alterations. Specifically, he suggested that the Environmental Management Plan, which he considered to be the “most important [part] of the study in practical terms,”<sup>378</sup> needed to be further developed in various ways. This included, with respect to oil spills, that “the contractor should guarantee the international standards” as the work will be taking place “within a Wildlife Reserve, in the [Southeast Nicaraguan] Biosphere Reserve which is a RAMSAR Site.”<sup>379</sup> He also noted that, “due to its international importance and international commitments” financing was required for the Environmental Management Plan, whose Contingency Plan needed to be further elaborated.<sup>380</sup>

---

<sup>377</sup> Report of Site Inspection Conducted 11-16 October 2006, p. 2 (NCM, Vol. II, Annex 20).

<sup>378</sup> Memorandum from Iván Ortega Gasteazoro, MARENA Director General of Protected Areas, to Hilda Espinoza Urbina, Director General of MARENA’s Department of Environmental Quality, 25 October 2006, p. 1 (NCM, Vol. III, Annex 56).

<sup>379</sup> *Ibid.*, p. 2.

<sup>380</sup> *Ibid.*

5.59 On 27 October 2006, an additional technical meeting of the reviewing team was held. Based on the concerns of the members of the intra-governmental reviewing team, MARENA requested additional information and clarification from EPN and CORASCO.

5.60 An additional meeting between CORASCO and MARENA took place on 9 November 2006, during which CORASCO agreed, among other things, to submit a revised Environmental Management Plan.<sup>381</sup> In early February 2008, EPN personnel, together with representatives of CORASCO, the Ministry of Transportation and Infrastructure, and the Army, conducted another visit to evaluate sedimentation in the San Juan River, particularly from the delta where the Colorado River splits off to the South, downstream to its mouth in the Caribbean Sea, and to assess the scope of the works that needed to be undertaken to guarantee permanent navigability.<sup>382</sup> The group also met with various officials from the town of San Juan de Nicaragua.<sup>383</sup>

5.61 During the visit, which included both a flyover of the area and navigation in the river itself, the inspection team observed “the shallow depth that in general exists in this stretch of the river, the product of the currents and accumulated sedimentation, which limits quick and safe navigation, a situation

---

<sup>381</sup> Letter from Noel S. Salinas Alvarado of EPN to Zacarías Corea of CORASCO, Reference GT-0954-11-2006, 23 November 2006 (NCM, Vol. III, Annex 57).

<sup>382</sup> See EPN “Report on the Visit Conducted to the San Juan River and Considerations regarding its Cleaning and Dredging to Guarantee its Permanent Navigation,” based on 6-7 February 2008 visit to the site, p. 2 (NCM, Vol. II, Annex 21).

<sup>383</sup> *Ibid.*, pp. 3 & 25.



which caused the team on two occasions to disembark and push the boat”<sup>384</sup> Indeed, in some areas the water was less than one foot deep<sup>385</sup> The team also found that substantial debris had accumulated in the River, which not only rendered navigation dangerous, but also facilitated increased sedimentation and the creation of new islands and sandbanks in the river channel.<sup>386</sup>

5.62 In its report on the February 2008 site visit, EPN pointed out that part of the reason dredging had become necessary was that Costa Rica’s continuous dredging of the Colorado River – discussed in Chapter 4 – had dramatically altered the flow regime over time, “causing gradual disappearance of the last 28 kilometers” of the San Juan River<sup>387</sup> Low flow volumes were leading to slow currents laden with high volumes of sediments and debris, which were being deposited on the riverbed and along the banks. This, in turn, reduced the slope of the river and caused “sandbars that transform into small and large islands that reduce the hydraulic section of the channel” and sometimes become attached to the Costa Rican bank, thereby causing a loss of Nicaraguan territory<sup>388</sup>

5.63 EPN’s report also reiterated some of the details of the planned project, as outlined in the EIS and Project Design,<sup>389</sup> and indicated that the project was estimated to cost some \$7.5 million.<sup>390</sup> It also recommended that the 2006 EIS

---

<sup>384</sup> *Ibid.*, p.4..

<sup>385</sup> *Ibid.*, p. 4.

<sup>386</sup> *Ibid.* p. 4.

<sup>387</sup> *Ibid.*, p. 5.

<sup>388</sup> *Ibid.*

<sup>389</sup> *Ibid.*, 6-7.

<sup>390</sup> *Ibid.*, p. 10.

prepared and revised by CORASCO be reviewed and analyzed, in order to update certain data.<sup>391</sup>

5.64 On 15 July 2008, EPN wrote to the Director of MARENA's Department of Environmental Quality, reiterating its request for the environmental authorization of the project. In support of this request, EPN provided a new report regarding the state of the San Juan River and the need for dredging to ensure its permanent navigability, which had been prepared after EPN's site visit in February.<sup>392</sup> EPN also submitted, on compact disk, another copy of the final Project Design Study prepared by CORASCO in 2006.<sup>393</sup>

5.65 On 6 August 2008, another meeting was held to consider EPN's new submission. The meeting, which was held at MARENA's offices, was attended by its Vice Minister and the Director of its Department of Environmental Quality, as well as by representatives of EPN and CORASCO.<sup>394</sup> Based on information provided by CORASCO at the meeting, MARENA concluded that all of the deposit sites for dredged material proposed by CORASCO were acceptable, with the exception of the sites located between the mouths of the San Juanillo and San Juan Rivers, which MARENA determined should be relocated to the strip of

---

<sup>391</sup> *Ibid.*, p. 13.

<sup>392</sup> Letter from EPN Executive President, Virgilio Silva Munguía to Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, Reference PE-VSM-0754-07-2008, 15 July 2008 (NCM, Vol. III, Annex 59).

<sup>393</sup> See EPN "Report on the Visit Conducted to the San Juan River and Considerations regarding its Cleaning and Dredging to Guarantee its Permanent Navigation," based on 6-7 February 2008 visit to the site, p. 23 (NCM, Vol. II, Annex 21).

<sup>394</sup> See Memorandum from Julio C. Ordoñez L. to Executive President, Virgilio Silva Munguía (accompanying report), 13 August 2008, p. 1 of report (NCM, Vol. III, Annex 60).

land near the town of San Juan de Nicaragua separating the Río Indio and the Caribbean Sea.<sup>395</sup>

5.66 During the meeting, MARENA circulated preliminary drafts of the reviewing team’s Technical Opinion and its Administrative Resolution regarding the dredging project. However, MARENA explained that at least one additional site visit would be necessary in order to confirm that the conditions that had existed during the preparation of the Environmental Impact Study had not changed, and to confirm on-site MARENA’s recommendation regarding the change in location of two sites for the deposition of dredged sediments. It was agreed that other details necessary for the issuance of the MARENA permit could be discussed during a meeting that would take place the following week.<sup>396</sup>

5.67 That next meeting occurred at EPN’s office on 12 August 2008, and was attended by representatives of CORASCO and MARENA.<sup>397</sup> It was agreed that the intra-governmental reviewing team should conduct the required site visit, and that EPN had to satisfy certain requirements before MARENA could issue an environmental permit. This included “the clarification of certain concepts, for example, the protection of riverbanks, the use of wood waste as protective structures and for social availability, the stripping and restoration of topsoil in corresponding areas for the deposition of dredged material,

---

<sup>395</sup> *Ibid.*

<sup>396</sup> *Ibid.*

<sup>397</sup> *Ibid.*, report pp. 1-2.

reforestation, etc.”<sup>398</sup> MARENA also informed EPN that the environmental permit would require that the project’s budget include funding to pay for the services of (i) a professional with the qualifications and experience necessary to assume the role of permanent Environmental Manager throughout the life of the project; and (ii) an inspector chosen by MARENA and the Executive Secretariat for the Preservation of the Southeast Nicaraguan Biosphere to assure environmental compliance.<sup>399</sup> Finally, MARENA reminded EPN that an environmental permit would need to be renewed if the authorized project was not initiated within 18 months.<sup>400</sup>

#### **(k) The Fifth Site Inspection**

5.68 From 17-20 September 2008, a fifth site visit was conducted by the intra-governmental reviewing team. The team travelled from the bifurcation of the Colorado to the mouth of the San Juan, during which time it inspected each of the sites selected for the deposition of dredged material.<sup>401</sup> It concluded that most of the sites, including the new sites selected during the reviewing team’s 11-16 October 2006 site visit, could be maintained as described in the EIS and related documents, with the exception of sites No. 1-4. Some of these sites were relocated due to their proximity to certain flora that serve as the primary food

---

<sup>398</sup> *Ibid.*, report p. 2.

<sup>399</sup> *Ibid.*, report pp. 2-3.

<sup>400</sup> *Ibid.*, report p. 3.

<sup>401</sup> EPN Memorandum from Arosman Mendieta Jerez, Supervising Engineer to Lester Quintero Gomez, Technical Div. Manager, National Ports Company (accompanying minutes), Reference IS-AMJ-12-09-08, 23 September 2008 (NCM, Vol. III, Annex 61).

source of manatees.<sup>402</sup> The team also recommended a review of the volume of dredged material to be deposited at those sites, in order to clarify their dimension and their environmental impact.<sup>403</sup> Finally, the team agreed to hold another working meeting at EPN's offices on 26 September 2008.<sup>404</sup>

5.69 On 21 October 2008, CORASCO provided MARENA with a plan for the locations of the deposit sites, including a table containing the reference coordinates for those locations.<sup>405</sup>

### **(I) The Technical Opinion**

5.70 Having reviewed hundreds of pages of technical information provided by EPN and CORASCO, and based on knowledge accumulated during its many meetings and site visits over two-and-a-half years, the intra-governmental reviewing team issued its Technical Opinion regarding the project on 28 November 2008.<sup>406</sup>

5.71 The Technical Opinion, like the EIS, described the project as the cleaning and maintenance of a navigation channel along a section of the San Juan River nearly 42 kilometres long, from Punta Petaca upstream of the Colorado River to the mouth of the San Juan, all within the limits of the San Juan River

---

<sup>402</sup> *Ibid.*, p. 1.

<sup>403</sup> *Ibid.*, minutes p. 2.

<sup>404</sup> *Ibid.*

<sup>405</sup> Letter from Engineer Leonardo Zacarías Corea T. General Manager, Corea & Associates (CORASCO) to Roberto Araquistain Vice Minister MARENA, 21 October 2008 (NCM, Vol. III, Annex 62).

<sup>406</sup> Technical Opinion (NCM, Vol. II, Annex 12).

Wildlife Reserve.<sup>407</sup> It noted that an area of 420 hectares could be influenced by the dredging activities either directly or indirectly: 126 hectares would be affected directly through the restoration of a navigation channel (30 meters wide and 42 kilometers long); 130.8 hectares would be affected directly through the deposition of dredged sediments; and 163.2 hectares might be affected indirectly by the proposed activities.<sup>408</sup>

5.72 In connection with identifying the approved sediment deposit sites by their geographic coordinates and explaining that they had been selected due to their particular characteristics,<sup>409</sup> the Technical Opinion stated that “[t]he material extracted will be deposited in small deposits distributed along the northern bank along the section of the river to be cleaned.”<sup>410</sup> In other words, all sediment deposits would be located in territory that indisputably belongs to Nicaragua.

5.73 The Technical Opinion also assessed the possible environmental impacts that had been identified, together with recommended mitigation measures. These included: (1) impacts on water quality and aquatic organisms caused by the re-suspension of sediments during dredging; (2) impacts on vegetation, landscape, and terrestrial animals caused by the depositing of dredged sediments at the selected disposal sites; (3) impacts on fauna caused by the noise

---

<sup>407</sup> *Ibid.*, p. 1.

<sup>408</sup> *Ibid.*

<sup>409</sup> *Ibid.*, pp. 2-3.

<sup>410</sup> *Ibid.*, p. 1 (emphasis added).

that would be produced during the dredging activities; and (4) impacts on ecological processes.<sup>411</sup>

5.74 The Technical Opinion concluded that the negative impacts of the dredging project would be of “low intensity” and impermanent, particularly if certain preventative and mediation measures were implemented, as set out in the EIS.<sup>412</sup> For instance, the Technical Opinion noted that it was imperative to maintain strict control over the handling of hydrocarbons to avoid spills and to implement a contingency plan in the case of accidental spills.<sup>413</sup>

5.75 The Technical Opinion also concluded that various beneficial impacts would result from the dredging project, not only for the people and commerce of the region, but also for benthonic communities, the development of organisms, and the recovery of vegetation on the riverbanks, which would protect the channel and riverbed, biodiversity, and the River itself.<sup>414</sup> Thus, the Technical Opinion reported that “[t]he inter-institutional technical team that evaluated the EIS believes the project is environmentally feasible if EPN complies strictly with the environmental measures established in that study and the provisions issued by MARENA under an administrative resolution to prevent, mitigate, and offset possible negative impacts.”<sup>415</sup>

---

<sup>411</sup> See *ibid.*, pp. 3-4.

<sup>412</sup> *Ibid.*, pp. 4 & 9.

<sup>413</sup> *Ibid.*, pp. 5-6.

<sup>414</sup> *Ibid.*, pp. 4, 5 & 8.

<sup>415</sup> *Ibid.*, p. 8.

5.76 The Technical Opinion concluded with a set of recommendations, including: (1) that EPN remain in contact with the entities responsible for monitoring the environmental performance of the project, as well as documenting all of its environmental management activities; (2) that qualified personnel be hired to meet EPN's commitments, as per the EIS; (3) that all events affecting or threatening the environment be reported to the competent authorities immediately; and (4) that EPN ensure the availability of the technical and financial resources necessary for the implementation of the Environmental Management Program as set forth in the EIS.<sup>416</sup>

**(m) MARENA's Issuance of the Environmental Permit**

5.77 By the end of November 2008, all of the requirements under Nicaraguan law for environmental impact assessment had been satisfied. An intra-governmental team had been assembled and had provided EPN with detailed Terms of Reference to guide the preparation of an Environmental Impact Study. EPN and a team of nearly a dozen environmental experts and hydrological engineers had produced, revised, and augmented an EIS, in accordance with the intra-governmental team's demands, based upon five site visits and numerous working meetings. EPN had also produced the mandatory Environmental Impact Document, which was approved by MARENA before it was made available to the general public, and notice of that availability had been published in two

---

<sup>416</sup> *Ibid.*, pp. 8-9.



newspapers with national circulation and international reach. The parties most likely to be affected by the project had voiced their support for the project, and all comments had been reviewed by the intra-governmental reviewing team while preparing its Technical Opinion, which it based not only on the EIS, but also the substantial documents annexed thereto, as well as the Project Design Study, in addition to the information that had been gleaned during site inspections, working meetings, and public consultations.

5.78 Then, and only then, did MARENA – after concluding that the required procedural steps had been observed and that the project satisfied Nicaragua’s rigorous environmental requirements – issue its approval for EPN’s proposed dredging project on 22 December 2008, via Resolution No. 038-2008.<sup>417</sup> Specifically, MARENA issued the authorization after concluding, based on the full environmental impact assessment process:

- That the project was necessary to guarantee the town of San Juan de Nicaragua’s “full participation in the national life” and to guarantee its residents access to basic public services and the enjoyment of their rights under the Nicaraguan Constitution;<sup>418</sup>
- That EPN had provided sufficient information regarding existing environmental conditions in and around the San Juan River, including

---

<sup>417</sup> See MARENA Administrative Resolution No. 038-2008, 22 December 2008 (NCM, Vol. III, Annex 33).

<sup>418</sup> *Ibid.*, Art. VI.

those present on Costa Rican territory, for an adequate analysis to take place;

- That the EIS, as augmented and refined, established that the project was not likely to have any significant adverse impacts on the environment, including to Costa Rica, because there would be no significant effect on the San Juan River itself or the flora, fauna, or abiotic characteristics of its zone of influence, whether in Nicaragua or Costa Rica, and because no dredged sediments would be deposited on the Costa Rican side of the River;
- That the EIS and related documentation had presented convincing evidence and supporting documentation, including substantial technical bathymetrical data and flow calculations specifically requested and reviewed by the reviewing team, that the project would not materially affect the flow or navigability of the Colorado River, which would be reduced by a few percentage points at most, and even less in the rainy season and
- That the dredging project would have positive effects, not only for the Nicaraguan and Costa Rican people who live in the area, but also for the San Juan River itself and its zone of influence, including by reducing erosion and sedimentation due to careful restoration of portions of the Nicaraguan bank, as well as the restoration of the mangrove swamps near the River's mouth, which would assist the

many species that depend on the health of those swamps and the rest of the River for their well-being.<sup>419</sup>

5.79 The authorization granted by MARENA was expressly limited to the “improvement of the navigation route to permit the communities in the southeastern corner of the national territory to be in contact by river with the rest of the country.”<sup>420</sup> This was to be accomplished by dredging to recapture a channel with the following dimensions:

in its cross-section it shall be 20 meters wide at the bottom, 30 meters wide at the surface, and with a minimum depth of 2 meters in the dry season, throughout a section 41,963.57 meters in length which runs from the site known as Punta Chingo Petaca to the [mouth] of the San Juan River, plus the construction of an access channel to carry the equipment required for the clean-up operation from the Caribbean Sea to the...San Juan de Nicaragua River, which shall have a cross-section of 40 meters wide at the bottom, 60 meters wide at the surface, and with a minimum depth of 6 meters, along a total length of 2,000 meters.<sup>421</sup>

5.80 MARENA’s authorization identified the sediment deposit sites that had to be utilized, both providing the relevant UTM coordinates and noting that “[t]he material extracted from the river bed...shall be deposited at the sites previously identified in the [EIS], located on the left bank of the San Juan River

---

<sup>419</sup> See Affidavit of Hilda Espinoza Urbina, Director General of MARENA’s Department of Environmental Quality, 20 December 2010, para. 20 (CRM, Vol. IV, Annex 165); see also MARENA Administrative Resolution No. 038-2008, 22 December 2008 (NCM, Vol. III, Annex 33).

<sup>420</sup> MARENA Administrative Resolution No. 038-2008, 22 December 2008, resolution 3, para. 1 (NCM, Vol. III, Annex 33).

<sup>421</sup> *Ibid.*, resolution 3, para. 1.

along the length of the section where the project's activities will be conducted.”<sup>422</sup>

It thus made clear that all deposit sites would be located in Nicaragua.

5.81 Further, the authorization required EPN to restore deforested areas “in accordance with a reforestation plan, making use of native species” and to ensure that “[t]he protective barriers on the left bank of the San Juan River...include the construction of a structure that does not permit erosion or overflowing of the banks when the river rises...according to the construction specifications shown in the [EIS].”<sup>423</sup>

5.82 To ensure that the dredging project would not cause unacceptable environmental impacts, additional conditions were incorporated into Resolution No. 038-2008 mandating that certain requirements be satisfied during the implementation of the project. These included:

- That any extracted sediments be analysed and disposed of in specific locations and in specific ways, taking care to preserve vegetation and ensure that the sediments not be returned to the River;
- That measures be taken to prevent the spill or spread of the fuels used to power the dredging equipment;
- That care be taken to protect the flora and fauna of the environment;

---

<sup>422</sup> See *ibid.*, resolution 3, para. 2 (emphasis added).

<sup>423</sup> See *ibid.*, resolution 3, para. 3 (emphasis added).

- That every stage of the project be overseen by a qualified environmental professional provided by EPN, who would receive instructions from MARENA as necessary; and
- That EPN pay for the services of a separate environmental inspector to be appointed by MARENA’s Delegation for the San Juan River region.<sup>424</sup>

5.83 The Resolution also noted that the resulting Environmental Permit was only valid for the activities specified in the information that had been submitted to MARENA and that, if EPN “intends to introduce any broadening or modification of the approved project, it must first apply to MARENA for the appropriate permit.”<sup>425</sup>

5.84 The permit for the project entered into force on 9 July 2009, upon its transmittal to EPN.<sup>426</sup> This is clear from the Resolution itself, which states: “This permit shall enter into force as of the date of delivery to the Proponent, a record of which must be left”.<sup>427</sup> Costa Rica attempts to obscure this fact in its Memorial by replacing these words with an ellipsis<sup>428</sup> when it makes the factually inaccurate allegation that “the EIS [sic] had already expired by the time the dredging operations started.”<sup>429</sup> That is incorrect. The Resolution stayed in force for 18 months from the date of its delivery to EPN – not from 22 December 2008,

---

<sup>424</sup> See *ibid.*, 3, paras. 3-23.

<sup>425</sup> *Ibid.*, final page, unnumbered para. 1.

<sup>426</sup> See *ibid.*, p. 1.

<sup>427</sup> *Ibid.*, final page, unnumbered para. 3.

<sup>428</sup> See CRM, p. 109, para. 3.83.

<sup>429</sup> *Ibid.*, p. 244, para. 5.89; see also p. 109, para. 3.83.

as alleged by Costa Rica<sup>430</sup> – and dredging operations therefore had to commence by 9 January 2011. Accordingly, when Nicaragua initiated work on the dredging project on 18 October 2010, the environmental authorization was still valid.

5.85 As the foregoing facts make clear, by strictly applying its own rigorous environmental regulations in its exhaustive assessment of the possible environmental impacts of the dredging project – including any such impacts to Costa Rica’s environment or rivers – Nicaragua did, in fact, fully satisfy its EIA obligations under international law. It assessed the likely effects of the dredging project in depth and detail, requiring EPN to carry its burden of proof, before ultimately concluding that the project was not likely to produce any significant, negative impacts. In doing so, the EIA process also demonstrated that the persons, property, and environment of Costa Rica were not likely to be significantly affected.

### **3. MARENA’s Review and Authorization of Additions to the Dredging Project**

5.86 Costa Rica is mistaken in asserting that MARENA’s October 2009 authorization of two additions to the San Juan River dredging project “did not fulfill any particular environmental requirement” and were not the product of additional environmental analysis.<sup>431</sup> Like the dredging project, the additions were authorized only after MARENA evaluated the likely environmental impacts of the

---

<sup>430</sup> *Ibid.*, p. 109, para. 3.83.

<sup>431</sup> *See ibid.*, p. 244, para. 5.89.

proposed additions in accordance with the applicable Nicaraguan environmental laws and regulations.

5.87 On 28 August 2009,<sup>432</sup> EPN submitted an application to expand the work approved in Resolution No. 038-2008 by adding two additional aspects to the project:

- “Activity No. 1: Cleaning of the Caño” – that is, “a tributary of the San Juan River that empties into the Harbor Head Lagoon” located from reference coordinates North 1208638 – East 863133 to North 1209823 – East 863450 – whose length of approximately 1,500 meters was to be cleaned to a depth of 2.5 meters up to a maximum width of 30 meters;<sup>433</sup> and
- “Activity No. 2: Cleaning, using a stationary cutting and suction dredge, of a stretch of the San Juan River” located at reference coordinates North 1208439 – East 863131, North 1208134 – East 863136, and North 1208138 – East 863196, in order to reveal a stretch of canal 6 meters deep, 250 meters long, and 59 meters wide<sup>434</sup> where sediments had accumulated.<sup>435</sup>

---

<sup>432</sup> See MARENA Administrative Resolution No. 038-2008-A1, 30 October 2009, p. 1, para. 1 (NCM, Vol. III, Annex 34).

<sup>433</sup> EPN, “Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River,” September 2009, p. 2 (NCM, Vol. II, Annex 13).

<sup>434</sup> *Ibid.*, pp. 2-3.

<sup>435</sup> See Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project “Improvement of the Navigability of the San Juan River”., p. 1 (NCM, Vol. II, Annex 22).

5.88 EPN proposed these additions because it had concluded that they were necessary to “create an alternate, more direct navigation route that would reduce the time required to travel between the different sites along the river,” and that they would have “a positive socioeconomic impact by permitting savings in the operation costs of boats and those of the townspeople because the consumption of fuel would be lower.”<sup>436</sup>

5.89 With regard to the proposed additions’ environmental impacts, EPN concluded they would have “low risk and little effect” since “the activities [were] similar to others already realized in national territory and because the direct area of influence would be the bed of the caño, the riverbed, and the sites identified for the deposition of sediments and debris.”<sup>437</sup> Nevertheless, recognizing that the additional cleaning and dredging activities could generate “both negative and positive impacts,” EPN prepared an Environmental Management Plan as a “technical methodological instrument” to ensure that the proper “corrective and compensatory measures” were implemented, thereby ensuring compliance with Nicaraguan environmental requirements.<sup>438</sup>

5.90 EPN submitted its proposed Environmental Management Plan to MARENA, along with its request for an environmental permit authorizing the work.<sup>439</sup>

---

<sup>436</sup> EPN, “Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River,” September 2009, p. 2 (NCM, Vol. II, Annex 13).

<sup>437</sup> *Ibid.*, p. 3.

<sup>438</sup> *Ibid.*

<sup>439</sup> *Ibid.*



5.91 EPN proposed to clear the caño in two phases. First, it would manually extract accumulated debris from the caño, which would be conducted by approximately 200-250 local laborers, who would take measures to impact the bank of the caño as little as possible. The manual efforts would prepare the site for the second phase of the project, which would involve the dredging of the channel to a depth of 2.5 meters and up to a width of 30 meters along its 1,560-meter length. EPN identified two deposit sites for the sediments and debris from the caño, which were both consistent with the requirements established for such sites in the EIS.<sup>440</sup>

5.92 Regarding the cleaning of a stretch of the River, EPN's Environmental Management Plan provided the coordinates for the site, described the dimensions of the area to be dredged, indicated that the work would be undertaken by 30 workers, and explained that three deposit sites for dredged sediments had been identified.<sup>441</sup>

5.93 Before authorizing these additions to the project, MARENA conducted an environmental review in order to ensure that they would not harm the environment. Costa Rica objects to the fact that these additions were not discussed in the EIS that had been finalized in 2006.<sup>442</sup> But that is why EPN

---

<sup>440</sup> *Ibid.*, p. 2.

<sup>441</sup> *Ibid.*, p. 3.

<sup>442</sup> See CRM, p. 243, para. 5.88. Costa Rica continues that “neither the Laguna Los Portillos, nor the territory of Isla Portillos were assessed in the 2006 EIS document, much less was either area subjected to any environmental analysis...” Putting aside for the moment that Harbor Head Lagoon is Nicaraguan territory about which Costa Rica can have no legal claims whatsoever, Costa Rica disproves its own allegation in the very next paragraph of its Memorial, highlighting

sought additional authorization for the additions to the project in August 2009. And that request is what prompted MARENA to conduct additional environmental assessments, in order to ensure that authorization was warranted and consistent with applicable environmental regulations.

5.94 MARENA's review was carried out in conformity with the applicable requirements under Nicaraguan law, which, in the case of related modifications or extensions of previously authorized projects, do not mandate the preparation of a separate technical EIS. In that regard, Costa Rica is incorrect in arguing: (1) that the additions to the larger dredging project were not actually minor;<sup>443</sup> (2) that MARENA failed to assess their environmental impact;<sup>444</sup> and (3) that MARENA did not follow its own domestic requirements in authorizing them and should have prepared new technical environmental impact studies.<sup>445</sup>

#### **(a) The Proposed Project Additions**

5.95 First, Costa Rica asserts that the additions to the project were not minor because, in Costa Rica's estimation, they involved "the construction of an artificial canal" and "the cutting of meanders." Specifically, Costa Rica argues that Nicaragua's "original plan" was "to deviate the waters of the San Juan,"<sup>446</sup> such that "the project was not directed at cleaning any caño, but rather at deviating

---

that "MARENA's 2008 approval of the EIS stated that in the last leg of the San Juan, before its mouth in the Caribbean Sea, no dredging materials could be dumped there because of the fragile character of the environment at that location." *Ibid.*, p. 244, para. 5.89.

<sup>443</sup> *See ibid.*, pp. 121-122, para. 3.105.

<sup>444</sup> *See ibid.*, pp. 243-245, paras. 5.88-5.91.

<sup>445</sup> *See ibid.*

<sup>446</sup> *Ibid.*, pp. 239-240, para. 5.82.

the entire San Juan across Isla Portillos, through Laguna los Portillos.”<sup>447</sup> This intention is supposedly apparent, Costa Rica asserts, from the facts that EPN requested authorization to clean the caño to a width of 30 meters, and because rectangular areas of trees were felled near both the River and the Lagoon, where Nicaragua supposedly intended – at least at one point – to dig a channel and redirect the entire flow of the River into Harbor Head Lagoon.<sup>448</sup> Costa Rica asks the Court to conclude from these facts that Nicaragua intended to construct a channel 100 meters wide,<sup>449</sup> which would have been large enough to divert the River’s entire flow. According to Costa Rica, Nicaragua changed its plan for the construction of this channel after this proceeding was initiated on 18 November 2010 by scaling down the project to create a caño “of narrower width and with a different direction.”<sup>450</sup>

5.96 Costa Rica’s description of the caño-clearing project, however, bears no relationship to reality. It was always Nicaragua’s intention to clear the caño to a maximum width of 30 meters (and actually much less in certain stretches), in exactly the location it ultimately conducted its cleaning activities. This is because that is where the caño has long been located, as established in Chapter 6. It cannot be that Nicaragua’s “plan” was to create an artificial connection between the San Juan River and Harbor Head Lagoon, as those bodies

---

<sup>447</sup> *Ibid.*, p. 245, para. 5.90.

<sup>448</sup> *Ibid.*, p. 237, para. 5.80.

<sup>449</sup> *Ibid.*, p. 245, para. 5.90.

<sup>450</sup> *Ibid.*, p. 239, para. 5.81.

of water have always been naturally connected.<sup>451</sup> And Nicaragua never planned to divert the entire flow of the Lower San Juan through the caño into the Lagoon, as Costa Rica alleges. Indeed, doing so would cause the final stretches of the River to dry up even further, which would be inconsistent with the objective of the project in the first place, that is, to improve navigation and connect the town of San Juan de Nicaragua to the rest of the country via a watercourse that is navigable year-round.

5.97 In fact, Costa Rica's own Memorial disproves its conspiracy theory. By plotting on an aerial photograph the coordinates included in EPN's 28 August 2009 request for authorization of the caño-clearing project (i.e., 1208638 North – 863133 East and 1209823 North – 863450 East)<sup>452</sup> – precisely the same coordinates included in MARENA's Resolution No. 038-2008-A1 of October 2009 discussed below<sup>453</sup> – Costa Rica demonstrates that Nicaragua cleared the caño exactly where it was supposed to under the MARENA resolution.<sup>454</sup> In other words, it is simply not true that Costa Rica's initiation of this lawsuit prompted Nicaragua to abandon a plan to divert the entire river through the caño.

5.98 Costa Rica also disputes that the caño ever existed. This technical question is addressed in detail in Chapter 6. For purposes of the present discussion, the relevant point is that, in August 2009, before this dispute arose

---

<sup>451</sup> See Kondolf, Section 2.5 (Appendix 1).

<sup>452</sup> EPN, "Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River," September 2009, p. 2 (NCM, Vol. II, Annex 13).

<sup>453</sup> MARENA Administrative Resolution No. 038-2008-A1, 30 October 2009, p. 2, para. III & p. 3, resolution 2(1) (NCM, Vol. III, Annex 34).

<sup>454</sup> See CRM, pp. 123-124, para. 3.107 & Figure 3.8.

with Costa Rica, EPN requested authorization to clean an existing caño and return the flow of water to a previously-existing stretch of river. These additions were consistent with the work that had already been extensively analysed during the EIA process for the larger dredging project. Even so, MARENA proceeded to assess the potential environmental impacts of the proposed additions, as it was required to do under Nicaraguan law.

### **(b) MARENA’s EIA of the Proposed Project Additions**

5.99 Costa Rica is equally wrong in asserting that MARENA “simply and summarily rubber stamped” EPN’s plans for the proposed additions.<sup>455</sup> As noted above, when EPN submitted its request for additional authorizations to MARENA at the end of August 2009, it included an Environmental Management Plan that described the details of both proposed additions. It also identified, analyzed and categorized possible environmental impacts, established how such impacts could be prevented, mitigated and reversed if necessary, and outlined the supervision that would be provided to ensure proper environmental management.<sup>456</sup> Thus, Costa Rica is incorrect in claiming that when EPN submitted its request for additional authorization, “no environmental analysis or any particulars regarding the details of the work plan about the cleaning of the caño were mentioned.”<sup>457</sup>

---

<sup>455</sup> *Ibid.*, p. 245, para. 5.91.

<sup>456</sup> See EPN, “Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River,” September 2009 (NCM, Vol. II, Annex 13).

<sup>457</sup> CRM, p. 244, para. 5.89.

5.100 Nor did MARENA simply review and accept uncritically the documentation submitted by EPN in support of its request for additional authorization. Rather, MARENA conducted a site visit to evaluate independently the proposal, how the work would be carried out, and its likely environmental impacts. It also produced a Technical Report, which included various recommendations for how the potential environmental impacts of the proposed additions could be prevented and mitigated, before finally deciding to authorize the project additions under certain strict conditions. Indeed, as explained below, as a result of its EIA process, the caño-cleaning project that MARENA authorized was different in substantial ways from the work that EPN had originally proposed.

5.101 MARENA conducted its site visit for assessing the environmental impacts of the proposed additions on 7-8 September 2009. In particular, two officials from MARENA's Department of Environmental Quality accompanied EPN's Technical Director on a visit to both the place in the river where the additional dredging was to take place and to (and into) the caño.<sup>458</sup>

5.102 Regarding the inspection of the caño area, according to the MARENA Specialist in Environmental Management responsible for the September 2009 site inspection, Engineer Elsa Maria Vivas Soto, the visit was "mostly performed in a small boat, the starting point being the Harbor Head

---

<sup>458</sup> See Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River, p. 1 (NCM, Vol. II, Annex 22); Declaration of Elsa Maria Vivas Soto of MARENA's Department of Environmental Quality, 20 December 2010 (hereinafter "Vivas Declaration"), paras. 6-13 (NCM, Vol. III, Annex 90).

Lagoon.” While the inspection team was “traveling through the caño, the fluidity of the water could be seen, which allowed small vessels such as the boat [the team was] in to navigate up to a certain point.” However, “a layer of sediment and dried fallen trees...prevented the passage of water and transportation toward the San Juan River side” of the caño. “Due to this sedimentation of the section, [the inspection team was] forced to continue the trip on foot, because the sedimentation made navigation through the caño difficult.”<sup>459</sup> According to Engineer Vivas, “[t]he need to remove the sediment to restore the flow volume of the caño” was apparent, as was “[t]he need to remove the vegetation that obstructed the caño...to improve its navigability as part of the sustainable development of the region.”<sup>460</sup> Based on her visit and the information provided by EPN, Engineer Vivas concluded that the proposal to clean the caño “would be environmentally viable” because:

- The work would be performed using “traditional” (*i.e.*, manual) methods that would cause only insignificant and reversible environmental impacts;
- The weather conditions and the type of ecosystem at issue “would allow for the natural regeneration of the plant life on the banks of the caño,” which were principally rapid-growth species;

---

<sup>459</sup> Vivas Declaration, paras. 8-9 (NCM, Vol. III, Annex 90).

<sup>460</sup> *Ibid.*, para. 10.

- The sediments and debris that would be extracted through the manual cleaning of the caño would “not represent any danger to the native species of the area because the soil is silty, the plant material is organic, and when it is deposited in another site it would aid in the natural regeneration of plant species”;
- The limited work would have only low-level and temporary effects on water quality and would not significantly alter the natural characteristics of the area (*i.e.*, the River or Harbor Head Lagoon); and
- All activities would be performed under the conditions to be established in the environmental permit.<sup>461</sup>

5.103 The findings of the site visit were reported back to MARENA in a written Technical Report,<sup>462</sup> which explained the details of the additions under consideration, offered observations (including, e.g., the types of vegetation present and the dimensions of areas likely to be affected by the proposed activities), and provided a series of specific recommendations for the prevention and mitigation of environmental impacts, including:

- That the work be conducted by hand (*e.g.*, with shovels and pickaxes);

---

<sup>461</sup> *Ibid.*, para. 11.

<sup>462</sup> *See* Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River, p. 1 (NCM, Vol. II, Annex 22)



- That any extracted sediments be handled appropriately and deposited in specific locations on the Nicaraguan bank to reduce any impact to flora or fauna and to prevent the sediments from returning to the caño;
- That all removed debris be transported off-site and disposed of properly;
- That mobile eco-friendly latrines be provided for the use of the workers;
- That, for any tree felled during the process, ten more of a native species be planted in its place, in order to promote the regeneration of native species; and
- That the activities be overseen by EPN's environmental supervisor and approved by a MARENA official.

5.104 Taken together, all of this information – that is, the details, analyses, and recommendations provided in the Technical Report prepared after the September 2009 site visit, the information provided by EPN in both its application for supplemental authorization and its EIS on the larger dredging project (as augmented and refined), and the intra-governmental reviewing team's efforts to familiarize itself with the Lower San Juan and its environs in order to assess the impacts of the larger dredging project – indicated to MARENA that the work to dredge the additional sedimented portion of the river and to clear manually the caño connecting the San Juan River to the Harbor Head Lagoon,

could be performed without causing significant, irreparable impacts to the environment.

5.105 Regarding the cleaning of the caño specifically, MARENA determined that there was no reason to conclude it would have a meaningful impact on the flow, course, or water quality of the San Juan River or other related waterbodies. MARENA also determined that, in a swampy area like Harbor Head, where vegetation regenerates quickly, the manual clearing of the plants and debris obstructing the caño would not have any long-term effects, and that any short-term impacts could be prevented by requiring the proper disposal of debris and mitigated by requiring the replacement of any damaged native vegetation.

5.106 Thus, satisfied that the proposed additional work would cause only short-term, reversible impacts to the environment which, in any case, would be mitigated through the replacement of native vegetation, on 30 October 2009, MARENA issued Administrative Resolution No. 038-2008-A1.<sup>463</sup> This resolution expanded the original dredging project to grant EPN the environmental authorization for additional Activities No. 1 and No. 2, under the specific conditions that had been recommended in the Technical Report.

5.107 The fact that Nicaragua conducted an adequate EIA of the proposed additions to the project is underscored by the fact that the additions it authorized were not the same as the additions originally proposed by EPN. As noted above,

---

<sup>463</sup> MARENA Administrative Resolution No. 038-2008-A1, 30 October 2009 (NCM, Vol.III, Annex 34). The permit was received by EPN on 3 November 2009, as indicated by the signature visible on the bottom of the final page of the Resolution. *See ibid.*, Spanish Original, p. 4.

EPN had requested authorization for a two-part caño-clearing effort, the second phase of which was to involve the use of a dredge. MARENA's September 2009 Technical Report, however, discussed the activity it was considering differently, that is, only as the "manual cleaning" of the channel.<sup>464</sup> Indeed, one of MARENA's explicit recommendations after its site visit was that "[t]he cleaning for the maintenance of the caño should primarily be conducted using manual equipment, such as shovels and pickaxes."<sup>465</sup> Likewise, the 30 October 2009 Resolution authorizing the caño-clearing states that its alteration to the original project authorization includes authorization for "cleaning a stream which connects the San Juan River with the Harbor Head Laguna in Nicaraguan territory, using manual equipment" and "clean-up work...with a dredge on a section [of the River] that has become sedimented,"<sup>466</sup> adopting the Technical Report's recommendation that the caño-clearing should be conducted using hand-held equipment.<sup>467</sup>

5.108 In short, it is simply not true, as Costa Rica alleges, that the additions to the project "were never subjected to any environmental examination" before being approved by MARENA in October 2009.<sup>468</sup> Indeed, the opposite is clear: EPN's proposed additional activities were subjected to environmental

---

<sup>464</sup> See Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River, p. 2 (NCM, Vol. II, Annex 22)

<sup>465</sup> *Ibid.*, p. 4.

<sup>466</sup> MARENA Administrative Resolution No. 038-2008-A1, 30 October 2009, p. 2, para. III (NCM, Vol. III, Annex 34).

<sup>467</sup> *Ibid.*, resolution 3, para. 30.

<sup>468</sup> CRM, p. 245, para. 5.91.

assessment, and their authorization – like the authorization of the larger dredging project – was the product of careful environmental evaluation under the applicable environmental laws and regulations.

**(c) No Requirement for a New EIS**

5.109 Costa Rica's claim that Nicaragua failed to satisfy its EIA obligations under international law with regard to the additions to the project because it did not prepare an entirely new EIS<sup>469</sup> fail just as badly. Simply put, Nicaraguan law does not require a party who has already produced a technical EIS for a project that has since been authorized by MARENA to repeat every step of that technical process for supplements or modifications to the larger, already-authorized project. This does not mean that there is no assessment of environmental impacts prior to the authorization of additions to larger projects; it simply means that MARENA is permitted, under the applicable regulations, to take into account the findings of an existing EIS for the larger, related project, and to otherwise leverage the knowledge from the EIA process that preceded the authorization of that larger project, in assessing the possible environmental impacts of the proposed additions. That is what MARENA did in this case. The fact that such an EIA satisfied the applicable Nicaraguan requirements means that Nicaragua fulfilled its international obligation to assess environmental impacts,

---

<sup>469</sup> See *ibid.*, pp. 243-245, paras. 5.88-5.91.

because – as established in Chapter 3 – the scope and content of EIAs is determined based on the requirements of a State’s domestic law.

5.110 In sum, Costa Rica cannot establish a violation of Nicaragua’s EIA obligations under international law by pointing to alleged holes in the Environmental Impact Study prepared for the dredging project.<sup>470</sup> As should be clear from the foregoing description of Nicaragua’s robust, multi-faceted EIA Program, environmental impact assessments overseen by MARENA include far more than the preparation of just an EIS – an obligation of the project proponent, who must also prepare the Environmental Impact Document and facilitate a public consultation period. Environmental impact assessments must also include a substantial and rigorous independent evaluation by an intra-governmental team, which must not only review and ensure the adequacy of the EIS and Environmental Impact Document, but also visit the site, conduct meetings, review public and local comments, and collaborate to ensure that the project is fully vetted prior to authorization by MARENA. Thus, the proper question under international law is not whether the EIS for the project was complete and adequate (which it was) but rather, whether the full environmental impact assessment process satisfies Nicaragua’s obligations under international law. That is, the sufficiency of Nicaragua’s environmental impact assessment of its activities must be judged in its entirety. The only reasonable conclusion to be drawn from the foregoing description of the EIA that was conducted in this case is that

---

<sup>470</sup> See, e.g., *ibid.*, p. 210, paras. 2.25-2.26.

Nicaragua's environmental authorities did, in fact, adequately assess the environmental impact of the project.

5.111 Costa Rica's present complaints regarding the adequacy of Nicaragua's EIA process are striking in light of the words of its own then-Foreign Minister, Dr. René Castro Salazar, who, in September 2010, reported to the Environmental Commission of Costa Rica's Legislative Assembly that he saw "no major ecological problems in the dredging of the San Juan River that Nicaragua aims to carry out,"<sup>471</sup> in part because Costa Rica's own models had demonstrated that Nicaragua's dredging project "will not produce the alarming environmental and economic impact that some media have suggested."<sup>472</sup> Indeed, as the Costa Rican newspaper *La Nación* reported in September 2010, then-Foreign Minister Castro – who holds both a degree in civil engineering from the University of Costa Rica and a Ph.D. from Harvard University where he concentrated on environmental economics and natural resources – also provided assurances to his countrymen that "[t]here is an environmental impact study made by Nicaragua,"

---

<sup>471</sup> Esteban A. Mata, "Chancellery accepts Nicaraguan plan to dredge San Juan River," *La Nación*, Costa Rica, 8 September 2010, reproduced in "San Juan de Nicaragua River: The Truths that Costa Rica Hides," 29 November 2010 (hereinafter "Complete Nicaraguan White Book"), p. 39 (NCM, Vol. II, Annex 26).

<sup>472</sup> Statement by Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, 8 September 2010, pp. 5-6 (NCM, Vol. II, Annex 24), *see also* Complete Nicaraguan White Book, p. 39 (NCM, Vol. II, Annex 26).

and that he was “satisfied with Nicaragua’s technical environmental impact justifications” regarding the lack of risk posed by the dredging project.<sup>473</sup>

5.112 Finally, insofar as Costa Rica’s allegations of violations by Nicaragua of the international law on EIA stem from a purported duty to consult with other and/or to provide other States with information, documentation, or a chance to participate in the decision-making process, Costa Rica’s arguments fail, even without taking into account the special Treaty Law that binds both parties and prevails over any General International Law regulations. As explained below in Section B, to the extent any such obligations exist, they only arise when an EIA indicates there is likely to be significant transboundary harm. Barring such circumstances, there is no right of participation in another State’s EIA process. The bar is much higher than that, and – as established in this section – the threshold for requiring such notification, consultation, or document sharing was never crossed in this case, as Nicaragua’s rigorous EIA demonstrated that no significant (or any) harm would be caused to Costa Rica.

5.113 In short, it is simply not true that Nicaragua has violated its obligation under international law to conduct an environmental impact assessment.

---

<sup>473</sup> Esteban A. Mata, “Chancellery accepts Nicaraguan plan to dredge San Juan River,” *La Nación*, Costa Rica, 8 September 2010, reproduced in Complete Nicaraguan White Book, p. 39 (NCM, Vol. II, Annex 26).

### **C. NICARAGUA BREACHED NO OBLIGATIONS OF NOTIFICATION OR CONSULTATION**

5.114 Costa Rica begins its chapter on Nicaragua's alleged breaches of the environmental protection regime with an overview of purported obligations of Nicaragua to notify and consult with Costa Rica. This overview is of a general, abstract character, it ignores the Treaty stipulations and the Cleveland Award and is entirely without reference to the facts of the present case, leading Costa Rica to jump to conclusions that are entirely unfounded. This response to Costa Rica's overview will be based only on the authorities cited by Costa Rica and leave aside the rights of Nicaragua based on the 1858 Treaty and subsequent Awards. As will be seen, virtually every one of the authorities Costa Rica relies upon in support of its argument regarding notification and consultation requires as a precondition to any such obligation the possibility that either significant adverse transboundary effects may be caused or, in the case of the Ramsar Convention, changes in the character of the ecosystem concerned may occur. It is clear from section A above that Nicaragua's dredging activities do not come close to those thresholds. Nicaragua would ask that the Court bear this in mind as Costa Rica's argument is examined in more detail, below.

5.115 Returning to Costa Rica's overview, its rehearsal of the award in the Lake Lanoux arbitration<sup>474</sup> (which Costa Rica invokes but does not discuss at

---

<sup>474</sup> CRM, p. 200, para. 5.5, citing (1957) 24 ILR 101, 119.



all), Principle 19 of the Rio Declaration,<sup>475</sup> the ILC's Draft Articles on Prevention of Transboundary Harm from Hazardous Activities<sup>476</sup> and the Court's judgment in the Pulp Mills case<sup>477</sup> may be useful as a didactic exercise, but is entirely devoid of an explanation of how, or even whether, any of these sources is at all relevant to the present case.

5.116 Lake Lanoux deals with an inter-basin diversion of water (though one would not know it from Costa Rica's mere mention of the title of the case). Principle 19 of the Rio Declaration applies by its terms to "activities that may have a significant adverse transboundary environmental effect," something that is far from being the case in respect of any activities of Nicaragua, as was demonstrated in Section A, above. The ILC's draft articles, as their title clearly states, involve cases in which there is a risk of transboundary harm from "hazardous" activities, which Costa Rica does not allege are involved in this case, and which would entail obligations of notification and consultation that may not exist in other contexts such as the present one. And the Pulp Mills case involved allegations (ultimately found to be unproven) of toxic pollution of a river as a result of industrial processes, also something not involved here.

5.117 Therefore, when this review concludes with the statement that "[t]hus, . . . Nicaragua is under a general obligation to notify and consult Costa Rica in respect of any works on the San Juan which may result in harm to Costa

---

<sup>475</sup> *Ibid.*, p. 200, para. 5.5.

<sup>476</sup> *Ibid.*, p. 200, para. 5.6.

<sup>477</sup> *Ibid.*, pp. 200-201, para. 5.6.

Rican territory,” one can only admire the tremendous analytical leap from the general statements of principle taken from inapposite authorities to the conclusion drawn without the benefit of any supporting analysis. This is of course to say nothing of the fact that Costa Rica has not established, and does not establish, that there actually are “any works on the San Juan which may result in harm to Costa Rican territory”.

5.118 Costa Rica then proceeds to allege that “further, specific, obligations to [notify and consult Costa Rica] arise out of the Ramsar Convention and the Convention on the Conservation of Biodiversity and Protection of Priority Wildlife Areas in Central America . . . .” However, an examination of the actual content of the relevant provisions of these instruments in the context of Nicaragua’s conduct reveals that Nicaragua was, and is, under no such obligations.

5.119 First, as to the Ramsar Convention, Nicaragua would begin by reaffirming its commitment to this agreement, as manifested by the large area of Nicaraguan territory that the Government has declared to be a Ramsar site (the Refugio de Vida Silvestre Río San Juan) and, specifically, by the care taken to protect that site during the permitting process for the dredging program, as detailed in Section A, above.

5.120 The convention takes what may be termed a soft approach to protecting and preserving wetlands of international importance. This is not surprising, since the fundamental purpose of the convention is to encourage states

to “designate suitable wetlands within [their] territor[ies] for inclusion in a List of Wetlands of International Importance”<sup>478</sup> in order to “stem the progressive encroachment on and loss of wetlands now and in the future”.<sup>479</sup>

5.121 However, it should also be borne in mind that the object of the Ramsar Convention is not to make every wetland designated pursuant to its provisions a no-man’s land. The agreement does not by any means prohibit human activities on such sites. Thus when considering provisions of this instrument it is of critical importance that they be viewed in the context of Article 2(3) of the convention, which provides that: “The inclusion of a wetland in the List [of Wetlands of International Importance] does not prejudice the exclusive sovereign rights of the Contracting Party in whose territory the wetland is situated.”<sup>480</sup> Thus, to the extent that Costa Rica alleges violations of the convention relating to the territory of Nicaragua, this would be a matter for Nicaragua, not Costa Rica, to evaluate.

5.122 Costa Rica relies on Article 5(1) of the convention which, inter alia, requires that the Contracting Parties “consult with each other about implementing obligations arising from the Convention . . . .”<sup>481</sup> This is a far cry from a general requirement of consultation, let alone of notification, which is not mentioned, in respect of activities in a border area. Yet, without the slightest

---

<sup>478</sup> Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, Iran, 1971 (hereinafter “Ramsar Convention”), Art. 2(1) (CRM, Vol. II, Annex 14).

<sup>479</sup> *Ibid.*, Preamble.

<sup>480</sup> *Ibid.*, Art. 2(3).

<sup>481</sup> CRM, p. 202, para. 5.9.

attempt to show how this provision could apply to the facts of the present case, or to which of the facts it might apply, Costa Rica suddenly refers to “[t]he underlying obligation on parties to instruments dealing with environmental issues that traverse national boundaries . . . that no unilateral activity can take place on a site where damage may be inflicted onto a shared ecosystem.”<sup>482</sup>

5.123 This breathtaking proposition, which would doubtless come as a complete surprise to most States, not least to the parties to the Ramsar Convention in light of the above-quoted Article 2(3) thereof, is entirely unsupported. Costa Rica does reproduce a passage from the Pulp Mills judgment immediately prior to stating the proposition, but (a) characterizes it as dealing with Article 36 of the Uruguay River treaty when in fact it concerns Article 7 of that agreement, relating to notification rather than to an obligation not to “inflict [damage] onto a shared ecosystem,” and (b) does not otherwise show how the passage substantiates Costa Rica’s sweeping and far-reaching proposition.

5.124 Undaunted, Costa Rica then proceeds to build an elaborate procedural castle on this foundation of air. Thus, according to Costa Rica, “[w]here there is a risk that such damage [to a shared ecosystem] may occur, there is a duty to consult and mitigate.”<sup>483</sup> Again, Costa Rica provides no authority to support this bolt out of the blue, contenting itself with the bare declaration that “there is” such a duty. Nor does Costa Rica identify the source of the alleged

---

<sup>482</sup> *Ibid.*, p. 203, para. 5.12.

<sup>483</sup> *Ibid.*

obligation to mitigate, say whether such a “duty” would apply if damage to the “shared ecosystem” would not affect areas outside the state causing the damage, or explain how something that “may occur” is to be mitigated.

5.125 But Costa Rica ploughs ahead regardless. It states that Nicaragua has not complied with this invented obligation, because Nicaragua “has completely failed to consult” on the planned dredging works, has “failed to provide Costa Rica with a copy of the Environmental Impact Study (‘EIS’) produced in 2006,” and has “failed to notify the Ramsar Secretariat of any changes that the wetlands along the proposed dredging path are likely to suffer.”<sup>484</sup> These allegations, unsupported though they are, call for brief responses:

- Since Costa Rica has not shown that Nicaragua’s dredging activity may adversely affect it,<sup>485</sup> it is difficult to see what the source of such an obligation of consultation might be;
- Similarly, Costa Rica has not even attempted to establish an obligation to provide it with a copy of an environmental impact study or assessment; and
- Article 3(2) (not Article 8(2)(c) as stated by Costa Rica) of the Ramsar Convention requires only that parties inform the continuing bureau of any actual or likely changes to the “ecological character of

---

<sup>484</sup> CRM, pp. 203-204, para. 5.12.

<sup>485</sup> See Section C, *infra*.

any wetland in its territory and included in the List . . . .”<sup>486</sup> Since according to Nicaragua’s detailed and thorough environmental impact assessment of the dredging program no such changes to the “ecological character” of the listed wetland in Nicaraguan territory has occurred, is occurring or may occur, Nicaragua has no duty to inform the Ramsar Secretariat, or permanent bureau. It follows that Costa Rica in fact has no “right to be in turn informed by the Ramsar Secretariat of these proposed changes . . . as stipulated in Article 3.2 [*sic* – Article 8(2)(d)]”, contrary to what Costa Rica contends.<sup>487</sup>

5.126 Turning to the Agreement on the Conservation of Biodiversity,<sup>488</sup> Costa Rica argues that this treaty “establishes the obligation of information sharing” in its Article 13(g), which however provides only that the parties “should” facilitate the exchange of unspecified kinds of information – an indication, perhaps a guideline, regarding desired behavior, but hardly the statement of an obligation.

5.127 Costa Rica again dresses up precatory language as an obligation when it states that Article 33 of the Agreement (which Costa Rica refers to as the “Convention”), providing that “[t]he exchange of information, based on

---

<sup>486</sup> Ramsar Convention, Art. 3(2) (CRM, Vol. II, Annex 14).

<sup>487</sup> CRM, p. 204, para. 5.12.

<sup>488</sup> Convention for the Conservation of the Biodiversity and Protection of the Main Wild Life Sites in Central America, Managua, 5 June 1992 (hereinafter “Central American Biodiversity Convention”) (CRM, Vol. II, Annex 23).

reciprocity, should be promoted . . . ,”<sup>489</sup> “establishes the obligation to share information . . . .”<sup>490</sup> No doubt the exchange of information, especially when reciprocated, is a worthy goal, as recognized in Article 33. But while that provision recommends the “promotion” of such exchanges, it does not come close to requiring them.

5.128 Costa Rica then turns to what it calls “Breach of Duties to Notify and Consult”.<sup>491</sup> Having utterly failed to make out any such duties as just demonstrated, Costa Rica would require divine intervention to establish breaches thereof. Not surprisingly, such intervention was not to be forthcoming.

5.129 Costa Rica refers first to Article 5(1) of the Ramsar Convention, which has been shown not to establish a general obligation of consultation. Thus, Nicaragua cannot have “breached its obligations under Article 5(1) by failing to consult with Costa Rica about the effects of its dredging program and by not endeavouring to coordinate with Costa Rica on its planned works . . . .”<sup>492</sup> There simply is no such obligation to consult contained in that provision, which as has been seen merely requires Parties to “consult with each other about implementing obligations arising from the Convention”.<sup>493</sup> As to coordination, Article 5(1) provides that the Parties “shall at the same time endeavor to coordinate and support present and future policies and regulations concerning the conservation of

---

<sup>489</sup> *Ibid.*, Art. 33.

<sup>490</sup> CRM, p. 205, para. 5.15.

<sup>491</sup> *Ibid.*, pp. 206-211, paras. 5.17-5.27.

<sup>492</sup> *Ibid.*, p. 206, para. 5.17.

<sup>493</sup> Ramsar Convention, Art. 5(1) (CRM, Vol. II, Annex 14).

wetlands and their flora and fauna.”<sup>494</sup> This is hardly an obligation even to “endeavor” to coordinate with Costa Rica “on planned works”. It is an obligation to endeavor to coordinate policies and regulations in the field of wetlands, nothing more.

5.130 Costa Rica further contends that Nicaragua breached Article 5(1) by failing “to inform the Ramsar Secretariat” of its dredging program “and construction of the artificial caño”<sup>495</sup> – despite the fact that (a) Article 5(1) contains no obligation to inform the Ramsar Secretariat/permanent bureau, and even Article 3(2), which Costa Rica does not cite but which actually does generally address the question, contemplates only provision of information concerning changes in the “ecological character” of Listed wetlands, as seen above, of which there will be none as a result of Nicaragua’s dredging program as shown in Section A above, and (b) the caño in question, as shown in Chapter 6 is anything but “artificial”.

5.131 Costa Rica then launches into a series of complaints about Nicaragua’s alleged failure to provide it with information about the dredging project, beginning in 2006, when the project was still in its early planning stages. There are two general but sufficient responses to these complaints. First, even assuming, quod non, that there were an obligation to provide such information, it could not arise until Nicaragua had something concrete of which to notify Costa

---

<sup>494</sup> *Ibid.*

<sup>495</sup> CRM, p. 206, para. 5.17.



Rica. This was not the case until several years later, as shown in Section A of the present Chapter. And second, if State A determines that a project it is planning will have no significant adverse transboundary impact on State B, it has no obligation to notify State B of its plans. This was shown in Chapter 3; relevant authorities will be recalled briefly here for the Court's convenience.

5.132 Nicaragua does not take issue with the general principle stated in Article 19 of the Rio Declaration, cited by Costa Rica,<sup>496</sup> that States are under an obligation to notify and consult with potentially affected States “on activities that may have a significant adverse transboundary environmental effect”.<sup>497</sup> But as shown elsewhere in the present Chapter,<sup>498</sup> Nicaragua's very modest dredging program does not begin to approach that threshold. Its effects would be best described as *de minimis* rather than “significant”.

5.133 This same threshold may be found in other instruments, such as the ILC's Draft Articles on Prevention of Transboundary Harm from Hazardous Activities adopted in 2001, Article 8(1) of which provides:

If the assessment referred to in article 7 indicates *a risk of causing significant transboundary harm*, the State of origin shall provide the State likely to be affected with timely notification of the risk and the assessment and shall transmit

---

<sup>496</sup> *Ibid.*, p. 200, para. 5.5.

<sup>497</sup> *Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN doc. A/CONF.151/26 (vol. I), Annex I, Principle 19 (emphasis added).

<sup>498</sup> See Section D.1, *infra*.

to it the available technical and all other relevant information on which the assessment is based.<sup>499</sup>

5.134 Again, as shown in Section A above, Nicaragua’s modest dredging program entails no “risk of causing significant harm” to Costa Rica, as indicated in Nicaragua’s EIS. Thus, even assuming this provision were applicable, *quod non*, Nicaragua would have no obligation to provide Costa Rica with “timely notification of the risk and the assessment” or to “transmit to it the available technical and all other relevant information on which the assessment is based.”

5.135 Costa Rica also purports to instruct Nicaragua about the need to conduct an environmental impact assessment,<sup>500</sup> when it conducted none itself for its road project, which entails substantial domestic and transboundary environmental harm as recognized on both sides of the border.<sup>501</sup> But, of course, as amply demonstrated in Section A above, Nicaragua did in fact conduct an exhaustive EIA concerning its rather minor dredging program. This EIA revealed

---

<sup>499</sup> Article 8(1) of Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 159 (emphasis added); see also the ILC Commentary on the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 160, commentary on Art. 8, para. 6.

<sup>500</sup> CRM, p. 208-210, paras. 5.22-525.

<sup>501</sup> See Nicaragua’s *Application* of 21 December 2011 in the case concerning *Construction of a Road in Costa Rica along the San Juan River* and the many statements from officials and technical groups in Costa Rica acknowledging the seriousness of the threats posed by the road and the lack of proper environmental impact assessment preceding its construction, discussed and referenced in Chapter 4.

that, as Costa Rica's own study concluded,<sup>502</sup> the dredging project would at most have only minimal effects on Costa Rica, giving rise to no obligation to notify or consult with Costa Rica.<sup>503</sup>

5.136 Finally, even if Nicaragua were to undertake a dredging program to return the situation of the river to that existing in 1858, the obligations of Nicaragua vis a vis Costa Rica would be determined by that Treaty and the Cleveland Award.

**D. NICARAGUA IS IN FULL COMPLIANCE WITH WHAT  
COSTA RICA CALLS THE “ENVIRONMENTAL  
PROTECTION REGIME”**

5.137 In a long section of Chapter 5 of its Memorial,<sup>504</sup> Costa Rica contends that “Nicaragua has breached its obligations in respect of the substantive environmental protection regime established for the protection of the fragile San Juan river basin.”<sup>505</sup> This from a State that has ravaged the right bank of the San Juan River – and as a result, the river itself – through its hastily executed road project that was launched without any environmental impact assessment or notification to Nicaragua, whose river bore and continues to bear the brunt of the project's impacts.

---

<sup>502</sup> See Statement by Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, 8 September 2010, pp. 5-6 (NCM, Vol. II, Annex 24).

<sup>503</sup> See Section A, *supra*.

<sup>504</sup> CRM, pp. 211-225.

<sup>505</sup> *Ibid.*, p. 211, para. 5.28.

5.138 Nicaragua has no difficulty with Costa Rica’s assertion of the existence of an obligation not to cause transboundary harm.<sup>506</sup> It is in the application of this principle that Costa Rica runs into difficulty. Indeed, the entire section on “the environmental protection regime” consists of a recitation of authorities supporting, in one way or another, the principle just referred to; there is virtually<sup>507</sup> no application of those authorities to the facts. The following section (“D. Environmental Damage Caused by Nicaragua”<sup>508</sup>) is the mirror image: all facts and no law. This style of argumentation fails to link damage with legal prohibitions thereof, and thus to establish any breaches of obligations incumbent upon Nicaragua.

5.139 Nicaragua will show in the following section of this Chapter that its activities have in fact caused Costa Rica no legally significant environmental harm and will not do so. The present section will briefly explain why Costa Rica’s abstract invocation of various authorities is unavailing: even if Costa Rica had linked the authorities with concrete actions of Nicaragua, no breaches would result. This response also leaves aside the rights of Nicaragua under the 1858 Treaty and subsequent Awards and analyses the environmental tactics invoked on their own merits.

---

<sup>506</sup> *Ibid.*, p. 211, para. 5.29.

<sup>507</sup> “Virtually” because occasionally Costa Rica makes a half-hearted attempt to link what it contends is conduct (or the lack thereof) by Nicaragua with an alleged prohibitory or mandatory rule, such as in the case of the Ramsar Convention, discussed below. Otherwise, all that can be found are a few vague references to alleged “obligations” that Costa Rica contends have been “breached by Nicaragua’s actions, as set out above.” *Ibid.*, p. 218, para. 5.42. Which specific actions, and where they are set out, are left for conjecture.

<sup>508</sup> *Ibid.*, p. 226.

## 1. Nicaragua Is in Full Compliance with the Ramsar Convention

5.140 Costa Rica leads with the Ramsar Convention, which has already been shown above to take a soft approach to the protection of Wetlands of International Importance, especially as Waterfowl Habitat. Costa Rica thus has an uphill battle to make out actual breaches of the convention's provisions, especially in view of Nicaragua's commitment to the values that underlie the convention.

5.141 After another long, didactic and abstract introduction,<sup>509</sup> Costa Rica devotes only one paragraph to actions of Nicaragua that are allegedly "clearly contrary to the object and purpose" of the convention and to Nicaragua's alleged breach of Article (8)(2)(c) of the convention by "fail[ing] to notify the Ramsar Secretariat of its intention to undertake these works and of their estimated impact on those wetlands . . . ."<sup>510</sup>

5.142 With regard to the former, evidently Costa Rica cannot find a single provision of the convention that Nicaragua's dredging works would violate, because it is reduced to alleging only that those works are contrary to the object and purpose of the convention. While, puzzlingly, Costa Rica says that the object and purpose of the convention is "set out in its Articles 2 to 4",<sup>511</sup> one would

---

<sup>509</sup> *Ibid.*, pp. 213-216, paras. 5.33-5.38.

<sup>510</sup> *Ibid.*, p. 216, para. 5.39.

<sup>511</sup> *Ibid.*, p. 216, para. 5.39.

normally look to a treaty's preamble to ascertain its object and purpose.<sup>512</sup> The preamble of the Ramsar Convention reads in its entirety as follows:

The Contracting Parties,

RECOGNIZING the interdependence of Man and his environment;

CONSIDERING the fundamental ecological functions of wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl;

BEING CONVINCED that wetlands constitute a resource of great economic, cultural, scientific, and recreational value, the loss of which would be irreparable;

DESIRING to stem the progressive encroachment on and loss of wetlands now and in the future;

RECOGNIZING that waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource;

BEING CONFIDENT that the conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action;

Have agreed as follows . . . .<sup>513</sup>

5.143 It is difficult to identify “the” object and purpose of the convention from these preambular paragraphs. However, it would seem that the conservation

---

<sup>512</sup> According to Sir Gerald Fitzmaurice, a special rapporteur for the ILC's work on the Law of Treaties:

Although the objects of a treaty may be gathered from its operative clauses taken as a whole, the preamble is the normal place in which to embody, and the natural place in which to look for, an express or explicit general statement of the treaty's objects and purposes. Where these are stated in the preamble, the latter will, to that extent, govern the whole treaty..

Sir Gerald Fitzmaurice, "The Law and Procedure of the International Court of Justice 1951-4: Treaty Interpretation and other Treaty Points", 33 *Brit. Y.B. Int'l L.* p. 203, at p. 228 (1957).

<sup>513</sup> Ramsar Convention, Preamble (CRM, Vol. II, Annex 14).

of wetlands, as far as is consistent with their interdependence with human activities (“the interdependence of Man and his environment”), would be a general objective. By designating a wetland for inclusion in the Ramsar list, and one in which there is little human activity, Nicaragua would seem to be promoting, rather than acting inconsistently with, a chief object and purpose of the convention.

5.144 Costa Rica refers specifically to “Nicaragua’s plan to undertake substantial dredging works that would impact on two Ramsar protected sites without the necessary environmental safeguards in place, and the felling of primary forest as well as the construction of an artificial caño through a Ramsar protected site located on foreign territory”<sup>514</sup> as being “contrary to the object and purpose of the Ramsar Convention . . . .”<sup>515</sup> This allegation is pure invention, for the following reasons:

- The dredging works are anything but “substantial”;
- There is no showing that the dredging “would impact on two Ramsar protected sites”, or even if, *quod non*, it would, how this would be contrary to the Ramsar Convention’s object and purpose;
- As shown in detail in Section A of this Chapter, Nicaragua did in fact have “the necessary environmental safeguards in place”;

---

<sup>514</sup> CRM, p. 216, para. 5.39.

<sup>515</sup> *Ibid.*

- “[F]elling of primary forest” was actually the removal of individual trees, not a “forest”, an activity necessary to the clearing of navigational obstructions from the channel, or caño, that marks the border, and as explained earlier, one that, due to Nicaraguan legal requirements noted in Section 1, resulted in the replacement of every tree felled by 10 new ones of species native to the area; the need to navigate through a wetland is an example of “the interdependence of Man and his environment” mentioned in the convention’s first preambular paragraph; and
- The reference to “the construction of an artificial *caño* through a Ramsar protected site located on foreign territory” is pure fabrication in several respects, including that the *caño* was “construct[ed]”, that it is “artificial”, and that the “Ramsar protected site” through which it runs is “located on foreign territory”. In summary, the caño is natural, not artificial, as demonstrated in Chapter 6, and only the portion of Costa Rica’s *Humedal Caribe Noreste* abutting the right bank of the caño is in “foreign territory”.

5.145 As to actual breaches, Costa Rica attempts to identify only one, to wit, Nicaragua’s alleged “fail[ure] to notify the Ramsar Secretariat of its intention to undertake [the] works [in question] and of their estimated impact on those



wetlands . . . ,”<sup>516</sup> which Costa Rica contends is “a breach of Article 8(2)(c) of the Ramsar Convention.”<sup>517</sup> This attempt, like Costa Rica’s others, fails.

5.146 Paragraph 8(2)(c) provides as follows:

2. The continuing bureau duties shall be, *inter alia*:

c) to be informed by the Contracting Parties of any changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3. . . .

5.147 Thus, this obligation is one that is, by its terms, incumbent upon the continuing bureau of the Ramsar Convention, not upon States Parties.<sup>518</sup> But even if, quod non, it were incumbent on the parties to inform the continuing bureau of such changes by virtue of this provision, the alterations would have to be major and sweeping in order to constitute changes in the “ecological character” of a wetland. No changes of such a fundamental nature are involved here, as shown in Section 1 of the present Chapter.

5.148 Costa Rica’s parting shot with regard to the Ramsar Convention is that Nicaragua has not “sought to consult with the Ramsar Secretariat on mechanisms by which it might minimize, or compensate for, the damage that it is causing to those wetlands.” Costa Rica cites no provision setting forth such an

---

<sup>516</sup> *Ibid.*

<sup>517</sup> *Ibid.*

<sup>518</sup> As indicated earlier, it is actually Article 3(2) that places an obligation on the parties to inform the bureau of such changes: “Information on such changes shall be passed without delay to the organization or government responsible for the continuing bureau duties specified in Article 8.” Ramsar Convention, Art. 3(2) (CRM, Vol. II, Annex 14). But what is said above, following this footnote, concerning Article 8(2)(c) applies to that provision as well: the dredging project will not have such fundamental effects as to cause “changes in the ecological character of” either of the wetlands involved.

obligation, for good reason: none is to be found in the convention. Nor is any recommendation to that effect to be found there. As explained in Section A of this chapter, Nicaragua's own laws require just such minimization of or compensation for any adverse impacts, let alone "damage", that might be caused by a proposed project, and such was in fact required in respect of the proposed dredging project. There was no need to consult with the Ramsar Secretariat concerning these measures that Nicaragua had already undertaken.

## **2. Nicaragua Is in Full Compliance with the SI-A-PAZ and Central American Biodiversity Agreements**

5.149 Costa Rica then turns to the "SI-A-PAZ" agreement<sup>519</sup> and the Convention on the Conservation of Biodiversity and Protection of Priority Wildlife Areas in Central America.<sup>520</sup> These two regional agreements represent worthy efforts to establish an international system of protected areas and to protect biological diversity and priority wildlife areas, respectively. Given the stark difference in levels of development of the left (Nicaraguan) and right (Costa Rican) banks of the San Juan River, punctuated with an exclamation point by Costa Rica's new and environmentally disastrous road, it is difficult to see from even the most casual observation how Nicaragua could be in breach of either of these agreements and Costa Rica not.

---

<sup>519</sup> Agreement over the Border Protected Areas between Costa Rica and Nicaragua (International System of Protected Areas for Peace [SI-A-PAZ] Agreement), Puntarenas, 15 December 1990 (hereinafter "SI-A-PAZ Agreement") (CRM, Vol. II, Annex 22).

<sup>520</sup> Central American Biodiversity Convention, (CRM, Vol. II, Annex 23). The title of the convention is translated in two different ways in the Annex.

5.150 The SI-A-PAZ Agreement between Costa Rica and Nicaragua of 15 December 1990 consists of four brief paragraphs. Contrary to what Costa Rica suggests,<sup>521</sup> the agreement imposes no obligations on the contracting parties concerning activities in or affecting the International System of Protected Areas for Peace in the border area of Costa Rica and Nicaragua. In the agreement's four paragraphs, the parties agree to (i) declare the International System of Protected Areas for Peace "the highest priority conservation project in both countries", (ii) request that the International Union for the Conservation of Nature (IUCN) make a similar declaration, (iii) "request the support of the Scientific and International Conservationist community, and that of the donor countries and organizations, in order to implement the binational, homologous and national projects that the Binational Commission of the SI-A-PAZ has identified for both countries", and (iv) request that the IUCN's "Regional Office for Central America continue its technical and financial support for the SI-A-PAZ."<sup>522</sup> Positive and laudable steps to advance conservation and sustainable development of this system of protected areas, to be sure, but not ones that require the parties to do or refrain from doing anything specific in those areas.

5.151 Costa Rica, however, states as follows concerning this agreement:

In the spirit of this agreement, Nicaragua ought not to carry out any activities that would imply the deterioration of the natural resources, including its forests, wetlands, rivers and lagoons. This

---

<sup>521</sup> CRM, p. 218, para. 5.42.

<sup>522</sup> SI-A-PAZ Agreement (CRM, Vol. II, Annex 22).

obligation has been breached by Nicaragua's actions, as set out above.<sup>523</sup>

5.152 It is as if Costa Rica were reading a different text than the one contained in its Annex. Even if, *quod non*, Nicaragua were carrying out activities of the kind referred to by Costa Rica, this would breach no provision of the SI-A-PAZ agreement. But, of course, Nicaragua is not carrying out such activities. The discussion of Nicaragua's EIS process regarding the dredging program in Section A above should lay to rest any notion that Nicaragua would proceed blindly ahead with development projects with no regard for the environment – as Costa Rica has done, entirely unabashedly, with its road project.

5.153 Furthermore, Costa Rica continues to play fast and loose with the content of international agreements when it says “[t]his obligation has been breached by Nicaragua's actions, as set out above.” No obligation under the agreement is identified – understandably, since there is none – and the specific actions of Nicaragua that are alleged to have breached this mythical obligation are, once again, left for conjecture.

5.154 Costa Rica continues this approach in its deployment of the Central American Biodiversity Convention.<sup>524</sup> This instrument reads more like a modern environmental agreement, but like such treaties, builds in considerable flexibility regarding the obligations it contains. Those obligations are of a highly general nature, which is appropriate for an agreement of this character. Costa Rica's

---

<sup>523</sup> CRM, p. 218, para. 5.42.

<sup>524</sup> *Ibid.*, pp. 218-219, paras. 5.43-5.45.

courage in attempting to find breaches of the agreement by Nicaragua, therefore, can only be viewed with wonder.

5.155 The built-in flexibility of the obligations under the agreement is on full display in Article 10, set forth in *extenso* by Costa Rica.<sup>525</sup> Curiously, after boasting that “Article 10 of the Convention outlines, with remarkable clarity, the obligations of each contracting State,”<sup>526</sup> Costa Rica says nothing about which of those clear obligations it believes that Nicaragua has breached.

5.156 What Costa Rica does not set forth, no doubt deliberately, is Article 2 of the treaty, which provides that: “The signatories to this Agreement confirm their sovereign right to conserve and exploit their own biological resources in accordance with their own policies and regulations” in a manner consistent with the sustainable conservation and use of such resources and without causing “any damage to the biological diversity” of their countries. Certainly Nicaragua’s dredging program is an exercise of her sovereign rights, within her own territory, and would fit comfortably within the requirements of this article as the program will not cause damage to the biological diversity of the nation.

---

<sup>525</sup> *Ibid.*, p. 219, para. 5.44. That provision reads as follows:

Each member state of this regional framework makes a commitment, in accordance with its capacities, national programmes and priorities, to take the necessary measures to ensure the conservation of biodiversity, and its sustainable use, as well as the development of its components within its national jurisdiction, and to cooperate, as much as possible, in border and regional actions.

Central American Biodiversity Convention, Art. 10 (CRM, Vol. II, Annex 23).

<sup>526</sup> CRM, p. 219, para. 5.44.

5.157 The net effect of these and other provisions of the agreement is a general and commendable intention to conserve biodiversity and protect priority wildlife areas in Central America. The agreement's generality and flexibility make it unsurprising that Costa Rica fails to identify a specific alleged breach of this treaty by Nicaragua. Instead, Costa Rica contents itself with the following paragraph, which concludes the section of its Memorial on "The Environmental Protection Regime":

It is clear that a significant regime of substantive environmental protection exists, a regime which Nicaragua is obliged to give effect to. However, it is clear – for the reasons already given – that Nicaragua has failed in its obligations in this respect.<sup>527</sup>

5.158 This is the sum total of what Costa Rica is able to identify to this point in respect of alleged Nicaraguan breaches of "the environmental protection regime". Once again, there are no references to concrete Nicaraguan actions or alleged failures to act. There is not even a reference to the concrete "obligations" Nicaragua is alleged to have breached. It may only be concluded from this section of the Memorial that Nicaragua has committed no breaches at all of these aspects of the "environmental protection regime" laid out by Costa Rica.

### **3. Nicaragua's Activities Are Fully Consistent with the Treaty of Limits as Interpreted by the Cleveland Award**

5.159 The final part of Costa Rica's discussion of "the environmental protection regime" is devoted to the "Treaty of Limits as interpreted by the

---

<sup>527</sup> *Ibid.*, p. 219, para. 5.46.

Cleveland Award”.<sup>528</sup> While President Cleveland would no doubt have been surprised to learn that a discussion of his award would appear under such a heading, and while the award and the discussion of it in this subsection in fact have nothing to do with protection of the environment per se, Costa Rica blithely tacks it onto the end of the section on the environmental protection regime, evidently not having found any other place to put it.

5.160 The actual purpose of this rather lengthy subsection<sup>529</sup> appears to be to provide a platform for Costa Rica to discuss what it calls Nicaragua’s “harm first and pay later” argument.<sup>530</sup> As pointed out in Chapter 3,<sup>531</sup> Costa Rica has made it apparent that what it really wants is a veto over Nicaragua’s improvement works in the lower San Juan. It holds this sword over Nicaragua’s head, threatening to release it unless Nicaragua provides what amounts to absolute guarantees that Costa Rica will suffer no harm as a result of the improvement works.

5.161 There is no support for such claims, either in the Cleveland Award or in general international law.<sup>532</sup> In fact, as demonstrated above in Chapter 4,

---

<sup>528</sup> *Ibid.*, p. 219, paras. 5.47, *et seq.*

<sup>529</sup> The subsection consumes over 6 pages and 13 paragraphs of the Memorial.

<sup>530</sup> CRM, p. 224, para. 5.56.

<sup>531</sup> See paras 3.42 – 3.45, Chapter 3, *supra*.

<sup>532</sup> It would serve no purpose to repeat here the discussion in Chapter 3 of general international law applicable to Costa Rica’s veto argument, referenced in the preceding footnote. Reference might also be made in this connection to the *Lake Lanoux Arbitration*, in which the tribunal warned against a situation in which “a State which ordinarily is competent has lost the right to act alone as a consequence of the unconditional and discretionary opposition of another State. This is to admit a ‘right of consent,’ a ‘right of veto,’ which at the discretion of one State paralyzes another State’s exercise of its territorial competence. For this reason, international practice prefers to resort to less

Costa Rica made the same argument in the Cleveland arbitration in response to a set of Nicaragua's questions concerning points of doubtful interpretation. President Cleveland clearly and emphatically rejected Costa Rica's argument.<sup>533</sup> Since this history sheds light on the nature and validity of Costa Rica's contentions in the present case it will be briefly recapitulated in the following paragraphs.

5.162 Nicaragua's sixth point of doubtful interpretation was as follows:

6. Can Costa Rica prevent Nicaragua from executing, at her own expense, the works of improvement? Or, shall she have any right to demand indemnification for the places belonging to her on the right bank which may be flooded or damaged in any other way in consequence of the said works?<sup>534</sup>

5.163 Costa Rica's written response to this question is illuminating:

Referring now to Interrogatory No. 6, I shall state positively that Costa Rica has the right to prevent Nicaragua from executing, at her own cost, the works to which she alludes, whenever undertaken without consideration of the rights which belong to Costa Rica . . .

Costa Rica can, therefore, prevent any place on the river bank which belongs to her from being occupied. And to prevent one thing from being done is something more than asking indemnification for the occupation and for the damages done in consequence thereof, whether through the flooding of lands, or by destruction of the river front, or for any other reason.

---

extreme solutions . . . ." *Lake Lanoux Arbitration (France v. Spain)*, Award, 16 November 1957, *International Law Reports*, Vol. 24, p. 128, para. 11.

<sup>533</sup> See *infra*, paras. 4.38 – 4.40.

<sup>534</sup> Whether Costa Rica is bound to co-operate in the preservation and improvement of the San Juan river and the Bay of San Juan, and in what manner; and whether Nicaragua can undertake any work without considering the injury which may result to Costa Rica. Argument on the Question of the validity of the Treaty of Limits between Costa Rica and Nicaragua and other supplementary points connected with it, Washington, Gibson Bros., 1887, p. 167 (NCM, Vol. II, Annex 5).



Nicaragua cannot do any work either on the river or bay, whether for the improvement or for the preservation of the same, without first giving notice to Costa Rica and obtaining her consent.<sup>535</sup>

5.164 This is thus the same argument Costa Rica is making now. For example, Costa Rica says that it has requested that Nicaragua provide:

all the necessary studies . . . to make sure that Costa Rica's territory would not be harmed. Costa Rica does not oppose Nicaraguan works of improvement, provided no material harm will be suffered by Costa Rica. . . . Under these circumstances, Nicaragua's unilateral program of dredging and related works is unlawful, and Costa Rica has the right to the suspension of those works until it is made clear that Costa Rica's territory, including the Colorado River, will not be harmed.<sup>536</sup>

5.165 In his response to Costa Rica's argument that it had the right to prevent Nicaragua from executing works to improve navigation on the river, President Cleveland left no doubt:

6. The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement, provided such works of improvement do not result in the occupation or flooding of Costa Rica territory, or in the destruction or serious impairment of the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same. The Republic of Costa Rica has the right to demand indemnification for any places belonging to her on the right bank of the River San Juan which may be occupied without her consent, and for any lands on the same bank which may be flooded or damaged in any other way in consequence of works of improvement.<sup>537</sup>

---

<sup>535</sup> *Ibid.*, p. 167.

<sup>536</sup> CRM, p. 225, paras. 5.57 & 5.58. Similarly, Costa Rica insists that it has the "right to resist any damage or harm that may be caused to its territory." *Ibid.*, p. 224, para. 5.53.

<sup>537</sup> Award of the President of the United States in regard to the Validity of the Treaty of Limits between Costa Rica and Nicaragua of 15 July 1858, Decision of 22 March 1888, 28 *U.N.R.I.A.A.* p. 208, at p. 210, 2007.

5.166 “The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing . . . works of improvement . . . .” Nothing could be clearer. But Costa Rica clearly cannot tolerate this idea, because it goes to great pains to interpret the word “provided” in President Cleveland’s ruling effectively to mean “prevent”: “President Cleveland’s emphatic use of the word ‘provided’ is crucial; it refers to the preconditions underpinning Nicaragua’s right to execute works of improvement on the San Juan.”<sup>538</sup> There follows a litany of definitions of the word “provided”, which shed no new light on a question that was not in doubt in the first place.<sup>539</sup>

5.167 Costa Rica characterizes Nicaragua’s position as though it were that Nicaragua can cause harm to Costa Rica through its works of improvement, anywhere, at any time, and to any extent, so long as Nicaragua pays for it: “Nicaragua contends that it has the right to inflict harm, ‘buying it off’ with the payment of compensation.”<sup>540</sup> Nicaragua has never contended that it had *carte blanche* to cause unlimited harm to Costa Rica so long as indemnification was provided. The position is much more straightforward than that, and is described so precisely in President Cleveland’s response to Nicaragua’s sixth question that no further explanation is needed.

5.168 But such is Costa Rica’s fear of Nicaragua’s modest dredging program that Costa Rica cannot help but resort to utter hyperbole:

---

<sup>538</sup> CRM, p. 221, para. 5.49.

<sup>539</sup> *Ibid.*, p. 221, para. 5.50.

<sup>540</sup> *Ibid.*, p. 222, para. 5.52.

At stake is not only the current dredging program but the entire border regime. Permitting Nicaragua to harm first and pay later would open the door for new depredations against Costa Rica, as Nicaragua has indeed foreshadowed. The result would be a conflicted border region, open to any form of transboundary harm accompanied by the promise of later payment, if at all. This is to rewrite the entire border regime at Costa Rica's expense.<sup>541</sup>

5.169 What is being rewritten by this argument is President Cleveland's award. The Court should reaffirm it, rejecting Costa Rica's apocalyptic invocations of doom.

**E. NICARAGUA'S ACTIVITIES HAVE CAUSED NO DAMAGE  
TO COSTA RICA AND POSE NO RISK OF FUTURE HARM**

5.170 Having failed to establish any violation by Nicaragua of its international obligations regarding the assessment of environmental impacts, notification and consultation, or the so-called "Environmental Protection Regime," Costa Rica dedicates the final section of Chapter 5 of its Memorial to an attempt at establishing harms that allegedly "have been, are being, or will continue to be caused to Costa Rican territory" as either the direct or indirect result of "Nicaragua's actions in the border region."<sup>542</sup> Indeed, despite the section's title, "Environmental Damage Caused by Nicaragua", it is the supposed risk of future harm that is the primary focus of both this section of Costa Rica's Memorial and many of the scientific annexes cited within it, with substantial

---

<sup>541</sup> *Ibid.*, pp. 224-225, para. 5.56

<sup>542</sup> *Ibid.*, p. 226, para. 5.62, *et seq.*

emphasis being placed on hypothetical future risks that, it is alleged, might come into being if certain unplanned eventualities were to occur.

5.171 In reality, Nicaragua's activities are modest in scope. They have not caused Costa Rica any harm, and they will not do so in the future.

### **1. The Dredging Project**

5.172 Costa Rica is mistaken when it alleges that Nicaragua's dredging program did not "comply with its own technical and procedural requirements pertaining to environmental protection."<sup>543</sup> To the contrary, Nicaragua's activities in and around the San Juan River have been conducted in full compliance with the applicable environmental laws and authorizations. Indeed, EPN has exceeded the environmental requirements contained in its environmental authorizations, having by January 2012 planted 15,390 new native plants on the Nicaraguan side of the River, which is 183% of the reforestation required under the permits.<sup>544</sup> This reforestation is aimed at helping to reinforce the banks of the San Juan River in order to prevent future erosion and sedimentation.<sup>545</sup>

#### **(a) Reduced Scope of the Dredging Project**

5.173 As described in Chapter 4, Nicaragua is entitled under the *lex specialis* regime governing the San Juan River to undertake a dredging program sufficient in scope to recover the navigability of the Lower San Juan as it existed

---

<sup>543</sup> *Ibid.*, p. 108, para. 3.82.

<sup>544</sup> EPN 2011 Annual Report, p. 23 (NCM, Vol. II, Annex 17).

<sup>545</sup> See Environmental Impact Study, pp. 173-174, 195-196 & 222-223 (NCM, Vol. II, Annex 7).

in 1858, when large vessels were able to navigate the entire river throughout the year.<sup>546</sup> However, the project to improve navigability actually proposed and authorized by Nicaragua – that is, the dredging project at issue in this case – was never designed to be a project of such scope. Rather, it was designed to restore a navigation channel of only two meters deep in the final 42 kilometers of the river, as well as an access channel to the Sea.

5.174 In reality, budgetary considerations have required EPN to reduce the scope of even its limited dredging project.<sup>547</sup> According to a letter EPN sent to MARENA in early April 2011, “as a result of the high cost of dredging forty two kilometers and understanding that the priority in this stage is to ensure the navigability by small boats, [the President of Nicaragua] has made the decision to modify the dimensions and length of the navigation channel, in the stretch between the Delta and San Juanillo, which according to the study prepared by the Consultant CORASCO S.A., has a length of 32.77 km.”<sup>548</sup> This reduction in scope – which eliminated the dredging of the segments from Punta Petaca to the Delta (where the Colorado branches off from the San Juan) and from San Juanillo to the mouth of the San Juan and on to the Caribbean – reduced the project from

---

<sup>546</sup> See Chapter 4, *supra*.

<sup>547</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, paras. 10-11 (CRM, Vol. IV, Annex 164). See also CR 2011/2, p. 17, para. 40 (Argüello); CR 2011/4, pp. 17-18, paras. 10-11 (Reichler).

<sup>548</sup> Letter from Eng. Lester A. Quintero G. Technical Manager, National Port Authority to Ms. Hilda Espinoza Director General Environmental Quality MARENA, Reference GT-LACQG-0402-04-2011, 05 April 2011 (NCM, Vol. III, Annex 65).

one that was estimated to result in 1.5 million to some 942,000 m<sup>3</sup> of extracted sediments.<sup>549</sup>

5.175 Since then, the scope of the project has been reduced even further. As EPN has explained, “[d]ue to the high cost of dredging forty-two kilometers, as defined in studies [prepared] by [CORASCO] in 2006, and aware that ensuring navigability for small- and medium-sized vessels was a priority at this stage of the Project, plans were made for dredging only the most critical stretches”.<sup>550</sup> Those specific, critical stretches are eight sites between the Delta and San Juanillo, a distance of 22 kilometers, numbered and indicated in red on the following map from EPN’s 2011 Annual Report (see **Figure 5.3**).

---

<sup>549</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, paras. 10-11 (CRM, Vol. IV, Annex 164). *See also* CR 2011/2, p. 17, para. 40 (Argüello); CR 2011/4, p. 17, para. 10 (Reichler).

<sup>550</sup> EPN 2011 Annual Report, p. 6 (NCM, Vol. II, Annex 17).

Figure 5.3.

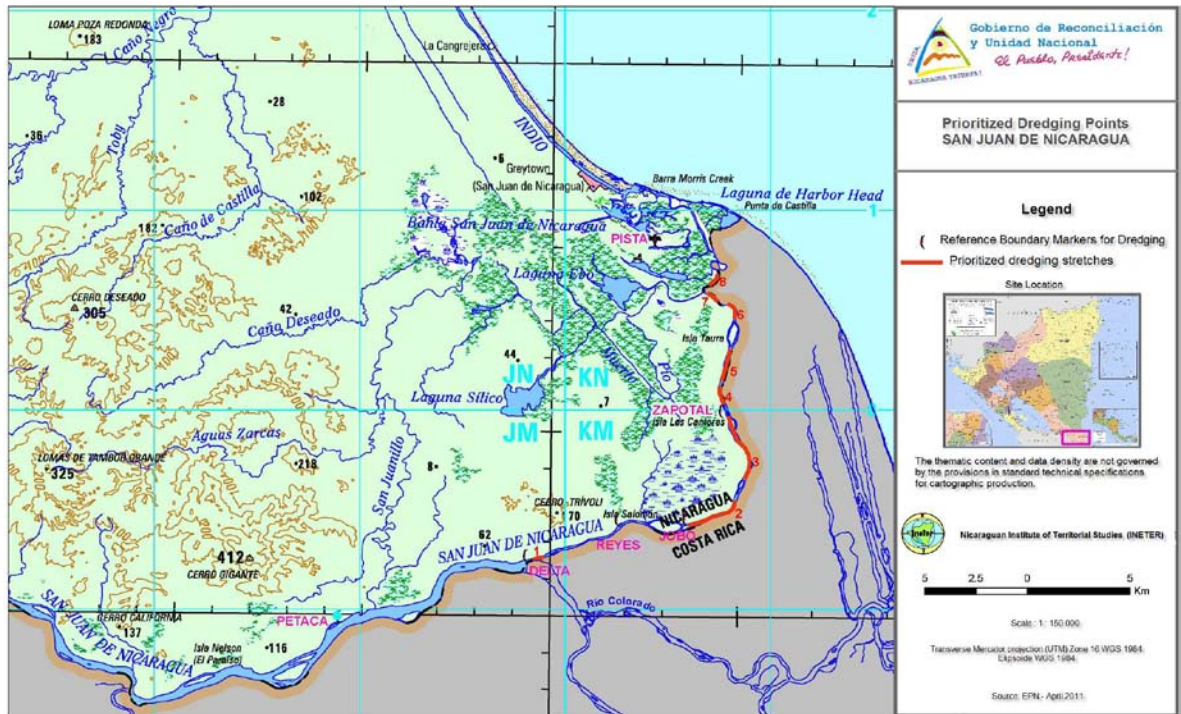


Figure 5.3. Map Illustrating 8 Priority Areas<sup>551</sup>

5.176 This modification means that the project, as currently planned, will involve the extraction of only 395,395.02 m<sup>3</sup> of dredged sediments from the eight most critical stretches of the Lower San Juan.<sup>552</sup> Thus, the project has been reduced by over 70% since its authorization by MARENA. According to a supplemental report by Professors Cees van Rhee and Huib de Vriend of the Delft University of Technology, “Nicaragua’s dredging program is of extremely small scale. The effect on the river discharge and morphology will be negligible and orders of magnitude less than natural variations in river flow.”<sup>553</sup> Thus, there is no

<sup>551</sup> *Ibid.*, p. 5.

<sup>552</sup> *Ibid.*, p. 6.

<sup>553</sup> 2012 Van Rhee & De Vriend Supplemental Report, Conclusions (Appendix 2).

basis for Costa Rica's characterization of Nicaragua's works as a "significant dredging operation."<sup>554</sup>

5.177 Costa Rica's reliance on the report of Professor Colin Thorne<sup>555</sup> provides it with no assistance. Professor Thorne criticizes the expert report prepared by Professors van Rhee and de Vriend in January 2011, which was submitted to the Court prior to the oral hearings on the issue of provisional measures. That report concluded that Nicaragua's dredging program was likely to increase the flow of the Lower San Juan River by only 20-50 m<sup>3</sup>/second.<sup>556</sup> According to Professor Thorne, a "more accurate prediction" could be produced through the use of a hydraulic model, rather than the equations utilized by Professors van Rhee and de Vriend.<sup>557</sup> Professor Thorne proceeds to explain that he has run a "HEC-RAS model" for "three scenarios representing the effects of enlarging the channel of the Río San Juan downstream of the Delta through dredging."<sup>558</sup> He then states that the results support the conclusion that Nicaragua's dredging program will alter the flow regime more than reported by Professors van Rhee and de Vriend in January 2011.<sup>559</sup>

5.178 Professor Thorne's analysis is incorrect. As Professors van Rhee and de Vriend explain, the "criticisms are without foundation, and the conclusions

---

<sup>554</sup> CRM, p. 256, para. 5.112.

<sup>555</sup> *See ibid.*

<sup>556</sup> 2011 Van Rhee & De Vriend Report , p.8 (NCM, Vol. IV, Annex 114) *See also* Thorne, p. II- 35.

<sup>557</sup> Thorne, p. II-35.

<sup>558</sup> *Ibid.*, pp. II-35-36.

<sup>559</sup> *See ibid.*, p. II-36.



Professor Thorne draws from his analysis are incorrect.”<sup>560</sup> There are various problems with Professor Thorne’s analysis, but the fundamental and most obvious error is the three “dredging scenarios” upon which he bases his analysis. Each is much larger than the dredging project Nicaragua has proposed, authorized, and undertaken in fact. Specifically, EPN is authorized to dredge a navigation channel that is “20 meters wide at the bottom, 30 meters wide at the surface, and with a minimum depth of 2 meters in the dry season”.<sup>561</sup> Nevertheless, the “dredging scenarios” Professor Thorne has analyzed are significantly larger. The final dredged profiles of those three scenarios are provided in the following table from the Thorne report.<sup>562</sup>

**Table II.12. Dimensions of the Río San Juan downstream of the Delta for three dredging scenarios.**

Dredging Scenario	Depth (m)	Width (m)
1	5.75	120
2	6.75	150
3	7.75	180

5.179 The true significance of these scenarios is more clearly elucidated with the help of the following table prepared by Professors van Rhee and de Vriend. It provides not only Professor Thorne’s three “dredging scenarios”, but also the original situation – that is, the baseline scenario existing in the San Juan River downstream from the bifurcation with the Colorado River prior to dredging – which Professor Thorne has included in Table II.11 of his Report:

<sup>560</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 2.1. (Appendix 2).

<sup>561</sup> MARENA Administrative Resolution No. 038-2008, 22 December 2008, p. 4, resolution 3(1) (NCM, Vol. III, Annex 33).

<sup>562</sup> Thorne, p. II-36.

<b>Dredging Scenario</b>	<b>Depth [m]</b>	<b>Width [m]</b>	<b>Discharge [m<sup>3</sup>/s]</b>
Original Situation	4.75	90	287.4
Thorne Scenario 1	5.75	120	368.26
Thorne Scenario 2	6.75	150	440.12
Thorne Scenario 3	7.75	180	502.99

Depth and Width of Thorne's Dredging Scenarios <sup>563</sup>

5.180 As this table makes clear, Professor Thorne has assumed that Nicaragua's dredging efforts will involve the dredging of much wider navigation channels, and even the widening of the river that now exists. Indeed, Professor Thorne's results depend on the assumption that the river will be deepened over its total width, which will itself be substantially enlarged. As Professors van Rhee and de Vriend explain, "[f]or a deepening of 1 m, (Thorne Scenario 1), he assumes that the total width of the river will be increased by 30 m (i.e., from 90 m to 120 m), whereas for the 3 m deepening (Thorne Scenario 3) the total width of the river will be doubled, from the original 90 m to 180 m, with the entire width being dredged to a depth of 3 m."<sup>564</sup>

5.181 It is not surprising that Professor Thorne's assumption of much larger dredging projects resulted in calculations of more increased flow in the Lower San Juan River. What may be surprising, however, is that the HEC-RAS

<sup>563</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 2.1, Table 1 (Appendix 2).

<sup>564</sup> *Ibid.*, Chapter 2.1.

model utilized by Professor Thorne is actually less conservative than the uniform flow model utilized by Professors van Rhee and de Vriend and criticized by Professor Thorne. In other words, when Professor Thorne's hypothetical dredging projects are analyzed using the uniform flow model, the result is higher levels of flow in the Lower San Juan, because the model used by Professors van Rhee and de Vriend is more conservative.<sup>565</sup>

5.182 Thus, if Professor Thorne had analyzed Nicaragua's actual dredging project using his HEC-RAS model rather than the much larger hypothetical scenarios he has introduced into the present discussion, he would have concluded that the project will have even less of an impact on the flow distribution between the San Juan and Colorado rivers than Professors van Rhee and de Vriend projected in their January 2011 report. In concrete terms, Professor Thorne would have concluded that the January 2011 prediction of a change in flow distribution of 50 m<sup>3</sup>/second was incorrect, not because the projected impact of Nicaragua's dredging program was too low, but rather because it was too high, as compared with the more accurate likely flow change of 20 m<sup>3</sup>/second.<sup>566</sup>

5.183 Costa Rica is equally incorrect in its complaint that Nicaragua is using three dredges when, it asserts, "Nicaragua's own EIS authorize[ed] the

---

<sup>565</sup> *Ibid.*, Chapter 2.1.

<sup>566</sup> *Ibid.*, Chapter 2.1. In fact, Professors van Rhee and de Vriend have concluded, based on the conduct of the dredging program to date, including its further reduced scope, that the increased flow in the Lower San Juan River as a result of Nicaragua's dredging program, and the corresponding decrease in flow in the Colorado River, will be less than 1.5%. *Ibid.*

operation of only one dredge.”<sup>567</sup> As Nicaragua explained to the Court in January 2011, due to financial constraints and its consequent decision to scale down the scope of the project, EPN modified the project to use smaller dredges available in Nicaragua instead of purchasing larger and more expensive ones from abroad.<sup>568</sup> That is, instead of the foreign-built dredges EPN had hoped to import when preparing the EIS, it switched to much smaller, domestic dredges because the foreign ones were too expensive.<sup>569</sup> As of January 2011, EPN’s plan was to utilize three dredges with a combined maximum capacity of 575 m<sup>3</sup>/hour,<sup>570</sup> as compared with the wide range of dredges discussed in the EIS, which would have had a capacity of between 200 and 2,000 m<sup>3</sup>/hour.<sup>571</sup> Dredging experts, Professors van Rhee and de Vriend of the Delft University of Technology, concluded in January 2011, based on those figures and the technical descriptions of the related dredges, that the dredging project – as defined in January 2011 – was “of a very small scale compared to the large Dutch dredging contractors currently working globally with hourly productions of more than 10,000 m<sup>3</sup>/hour.”<sup>572</sup>

---

<sup>567</sup> CRM, pp. 252, 253, para. 5.108; *see also* pp. 108-109, para. 3.82.

<sup>568</sup> Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010, para. 12 (CRM, Vol. IV, Annex 164).

<sup>569</sup> *Ibid.*

<sup>570</sup> *Ibid.*, paras. 12-13 & Annex 4 thereto providing dredge specifications, omitted from the version of the document submitted by Costa Rica but submitted herewith (NCM, Vol. II, Annex 15).

<sup>571</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 2.2, including Table 3 (Appendix 2).

<sup>572</sup> 2011 Van Rhee & De Vriend Report, p. 3 (NCM, Vol. IV, Annex 114).

5.184 In fact, the three dredges that have actually been used by Nicaragua have even smaller capacities than the ones described in January 2011. Specifically, they have a combined maximum capacity of only 430 m<sup>3</sup>/hour (300 m<sup>3</sup>/hour, 120 m<sup>3</sup>/hour, and 10.0 m<sup>3</sup>/hour).<sup>573</sup> Moreover, due to mechanical failures, only two of the dredges are actually meaningfully utilized in the dredging project.<sup>574</sup>

5.185 Specifically, although the largest dredge (with its maximum demonstrated capacity of 300 m<sup>3</sup>/hour) is a relatively new piece of machinery, having been built in Nicaragua in 2009, it has been plagued by mechanical problems.<sup>575</sup> From January through November 2011, it was out of commission due to mechanical failures at least 41% of the time.<sup>576</sup>

5.186 Similarly, the second largest dredge (with a maximum capacity of 120 m<sup>3</sup>/hour), which was manufactured by AMMCO in Europe in 1975, has suffered prolonged periods of paralysis caused by mechanical problems.<sup>577</sup> It was not productive 44% of the time from January through November 2011 due to mechanical failures.<sup>578</sup> This figure does not take into account other delays, or the fact that the dredge's cutter was frequently obstructed by wood debris at the bottom of the River.<sup>579</sup> Because the dredge is antiquated and relatively obsolete,

---

<sup>573</sup> EPN 2011 Annual Report, pp. 6-7 (NCM, Vol. II, Annex 17).

<sup>574</sup> *Ibid.*, p. 12.

<sup>575</sup> *Ibid.*, pp. 10-11.

<sup>576</sup> *Ibid.*, p. 20.

<sup>577</sup> *Ibid.*, p. 9.

<sup>578</sup> *Ibid.*, p. 19.

<sup>579</sup> *Ibid.*

its maintenance involves high costs, and it has been difficult for EPN to locate necessary replacement parts in the international marketplace.<sup>580</sup>

5.187 Nicaragua's third dredge arrived in San Juan de Nicaragua for assembly in April 2011. From the beginning, the machine presented problems, particularly with the operation of its dredge pump. The dredge was rebuilt in order to improve the operation of its hydraulic system. However, the dredge presented renewed mechanical problems in December 2011 and, as of January 2012, was being repaired in San Juan de Nicaragua.<sup>581</sup> EPN has decided that it is not useful for the dredging of the San Juan River. In dredging attempted near deposit site No. 18, the dredge produced low dredge yields: no more than 10.0 m<sup>3</sup>/hour.<sup>582</sup> Moreover, the dredge cannot expel dredged material more than 120 meters, cut strips over 3.6 meters, or advance in anything other than a straight line.<sup>583</sup>

5.188 In light of these difficulties, only the two comparatively larger dredges have actually been used with any frequency.<sup>584</sup> They have a combined capacity of 420 m<sup>3</sup>/hour when both are functioning optimally (which is often not the case). This is significantly lower than the 575 m<sup>3</sup>/hour capacity that

---

<sup>580</sup> *Ibid.*, p. 9.

<sup>581</sup> *Ibid.*, p. 12.

<sup>582</sup> *Ibid.*, pp. 7 & 12.

<sup>583</sup> *Ibid.*, p. 13.

<sup>584</sup> *Ibid.*, pp. 12-14.

Professors van Rhee and de Vriend explained could only conduct a dredging project “of a very small scale”.<sup>585</sup> As they establish in their supplemental report:

The dredges used by Nicaragua have not increased the scope of the project compared to what was contemplated in the Environmental Impact Study. Even if EPN procures the additional dredges discussed in its 2011 Annual Report, the project – which only contemplates sufficient dredging to reveal a navigation channel that is 2 m deep across a bottom width of 20 m – will still be of extremely small scale. Moreover, even if all such additional dredges are procured and used alongside Nicaragua’s three existing dredges, their maximum capacity would still be lower than that of some of the dredges contemplated in the Environmental Impact Study.<sup>586</sup>

5.189 In short, Costa Rica is incorrect that Nicaragua’s works constitute a “significant dredging operation.”<sup>587</sup> The project is of extremely modest scope, and it is well within the limits of the environmental authorization issued by MARENA in December 2008.

### **(b) Progress To Date**

5.190 The decision was made in 2011 to focus dredging works initially in the area known as the Delta, the first stretch indicated on Map 3, above, where the flow is especially low.<sup>588</sup> The EIS mentions the presence of an area of high-plasticity clay, with a length of approximately 500 meters and a thickness of 1.5-2 meters that serves as a barrier preventing a higher level of flow from continuing to the Lower San Juan downstream from the Delta.<sup>589</sup>

---

<sup>585</sup> 2011 Van Rhee & De Vriend Report, p. 3 (NCM, Vol. IV, Annex 114).

<sup>586</sup> 2012 Van Rhee & De Vriend Supplemental Report, Conclusions (Appendix 2).

<sup>587</sup> CRM, p. 256, para. 5.112.

<sup>588</sup> EPN 2011 Annual Report, pp. 5-6 (NCM, Vol. II, Annex 17).

<sup>589</sup> *Ibid.*, p. 19; *see also* Environmental Impact Study, p. 11 (NCM, Vol. II, Annex 7).

5.191 Thus, the practice throughout 2011 was for the 1975 dredge with a maximum capacity of 120 m<sup>3</sup>/hour to be dispatched to the Delta area, and for the 2009 dredge with the maximum capacity of 300 m<sup>3</sup>/hour to provide support. Between January and mid-December 2011, 131,988.79 m<sup>3</sup> of sediments were dredged from the stretch between the Delta and Los Reyes. EPN reports that this strategy has had positive effects, eliminating at least some of the problems that had existed in that area of the River involving “1-foot maximum water depth and grounded watercraft,” thereby permitting safer navigation in that portion of the Lower San Juan. Nevertheless, mechanical problems, the inefficiency of the dredges, and rapid re-sedimentation have caused the dredging efforts to be effectively limited in 2011 to the stretch of the San Juan between the Delta and Los Reyes.<sup>590</sup> Indeed, during the same period, only 19,164 m<sup>3</sup> of sediments were dredged from other parts of the River (specifically, the stretch between San Juanillo and El Zapotal).

5.192 The budget for the dredging project was \$7.5 million,<sup>591</sup> a fact that Costa Rica has acknowledged.<sup>592</sup> As Costa Rican Foreign Minister Castro observed in September 2010, a budget this size is “rather modest for this type of

---

<sup>590</sup> EPN 2011 Annual Report, p. 16 (NCM, Vol. II, Annex 17).

<sup>591</sup> See EPN “Report on the Visit Conducted to the San Juan River and Considerations regarding its Cleaning and Dredging to Guarantee its Permanent Navigation,” based on 6-7 February 2008 visit to the site, p. 18 (NCM, Vol. II, Annex 21); see also CR 2011/2, p. 17, para. 40 (Argüello).

<sup>592</sup> CR 2011/3, p. 28, para. 25 (Crawford).



work”<sup>593</sup> and would only allow Nicaragua “to dredge or clean between 7 and 10 linear kilometers of the San Juan [River], which would represent a small segment of the river.”<sup>594</sup>

5.193 In June 2011, EPN estimated that it will take 10.8 years to finish dredging the stretch of the San Juan from the Delta to San Juanillo, a total of approximately 22 kilometers. As noted, the project has since been further reduced to focus on eight especially problematic stretches of the River.

**(c) Activities Conducted in late 2010**

5.194 As discussed above<sup>595</sup>, after receiving supplemental authorization from MARENA in August 2009, EPN proceeded in October 2010 to carry out the additions to the larger project to improve navigation, manually cleaning the caño connecting the San Juan River to Harbor Head Lagoon and using a dredge to clear a portion of the River upstream, so that it would flow straight rather than meandering in a formation that makes navigation difficult. Both activities took place exclusively on Nicaraguan territory.<sup>596</sup>

5.195 While these activities were underway in late November 2010, MARENA personnel visited the sites of both project additions in order to verify

---

<sup>593</sup> Statement by Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, 8 September 2010, p. 4 (NCM, Vol. II, Annex 24).

<sup>594</sup> *Ibid.*, p. 6.

<sup>595</sup> See paras. 5.86 – 5.113

<sup>596</sup> *Ibid.*

that the works were being carried out in accordance with the environmental requirements set forth in MARENA Resolution No. 038-2008-A1.

5.196 During its visit to the caño, the inspection team observed that the caño was being cleared “manually (using shovels, pickaxe and chainsaw...for tree pruning)” by men in rubber boots to approximately 10 meters wide at the beginning near the San Juan River, with a depth of between 1 and 1.2 meters, in order to allow for continued navigation of the channel by small craft along the 1,560 meters to Harbor Head Lagoon. The MARENA inspectors noted that, although some vegetation was being “affected on the left bank of Nicaraguan territory,” it was “part of the very wet riparian and flooded forest of the caño” that needed to be removed because it “obstructed the navigation of the channel.”<sup>597</sup>

5.197 As to the dredging of the upriver section, the environmental inspectors found that the work was 40% complete, having resulted in the dredging of 12,000 m<sup>3</sup> of sediments, which had been properly deposited in two approved sites located in a former agricultural area on the Nicaraguan bank. Another site had also been identified for future use.<sup>598</sup>

5.198 For both activities, the MARENA inspectors concluded that the environmental impacts were “short-term and reversible, primarily the recuperation of vegetation,” and that “[t]he impact on water quality conforms to the physico-chemical parameters and is considered to be of low intensity, inevitable, and is

---

<sup>597</sup> MARENA Technical Monitoring Report from Inspection Conducted 24-26 November 2010, p. 5 (NCM, Vol. II, Annex 14).

<sup>598</sup> *Ibid.*, p. 3.

located along the stretch of the cleaning activities initiated with short duration and indirect effect.”<sup>599</sup>

5.199 Work at both sites continued, pursuant to MARENA’s same environmental requirements. The cleaning of the caño was completed late November 2010, though the replanting of [ten to one] trees to replace the 180 that had been cleared as part of the cleaning efforts extended until December 2010.<sup>600</sup>

## **2. No Damage Caused to Costa Rica**

5.200 Costa Rica alleges that it has suffered harm as a result of Nicaragua’s activities. These accusations are without basis.

5.201 It must be noted from the outset that, although Costa Rica attempts to create the impression that independent third-parties and international organizations have supported its allegations of harm, all the available “evidence” is actually of Costa Rican production. Costa Rica relies most of all upon the expert report of Professor Colin Thorne, who – although he conducted a visit to the Lower San Juan and Colorado Rivers and nearby Costa Rican territory in July 2011 – has relied primarily upon information and reports provided to him by Costa Rica, the majority of which are essentially Costa Rican in origin.

---

<sup>599</sup> *Ibid.*, p. 6. The resulting report confirmed that “EPN [had] designated an environmental specialist to ensure the supervision and compliance with the environmental measures” required in all relevant permits, proceeding afterwards to detail the findings of the visits to both sites. *Ibid.*, p. 1.

<sup>600</sup> See Nicaragua’s answers to judge’s questions, *Request for the Indication of Provisional Measures, Certain Activities carried out by Nicaragua in the border area (Costa Rica v Nicaragua)*.

5.202 For instance, in opining on the alleged impacts of Nicaragua’s activities, Professor Thorne relies almost exclusively upon what he calls “the environmental impacts observed and/or inferred by the Ramsar teams” that have conducted missions in response to Costa Rica’s requests for assistance.<sup>601</sup> Such impacts have supposedly been “established” in two separate reports: Ramsar Advisory Mission Report No. 69 on a visit conducted in late 2010, and what Professor Thorne calls the “Draft Ramsar Report” on the joint Costa Rican-Ramsar visit conducted in April 2011.<sup>602</sup> In reality, neither of these reports establishes what was actually observed by Ramsar personnel.

5.203 Despite its title, Ramsar Report No. 69 is essentially a Costa Rican report.<sup>603</sup> The report itself states that it is based entirely on information provided by Costa Rica,<sup>604</sup> and that it took as fact the opinions of Costa Rica’s Environmental Ministry regarding the purpose of Nicaragua’s activities and adopted the Ministry’s pre-packaged conclusion as its own.<sup>605</sup> The Ramsar

---

<sup>601</sup> Thorne, p. I-65.

<sup>602</sup> See *ibid.*, p. III-1.

<sup>603</sup> Indeed, the copy annexed to Costa Rica’s Memorial, which is dated 17 December 2010, is not the final version published for public consumption on Ramsar’s website, which is dated 3 January 2011. Compare CRM, Vol. IV, Annex 147 to the Ramsar version of Report No. 69 available at [http://www.ramsar.org/cda/en/ramsar-documents-rams/main/ramsar/1-31-112\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-documents-rams/main/ramsar/1-31-112_4000_0__) (last visited 15 July 2012).

<sup>604</sup> See, e.g., Ramsar Secretariat, “Ramsar Advisory Mission Report No. 69, North-eastern Caribbean Wetland of International Importance (*Humedal Caribe Noreste*), Costa Rica,” 17 December 2010 (hereinafter “Ramsar Report No. 69”), in CRM, Vol. IV, Annex 147, pp. 88 & 129 (indicating that the report’s conclusions are based on “the analysis of the technical information received from the Government of Costa Rica”). The version of the report presented in Costa Rica’s annexes does not include page numbers. For this reason, citations to the report in this Counter Memorial refer to the page number of CRM, Vol. IV in which the report appears.

<sup>605</sup> See *ibid.*, p. 117 (“The Ministry of the Environment, Energy, and Telecommunications stated in its communication that the purpose of the changes was to prepare the area for the construction of an artificial canal to unite a body of fresh water with a body of salt water...thus changing the role

Advisory Mission responsible for the report did not visit the region where the relevant activities take place;<sup>606</sup> it did not take its own measurements of water flow, volume, or quality; and it did not collect or analyze its own samples of sediments. It simply spent three days in late November 2011 – after this proceeding had been commenced by Costa Rica – in San Jose, Costa Rica, being briefed by officials of the Costa Rican Government and Costa Rica’s experts.<sup>607</sup> The report itself makes clear that these were the only sources of information on which its findings and conclusions were based.<sup>608</sup> There was no attempt at independent fact-finding, and no effort to communicate with the responsible Nicaraguan authorities, despite the fact that Nicaragua invited the Ramsar Advisory Mission to visit Nicaragua and offered its full cooperation.

5.204 Specifically, on 30 November, after Nicaragua learned that Costa Rica had invited a Ramsar mission to San Jose to assess the impacts of Nicaragua’s activities, it wrote to the Ramsar Secretariat in Geneva, inviting the mission to come to Nicaragua as well, so that Nicaragua could provide complete information on the project, answer all questions, and take the Ramsar representatives to inspect the area in question.<sup>609</sup> This invitation was delivered

---

of the sandbanks to control the sediment flux that is currently carried by the river, and causing a rupture in the balance of the wetland.”).

<sup>606</sup> *Ibid.*, p. 101 (“The Mission intended to conduct an overflight in the Humedal Carie Noreste area but, due to weather conditions and safety reasons, it was not possible to do so.”).

<sup>607</sup> *See ibid.*, pp. 133-134 (Work Programme of the Mission).

<sup>608</sup> *E.g., ibid.*, pp. 88, 117 & 129.

<sup>609</sup> *See* Letter from Carlos Robelo Raffone, Nicaraguan Ambassador in Geneva and Permanent Representative of Nicaragua before the United Nations and other International Organizations, to Anada Tiéga, Ramsar Secretary General, 30 November 2010 (NCM, Vol. III, Annex 63).

while the Advisory Mission was still in Costa Rica, less than one hour by plane from Managua. Another invitation was issued on 2 December 2010, when Nicaragua requested that no report be issued until Nicaragua's views had been received.<sup>610</sup> Nevertheless, no advisory mission was sent to Nicaragua until March 2011, well after the final version of Report No. 69 was issued in January 2011 and after the Order of the Court of 8 March 2011.

5.205 Given that the Ramsar Mission responsible for the report relied exclusively on second-hand information presented to it by the Costa Rican government, and given that the report does not disclose either the names or qualifications of its authors as would be expected of a scientific report,<sup>611</sup> it is both troubling and telling that Professor Thorne describes the report as providing “an authoritative description of the changes in the physical and ecological characteristics of the wetlands affected by the actions of Nicaragua in constructing the ‘Caño’ and cutting off a meander in the Lower San Juan,”<sup>612</sup> and states that he has “taken the content of [this report] as the baseline for assessing the impacts of Nicaragua’s dredging programme”.<sup>613</sup>

5.206 Costa Rica’s own annexes demonstrate that the second purported “Ramsar Report” – rather than being a report by the Ramsar Advisory Mission that accompanied Costa Rican officials to the disputed area in early April 2011 –is

---

<sup>610</sup> See Letter from Carlos Robelo Raffone, Nicaraguan Ambassador in Geneva and Permanent Representative of Nicaragua before the United Nations and other International Organizations, to Anada Tiéga, Ramsar Secretary General, 2 December 2010 (NCM, Vol. III, Annex 64).

<sup>611</sup> Kondolf, Section 4.1. (Appendix 1).

<sup>612</sup> Thorne, pp. II-44-45.

<sup>613</sup> *Ibid.*, p. II-45.

in fact a “Report to Ramsar” of personnel from Costa Rica’s Ministry of Environment, Energy and Telecommunications.<sup>614</sup> Indeed, in a 7 November 2011 letter to Costa Rica’s Minister of Foreign Affairs and Worship – which Costa Rica has placed in a different volume of annexes, far removed from both the report (Annex 155) and its own letter to Ramsar regarding the report (Annex 156) – Ramsar’s Secretary-General, Anada Tiéga, expressly stated that, with the exception of certain “technical comments outlined by the Secretariat” that had been introduced into the report, the Ramsar Secretariat “is not responsible for the other content that may be in the aforementioned report.”<sup>615</sup> This is hardly an “agreement with the Report” by Ramsar that Costa Rica attempts to portray at paragraph 3.68 of its Memorial.

5.207 The Ramsar Secretary-General’s express caveat regarding the content of Costa Rica’s report on the April 2011 site visit is understandable, given that it is clearly a Costa Rican attempt to establish that Nicaragua has caused harm.<sup>616</sup> Indeed, the Costa Rican report to Ramsar has been used as a central piece of Costa Rica’s “evidence” in its Memorial, which cites the report and reproduces its images and findings throughout. Moreover, according to Dr. Mathias Kondolf, the biased tone of the report illustrates that its “a priori objective” appears to have

---

<sup>614</sup> See CRM, Vol. IV, Annex 155 title (emphasis added).

<sup>615</sup> Note from the Secretary General of the Ramsar Convention to the Minister of Foreign Affairs and Worship of Costa Rica, 7 November 2011 (CRM, Vol. III, Annex 96).

<sup>616</sup> See Ministry of Environment, Energy and Telecommunications of Costa Rica, Technical Report to Ramsar: “Assessment and evaluation of the Environmental situation in the *Humedal Caribe Noreste* within the framework of the Order of the International court of Justice,” 28 October 2011 (hereinafter “Costa Rican 2011 Report to Ramsar”) (CRM, Vol. IV, Annex 155).

been “exaggerating the possible effects of the caño clearing”.<sup>617</sup> In short, Costa Rica’s report to Ramsar is hardly an impartial and objective technical analysis, and the Ramsar personnel who accompanied Costa Rica’s officials to the disputed area in April 2011 – the first time they actually visited the site – have so far published no report of their own.

5.208 Given that these and other Costa Rican reports – many of which Costa Rica has not made available for review<sup>618</sup> – form the backbone for Professor Thorne’s analysis regarding the purported impacts of Nicaragua’s activities on Costa Rica, his conclusions must be viewed skeptically. Professor Thorne’s conclusions are only as good as the information upon which they have been built. And that information is neither impartial nor reliable. That is, Costa Rica’s own reports and “evidence” do not become impartial or reliable simply because one Ramsar Advisory Mission and Professor Thorne have repeated them.

5.209 As Dr. Kondolf explains, in the portions of the Thorne report that deal with Costa Rica’s allegations of damage to its territory:

Thorne is apparently not presenting his own original work, but mostly repeating the conclusions reached by other authors. Professor Thorne seems to implicitly accept at face value the material presented in these other reports without any critical evaluation of their plausibility or reliability. ...[A]ll of these

---

<sup>617</sup> Kondolf, Section 5.9 (Appendix 1).

<sup>618</sup> For instance, although Professor Thorne relies upon an August 2011 report prepared by Fundación Neotrópica, Costa Rica has failed to attach that report to its Memorial, attaching instead a different and later report by the same organization upon which Professor Thorne did *not* rely. *See* Thorne, pp. II-2 & III-1 and CRM, Vol. IV, Annex 157, 10 October 2011.



reports suffer from a lack of scientific rigor, and in some cases, demonstrable bias.<sup>619</sup>

**(a) Harm Allegedly Caused by Nicaragua’s Caño-Clearing Activities**

5.210 Most of Costa Rica’s allegations of actual harm relate to Nicaragua’s caño-clearing efforts. Specifically, Costa Rica alleges that Nicaragua felled trees, cleared underbrush, removed soil, and deposited sediments and debris on Costa Rican territory,<sup>620</sup> and that such activities purportedly “destroyed part of a fragile wetland containing primary forest on Costa Rican territory.”<sup>621</sup>

5.211 In reality, these activities only took place on Nicaraguan territory, as discussed above. However, even if, quod non, some of the activities affected Costa Rican territory, they could not have caused the “irreparable” impacts or “destruction” that Costa Rica alleges in its Memorial. To the contrary, the clearing of the caño generated only minimal, time-limited impacts because the

---

<sup>619</sup> Kondolf, Section 2.1 (Appendix 1). *See also* Section 1.2:

Thorne is apparently repeating the conclusions reached by other authors who are less qualified than he, but whose often tenuous conclusions he appears to accept uncritically.

...[T]hese other reports are technically weak, and do not meet minimum standards for scientific work. [In some of them], the authors are not disclosed, which severely undermines their credibility. The reports also include admissions of bias and evidently repeat conclusions provided to the authors by third parties. The reports include clumsy attempts to use technical terminology in fluvial geomorphology and hydrology, which reflect the authors’ lack of technical background .

<sup>620</sup> CRM, p. 226, para. 5.62.

<sup>621</sup> *Ibid.*, p. 226, para. 5.60.

native species in that area of direct influence allow for natural regeneration and are species that grow rapidly, and because (in stark contrast with Costa Rica's construction of its road<sup>622</sup>) the activity was manual, conducted by hand, and care was taken to dispose of sediments appropriately.

**(i) *The Felling of Trees***

5.212 While Nicaragua generally avoids the felling of any trees in the area of the lower San Juan where possible, and especially those that are older, Nicaragua acknowledges that it felled 180 trees during its caño clearing efforts at the end of 2010.<sup>623</sup> Costa Rica insists that “[t]he actual number of trees felled is higher than this figure,” because, it asserts, inspections and satellite images have allegedly demonstrated that “around 292” trees have been felled, totaling some 2.48 hectares of felled forest.<sup>624</sup> Costa Rica has not attempted to prove – and indeed, cannot prove – that Nicaragua is responsible for these additional felled trees, whose deceptively exact numbers it concedes it has “extrapolated” from preexisting information “with the help of satellite images” because “it was not possible to collect detailed information”.<sup>625</sup> Costa Rica thus admits that its assertions about the trees that were felled is not based on sound science.

---

<sup>622</sup> As Dr. Kondolf explains, “the extent of clearing and disturbance by the Costa Rican road is at least 100 times greater than the clearing of the Caño about which Professor Thorne and other authors have made dire predictions of environmental impact. Put in context of the much larger road project, the impacts from clearing of the Caño are small indeed.” Kondolf, Section 2.14 (Appendix 1).

<sup>623</sup> CR 2011/2, pp. 45-46, para. 44 (Reichler).

<sup>624</sup> CRM, pp. 230-231, para. 5.68.

<sup>625</sup> Costa Rican 2011 Report to Ramsar, p. 45 (CRM, Vol. IV, Annex 155).

5.213 In characterizing the felled trees, Costa Rica says that the age of the trees “ranged between 24 and 309 years old, with an average age of between 29.7 and 247.6 years.”<sup>626</sup> This extremely wide-ranging “average age” figure prompted Nicaragua to review Costa Rica’s “Appraisal of maximum average age of the trees felled,” which was prepared by its Ministry of Environment in December 2010 and submitted as Annex 145 to Costa Rica’s Memorial. That review revealed that the document upon which Costa Rica relies is, by its own admission, not an objective appraisal of the ages of the felled trees, but rather a report that had the goal of “proving” a pre-determined conclusion: “...this document is aimed at proving, through an appraisal of the maximum average age of the trees felled, that specifically in the forest area where the trees were cut, there has been no canal during the last few decades.”<sup>627</sup>

5.214 After conceding that “one of the most difficult things to determine about natural forests is their age,”<sup>628</sup> the report proceeds to apply a wholly inappropriate methodology for doing so, relying on growth rates documented elsewhere in Costa Rica, assuming that they would apply equally in the study area. As Dr. Kondolf explains in his expert report – and as Costa Rica’s

---

<sup>626</sup> CRM, p. 231, para. 5.69.

<sup>627</sup> Sistema Nacional de Áreas de Conservación (SINAC), Ministry of Environment, Energy and Telecommunications of Costa Rica, Report: “Appraisal of maximum average age of the trees felled in primary forest areas in the Punta Castilla, Colorado, Pococí and Limón sectors of Costa Rica, as a result of the Nicaraguan Army’s occupation for the apparent restoration of an existing canal,” December 2010 (hereinafter “SINAC 2010 Tree Appraisal”), in CRM, Vol. IV, Annex 145, p. 50. The version of the report presented in Costa Rica’s annexes does not include page numbers. For this reason, citations to the report in this Counter Memorial refer to the page number of CRM, Vol. IV in which the report appears.

<sup>628</sup> *Ibid.*, p. 51.

“Appraisal” itself appears to concede – tree growth rates vary widely and are highly dependent on local environmental conditions. “Before confidently applying growth rates from one locality to another, the environmental conditions for the two areas must be quantified and objectively compared.”<sup>629</sup> No such information is presented in Annex 145, or anywhere else in Costa Rica’s submission.

5.215 Moreover, the report concedes that it did not conduct “an appropriate counting” of plants with diameters smaller than 5 centimeters,<sup>630</sup> meaning that the averages calculated and reported in the later pages of the report were artificially inflated, corrupting the conclusions drawn from those averages.<sup>631</sup> As Dr. Kondolf puts it, the smallest size category should have been included with some adjustment to account for poor counting. “By leaving out the smallest size category, the report presents a misleading impression of the pattern of size data,”<sup>632</sup> implying that the tree density per hectare “follows a more consistent pattern than indicated by the actual data.”<sup>633</sup>

5.216 Thus, Costa Rica’s “Appraisal” has not actually proven that there are trees over 200 years old in the area in dispute, much less that the trees inspected “could be on average 247.6 years old, an age which could fluctuate between 206.3 and 309.8 years.”<sup>634</sup> These figures are not only misleading in their

---

<sup>629</sup> Kondolf, Section 6.2 (Appendix 1).

<sup>630</sup> SINAC 2010 Tree Appraisal, in CRM, Vol. IV, Annex 145, p. 55.

<sup>631</sup> *See ibid.*, pp. 57-58.

<sup>632</sup> Kondolf, Section 6.3 (Appendix 1).

<sup>633</sup> *Ibid.*

<sup>634</sup> SINAC 2010 Tree Appraisal, in CRM, Vol. IV, Annex 145, p. 58.

“false precision,”<sup>635</sup> but also directly in conflict with the conclusions of Professor Thorne. As Dr. Kondolf points out, the historical maps presented in Professor Thorne’s report “indicate that much of the land under the site did not exist until it was deposited in the early 19<sup>th</sup> century, which implies that trees of 247 years in age would not be possible, as they would have had to establish in the waters of the former San Juan harbor.”<sup>636</sup>

5.217 Even if Costa Rica’s methodology for measuring the age of the felled trees was scientifically acceptable (which it was not), the results of even its flawed analyses actually illustrate that the great majority of the trees claimed by Costa Rica to have been felled<sup>637</sup> were not hundreds of years old. Indeed, according to Costa Rica’s own documents, only three (3) trees had diameters of over 100 centimeters, purportedly indicating ages exceeding 200 years.<sup>638</sup> Costa Rica also argues that the felling of trees caused “irreversible” damage to its territory, affecting vegetation cover in the wetland, soil and seed banks, groundwater supply, habitats, and ecological services.<sup>639</sup> This is scientifically inaccurate, especially given the particularly dynamic nature of the region, which enjoys very high recovery potential. According to Dr. Kondolf, Costa Rica’s frequent use of terms as “irreversible” and “totally destroyed” “imply that recovery of disturbed sites in this area is slow or nonexistent. This is directly

---

<sup>635</sup> Kondolf, Section 6.3 (Appendix 1).

<sup>636</sup> *Ibid.*, Section 6.4.

<sup>637</sup> See CRM, pp. 231-233, paras. 5.69-5.74.

<sup>638</sup> See SINAC 2010 Tree Appraisal, in CRM, Vol. IV, Annex 145, Tables 2 & 4.

<sup>639</sup> CRM, paras. 5.71-5.73.

contradicted by the [Report to Ramsar's] acknowledgement that vegetation recovery has occurred since 1961....In this dynamic environment, with rapid rates of vegetation growth, small areas cleared of vegetation can be expected to rapidly recover, so the dire language used to describe the effects of the clearing of the Caño appears to be an exaggeration.”<sup>640</sup>

**(ii) *The Removal of Undergrowth***

5.218 Nicaragua does not dispute that undergrowth was cleared in its efforts to clear the caño and render it navigable once again. However, vegetation was only affected on the Nicaraguan bank of the caño. MARENA personnel observed this during a visit to the site in late November 2011, which was conducted to ensure compliance with the environmental requirements of the supplemental authorization.<sup>641</sup>

5.219 Moreover, Costa Rica's allegation that “the very removal of undergrowth...significantly changed the ecological characteristics of the wetland,” which had been “previously undisturbed,”<sup>642</sup> is incorrect. Costa Rica's Memorial illustrates that it has allowed the Humedal Caribe Noreste – the Costa Rican analogue to Nicaragua's Ramsar site – to be “used largely for agriculture,” as well as “cattle ranching”.<sup>643</sup> The same is true of the disputed area, which according to Costa Rica's October 2011 report to Ramsar, has experienced “an

---

<sup>640</sup> Kondolf, Section 5.7 (Appendix 1).

<sup>641</sup> See MARENA Technical Monitoring Report from Inspection Conducted 24-26 November 2010 (NCM, Vol. II, Annex 14).

<sup>642</sup> CRM, p. 236, para. 5.79.

<sup>643</sup> *Ibid.*, pp. 38-39, para. 2.13, quoting Annotated Ramsar list (CRM, Vol. IV, Annex 119).

expansion of the agricultural frontier to make way for sparsely-forested pastures.”<sup>644</sup> Indeed, the southern portion of the caño is located – and the related clearing of underbrush took place – in “an area of livestock pasture.”<sup>645</sup> Land that has been subjected to such uses can hardly be described as “undisturbed.”<sup>646</sup> Thus it is Costa Rica that has changed the “ecological character of [a] wetland in its territory and included in the List” and should have notified the Ramsar Secretariat of this “without delay” under Article 3(2) of the Convention.

5.220 Moreover, as Costa Rica’s own expert notes, “vegetation regrowth” began immediately after Nicaragua had finished its works to clear the caño.<sup>647</sup> By the time Professor Thorne visited the site in July 2011, he was able observe “recovery of the vegetation on the banks, bars, and berms” of the caño and that “the shrubs and understory appeared to be recovering from disturbance”.<sup>648</sup> In short, the undergrowth has suffered no irreparable harm.

### ***(iii) The Excavation of Soil***

5.221 Costa Rica’s Ministry of the Environment estimated that Nicaragua’s laborers excavated approximately 5,815 m3 of soil in their works to clear the caño in late 2010.<sup>649</sup> Professor Thorne suggests that the actual value may

---

<sup>644</sup> Costa Rican 2011 Report to Ramsar, p. 56 (CRM, Vol. IV, Annex 155).

<sup>645</sup> *Ibid.*, p. 13.

<sup>646</sup> *See* Kondolf, Section 5.7 (Appendix 1).

<sup>647</sup> Thorne, p. I-59.

<sup>648</sup> *Ibid.*, p. I-56.

<sup>649</sup> CRM, p. 235, para. 5.76.

be closer to 10,000 m<sup>3</sup>, and that “disturbance of this scale would certainly disrupt sub-surface, terrestrial and aquatic processes, habitats, and species.”<sup>650</sup>

5.222 Even assuming that a relatively small group of individuals using hand tools would be capable of removing such a substantial quantity of soil, Nicaragua has not, as Costa Rica claims, “caused harm to Costa Rican territory, as the very removal of...soil from a previously undisturbed wetland has significantly changed the ecological characteristics of the wetland.”<sup>651</sup> The evidence shows that the area in question is not “an area of primary forest that had been undisturbed for over 200 years.”<sup>652</sup> As noted above, the southern portion of the caño has, in fact, been disturbed in various ways, most notably by the agricultural and cattle-ranching uses Costa Rica itself has authorized. These are in fact the activities that have changed the character of the wetland, not Nicaragua’s modest efforts to clean the caño by hand.

5.223 In short, “[t]he impacts of clearing and excavating the Caño were minor and short-lived (as acknowledged by the Thorne report). There is no credible evidence of harm to Costa Rican territory.”<sup>653</sup>

---

<sup>650</sup> *Ibid.*, p. 235, paras. 5.76-5.77.

<sup>651</sup> CRM, p. 236, para. 5.79.

<sup>652</sup> Thorne, p. I-54.

<sup>653</sup> Kondolf, Section 1.2 (Appendix 1).



**(iv) *The Depositing of Soil and Debris in the Wetland***

5.224 Costa Rica also argues that it suffered harm from Nicaragua's caño-clearing efforts because debris and soil were deposited on Costa Rican territory, which resulted in damage.<sup>654</sup> It is not true that such deposition took place, or that any harm was caused to Costa Rica.

5.225 First, Costa Rica's complaint begs the question as to where its territory ends and Nicaragua's begins. In insisting that cleared soil was "deposited on both sides of the caño,"<sup>655</sup> Costa Rica either provides no evidence to support the assertion,<sup>656</sup> or relies exclusively on its own report to Ramsar, which the Secretariat (whose representatives are the only other witnesses from the April 2011 site visit) has not endorsed.<sup>657</sup> That Costa Rican report, which was prepared for the purposes of this litigation, does allege that "[i]t was also observed that the materials extracted during the construction of the artificial channel were dumped on both banks of the excavated waterway," and that this occurred "along its full length of 1,208 meters".<sup>658</sup> But the authors do not present any photographic proof in support of these assertions, as they have done in other parts of the report regarding other purported observations.<sup>659</sup>

---

<sup>654</sup> CRM, p. 226, para. 5.62(3) & p. 236, para. 5.78.

<sup>655</sup> *Ibid.*, p. 235, para. 5.76.

<sup>656</sup> *See ibid.*, p. 236, para. 5.78 (alleging in conclusory fashion that "the reports and photographic evidence demonstrate clearly that both (Costa Rican) sides of the artificial *caño* were impacted.").

<sup>657</sup> *See* Note from the Secretary General of the Ramsar Convention to the Minister of Foreign Affairs and Worship of Costa Rica, 7 November 2011 (CRM, Vol. III, Annex 96).

<sup>658</sup> Costa Rican 2011 Report to Ramsar, pp. 32-33 (CRM, Vol. IV, Annex 155).

<sup>659</sup> *See ibid.*

5.226 Costa Rica’s own expert appears to be hesitant about concluding that soil was deposited on both sides of the caño. Despite the deceptively conclusive statements in Costa Rica’s report to Ramsar and its Memorial that damage to Costa Rica’s side of the caño is “clear” from the reports and photographic evidence (which is not provided or cited), Professor Thorne refuses to draw the same conclusion from his review of the report to Ramsar, only going so far as to say that the Costa Rican field team that visited the site in April 2011 “observed that the sediment dug out to create the ‘Caño’ had been dumped on the wetland along the course of the constructed channel” and had “created bunds on one or both sides of the channel along the entire length of the ‘Caño’”.<sup>660</sup> This remark is not only equivocal, but based on unreliable hearsay: the same self-serving and unsupported Costa Rican “observation” that Ramsar did not endorse.

5.227 Regarding Costa Rica’s argument that the deposition of debris and soil from the caño has caused harm to the disputed area, the Memorial provides no support for this assertion; it merely alleges in conclusory fashion that this has transpired without providing any evidence.<sup>661</sup> The same is true of Costa Rica’s report to Ramsar, which asserts that the section of the wetland where cleared debris and soil were deposited “has been left totally destroyed, as it is impossible to restore it to its former status, even if the extracted material could be put back

---

<sup>660</sup> Thorne, p. I-51 (emphasis added).

<sup>661</sup> See CRM, p. 226, para. 5.62 & p. 236, paras. 5.78-5.79.

into the artificially-excavated canal.”<sup>662</sup> Again, no evidence is provided to support this dramatic claim, which is not surprising since it is entirely untrue.

5.228 As Dr. Kondolf explains, Costa Rica’s hyperbole regarding alleged harm “is not supported by evidence, and does not reflect the dynamic nature of the environment, nor the fact that the entire feature was only recently constructed by deposition of alluvial sediment. The dramatic terms ‘totally destroyed’ and ‘impossible to restore’ are not based on science.”<sup>663</sup>

5.229 Even Professor Thorne concedes that, by June 2011, the “banks, bars, and berms” along the caño had experienced “regrowth of vegetation,” a process which was continuing when he visited the area the following month.<sup>664</sup> As illustrations of this fact, Professor Thorne points to the following images<sup>665</sup>, none of which support Costa Rica’s allegation<sup>666</sup> that the right bank of the caño has suffered any harm, much less been “totally destroyed.”

---

<sup>662</sup> Costa Rican 2011 Report to Ramsar, p. 33 (CRM, Vol. IV, Annex 155).

<sup>663</sup> Kondolf, p. Section 5.10 (Appendix 1).

<sup>664</sup> Thorne, pp. I-55-56.

<sup>665</sup> *Ibid.*, p. I-56, Figure I.39 and caption thereto.

<sup>666</sup> *Ibid.*, p. I-57, Figure I.40(f).



5.230 Rather than illustrating the “total destruction” of the Costa Rican bank of the caño, these images depict a southern (and, for that matter, northern) bank lush with vegetation, with healthy trees and other plants growing nearby.

5.231 In short, Costa Rica has not proven – and cannot prove – that Nicaragua caused harm to Costa Rica through the clearing of the caño. The work was conducted entirely on Nicaraguan territory, and none of the activities led to irreparable harm or destruction. The modest nature of Nicaragua’s activities in the caño are put into stark relief by Costa Rica’s much broader destructive

activities in its own territory, which not only undercut Costa Rica's claims of harm but have also caused and continue to cause harm to Nicaragua.

**(b) Harm Allegedly Caused by Nicaragua's Dredging**

**Activities**

5.232 The only two arguments Costa Rica is able to muster regarding harm allegedly caused by Nicaragua's dredging efforts are: (1) that dredged sediments have been deposited in Costa Rican territory; and (2) that the dredging is causing erosion on the Costa Rican bank. Neither of these allegations is supported by evidence.

***(i) No Dredged Sediments Have Been Deposited on the***

***Costa Rican Bank***

5.233 Costa Rica asserts that Nicaragua's dredging efforts have "resulted in the dumping of river sediments on both Costa Rican and Nicaraguan territory, both protected wetlands of international importance under the 1971 Ramsar Convention."<sup>667</sup> Obviously, Costa Rica, which has given over wetlands to farming and cattle grazing, has no standing to complain about activities taking place exclusively on Nicaraguan territory. These activities have no transboundary effects and are, in any case, being handled responsibly, pursuant to the requirements of an Environmental Permit that takes into account the conclusions of the EIA process which preceded MARENA's authorization of the project.

---

<sup>667</sup> CRM, p. 69, para. 3.2.

5.234 Insofar as Costa Rica is alleging that the dumping of dredged sediments has taken place “on the right Costa Rican bank of the San Juan causing damage to Costa Rican territory,”<sup>668</sup> this could, at least hypothetically, be a claim that Costa Rica has standing to raise. However, all of Costa Rica’s allegations that Nicaragua has deposited dredged sediments on Costa Rican territory beg the question of where Nicaraguan territory ends and Costa Rican territory begins. That is, the dredged sediments at issue were deposited in the territory that Nicaragua is convinced falls under its sovereignty.<sup>669</sup>

5.235 Leaving aside the fact that all dredged sediments have been deposited on Nicaraguan territory, the amount deposited in the disputed area is trivial and can hardly be characterized as sufficient to cause irreparable harm. Those sediments<sup>670</sup> are visible as a single grey pile<sup>671</sup> in the following photographs from the report of Professor Thorne:



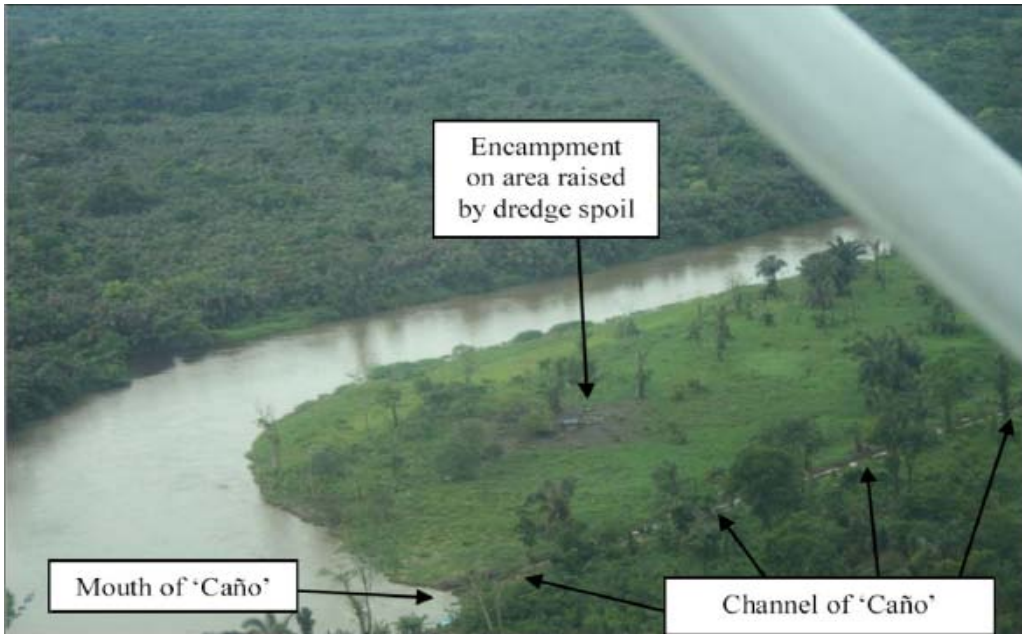
---

<sup>668</sup> *Ibid.*, p. 131, para. 3.115.

<sup>669</sup> *See ibid.*, paras. 3.8, 3.11, 3.14, 3.18-3.19 & 5.65.

<sup>670</sup> Thorne, p. I-39, Figure I.24.

<sup>671</sup> *Ibid.*, p. I-45, Figure I.28.



5.236 The one small pile of sediments visible in both photographs, circled in blue in the first photograph, and labeled with the caption “Encampment on area raised by dredge spoil” in the second photograph, is what Costa Rica is alleging has caused “irreversible” damage to the wetland.<sup>672</sup>

5.237 By the time of Costa Rica’s visit to the disputed area in April 2011, the source of Costa Rica’s complaint looked like this<sup>673</sup>:

---

<sup>672</sup> See CRM, p. 228, paras. 5.65-5.66.

<sup>673</sup> Costa Rican 2011 Report to Ramsar, p. 39, Figure 15 (CRM, Vol. IV, Annex 155).



5.238 Costa Rica argues that this single deposit has caused “the permanent loss of the ecological conditions existing before the deposit, reason for which it constitutes an irreversible damage.”<sup>674</sup> It further contends that the area affected by this deposit has “already suffered a total impact and will be beyond recovery”<sup>675</sup> leading to “the permanent loss of the ecological conditions existing before the deposits.”<sup>676</sup>

5.239 Costa Rica’s own evidence debunks this hyperbole. Costa Rica’s expert has acknowledged that, by June 2011, this one sediment deposit was being

---

<sup>674</sup> *Ibid.*, p. 38.

<sup>675</sup> *Ibid.*, pp. 68-69.

<sup>676</sup> *Ibid.*, p. 73.



“recolonized” by vegetation, as can be seen in the following image<sup>677</sup>, in which the small grey pile of sediments has begun to be covered with green plants:



5.240 As Professor Thorne puts it, such “recovery and regrowth” means that “the impacts were of local extent and time-limited duration.”<sup>678</sup> In other words, the sediment deposit has not caused “irreparable” or “irreversible” damage, or otherwise rendered the area “beyond recovery”.

5.241 Indeed, by 7 July 2011, when Professor Thorne viewed the area by helicopter, the site of the supposed “irreparable damage” resulting from Nicaragua’s deposition of dredged sediments looked like this (with the red circle having been provided by Professor Thorne)<sup>679</sup>:

---

<sup>677</sup> Thorne, p. I-56, Figure I.39 and caption thereto.

<sup>678</sup> *Ibid.*, p. I.61.

<sup>679</sup> *Ibid.*, p. I-57, Figure I.40(b).



5.242 As this photograph shows, the one location where dredged sediments were deposited in the disputed area had substantially diminished in size by July 2011, with new vegetation taking the place of the old. There has been no “destruction”. At the rate of growth visible from these photographs, between April and July 2011, it is obvious that, by the end of that year, the sedimentary deposit would have been completely covered by vegetation, and no longer discernible.

5.243 Nor is Costa Rica correct in suggesting that Nicaragua has deposited sediments in territory that is indisputably Costa Rican, i.e., territory outside the area near the Harbor Head Lagoon that is under dispute in this case. As an initial matter, as discussed above, it is simply not true that Nicaragua

authorized the deposition of dredged sediments in Costa Rica. According to Costa Rica's Memorial, when the reference coordinates included in MARENA's Resolution No. 038-2008 authorizing the dredging project and related deposit sites are plotted on a map, it becomes "immediately apparent that several sites are on the right, Costa Rican bank of the San Juan."<sup>680</sup> But Costa Rica's "sketch map" does not accurately indicate the locations of the deposit sites authorized by MARENA. As discussed above in Section A, those sites are located exclusively on the Nicaraguan side of the River.

5.244 Indeed, an annex to Costa Rica's Memorial establishes that Nicaragua has deposited dredged sediments in conformity with EPN's plan and MARENA's authorization, which require the deposition of sediments only on the Nicaraguan side of the River. This document, included as Annex 150, is a report by UNITAR/UNOSAT dated 8 November 2011. It states unambiguously that Nicaragua's "depositional sites are located exclusively on Nicaraguan territory".<sup>681</sup>

5.245 The only purported "evidence" Costa Rica has provided of Nicaragua's supposed dumping of dredged sediments on indisputably Costa Rican territory consists of a single photograph – Figure 3.3 – which supposedly shows

---

<sup>680</sup> CRM, pp. 227, paras. 5.63-5.64 & p. 299, Sketch Map 5.1.

<sup>681</sup> UNITAR/UNOSAT, "Update 4: Morphological & Environmental Change Assessment for the San Juan River, Costa Rica (Covering the Period from 7 June to 25 October 2011)," 8 November 2011 (hereafter "UNITAR/UNOSAT Update 4"), in CRM, Vol. IV, Annex 150, p. 160. The version of the report presented in Costa Rica's annexes does not include page numbers. For this reason, citations to the report in this Counter Memorial refer to the page number of CRM, Vol. IV in which the report appears.

that “[o]n 21 August 2011...a pipe connected to one of Nicaragua’s dredgers located in the area of the ‘Delta’ just beyond the bifurcation of the Colorado River and the San Juan, had been placed on the right, Costa Rican bank of the San Juan,” with the pipe “attached to Costa Rican territory.”<sup>682</sup> The image, which Costa Rica has not authenticated and which bears a different date (7 July 2011) in its caption, shows no such thing. Instead, it depicts<sup>683</sup> – as its own caption shows – the dredge’s pipe “along the Costa Rican bank,” but still very much in the water of the San Juan River.



5.246 Furthermore, Costa Rica only alleges that the dredge’s pipe was attached to Costa Rican territory, not that it deposited sediments there.

---

<sup>682</sup> CRM, p. 99, para. 3.66.

<sup>683</sup> *Ibid.*, p. 100, Figure 3.3.

Presumably, Costa Rica would have produced photographic evidence of such deposits had they existed. But there is no such evidence.

5.247 Finally, even if it were true, quod non, that Nicaragua had deposited dredged sediments on Costa Rican territory, it is not true that such deposition would result in significant, irreparable harm.

5.248 Costa Rica alleges that the deposition of river sediments in a wetland “has in itself an irreversible effect” because “[t]he sediment dries up the land where the deposits are made, and causes an immediate change to the biological composition of the site,” which “cannot be restored to its previous condition, due to the change in the ecological characteristics of the components of the ecological processes of the wetland (biological, chemical and physical).”<sup>684</sup> The only support Costa Rica cites for this argument is “the report submitted to the Ramsar Secretariat dated 28 October 2011”<sup>685</sup> – that is, a Costa Rican report submitted to Ramsar well after the initiation of this dispute.

5.249 Costa Rica’s own expert, Professor Thorne, provides no support for Costa Rica’s assertion. Instead, he concludes that “sediment from the bed of the river that was deposited onto the right-bank floodplain” has had only impacts of “local extent and time-limited duration,” since “recovery and regrowth of riparian vegetation” was already visible by June and July 2011.<sup>686</sup>

---

<sup>684</sup> *Ibid.*, p. 228, para. 5.66.

<sup>685</sup> *Ibid.*, citing Costa Rican 2011 Report to Ramsar, p. 38 (CRM, Vol. IV, Annex 155).

<sup>686</sup> Thorne, p. I-61.

**(ii) Dredging Has Not Caused Erosion of the Costa Rican Bank**

5.250 Costa Rica alleges that “[a]s a result of the dredging works, the Costa Rican bank of the San Juan is starting to erode.”<sup>687</sup> In support of this allegation, Costa Rica again provides only one close-up photograph, Figure 3.4,<sup>688</sup> which does not identify the location or establish any linkage between the condition of the river bank that is depicted and Nicaragua’s dredging operations. Indeed, it is not possible to tell from the photograph<sup>689</sup> whether the bank that is depicted is the right bank of the San Juan River, or some other waterway inside Costa Rica:



---

<sup>687</sup> CRM, p. 254, para. 5.109.

<sup>688</sup> *Ibid.*, p. 101, cited at p. 99, para. 3.66 & p. 254, para. 5.109.

<sup>689</sup> *Ibid.*, p. 101, Figure 3.4.

5.251 Costa Rica points to the Thorne Report, which says that the Costa Rican banks could be damaged or erode “due to vessel movement and mechanical contact with the bank” or “if the dredger removes sediment from close to the bank or disturbs sensitive bank vegetation.”<sup>690</sup> These are hypothetical situations (“if the dredger removes sediment from close to the bank...”); none is proven to have occurred. Costa Rica claims to have “gathered evidence showing that Nicaragua did place dredging pipes along the right bank, which are believed to have been used to extract material from that margin, thus weakening it and allowing erosion to take its course, as the Figure 3.4 demonstrates.”<sup>691</sup> However, as noted above, this “evidence” – one unauthenticated photograph which Costa Rica has labeled with two inconsistent dates – is not proof of anything, let alone that Nicaragua’s dredging has caused erosion of the Costa Rican bank. A moment’s reflection reveals that it is not at all in Nicaragua’s interest to cause the Costa Rican bank to erode, since this would simply add to the sedimentation of a river from which Nicaragua is seeking to remove sediment. In short, there is no support for Costa Rica’s allegation that Nicaragua has caused erosion along the banks of the San Juan River.

5.252 Here again, Costa Rica’s own documents disprove its allegations. The November 2011 UNITAR/UNOSAT Report mentioned above also concluded that “there are no indications of adverse environmental or hydrological impacts

---

<sup>690</sup> *Ibid.*, p. 254, para. 5.109, quoting Thorne, p. II-30.

<sup>691</sup> *Ibid.*, p. 254, para. 5.109.

along the Costa Rican side of the border on the south bank of the river” as a result of Nicaragua’s dredging activities.<sup>692</sup>

5.253 Costa Rica’s expert likewise confirms that its claims of erosion-related harm are meritless. Specifically, while Professor Thorne notes that it can be dangerous for dredges to operate too close to the Costa Rican bank, he concludes, based on his site visit in July 2011, that “there was no evidence of widespread bank erosion triggered by systemic response to the cumulative effects of the dredging programme,” and that “widespread erosion of the banks would not be expected in response to the cumulative effects of site or reach-scale dredging alone.”<sup>693</sup> Rather, the localized bank erosion that Professor Thorne observed on the Costa Rican bank tended to be “in divided reaches and associated with riverside settlements.”<sup>694</sup>

5.254 Indeed, erosion of the Costa Rican bank is something that Nicaragua’s EIS identified in 2006 as one of the reasons that the dredging project was necessary in the first place. Specifically, the EIS noted that “the soil of the riverbanks collapse as a result of the lack of natural structures to sustain them,” such as the “roots of trees and shrubbery [that] serve this function of ‘mooring’ or

---

<sup>692</sup> UNITAR/UNOSAT Update 4, in CRM, Vol. IV, Annex 150, p. 160 (emphasis added).

<sup>693</sup> Thorne, p. II-41. Inconsistently, Professor Thorne also argues that he was able, in July 2011, to observe certain listed “direct, short-term, site-scale, and reach-scale impacts” of Nicaragua’s dredging activities, and that “[e]vidence of all these impacts may be seen in Figure II.19” of his report. However, Figure II.19 is nothing more than an (erroneous) map of deposit locations as authorized in MARENA’s Resolution of the dredging project, nothing that provides any evidence whatsoever of the impacts the dredging project has had to date. *Ibid.*, pp. II-39-40 & Figure 19.

<sup>694</sup> *Ibid.*, p. II-41 (emphasis added).



providing physical resistance from erosion.”<sup>695</sup> This discussion of the erosion problem in the EIS was accompanied by the following photographs, which illustrate erosion of the banks of the San Juan River (see **Figure 5.4.**):

**Figure(s) 5.4.**



**Figure(s) 5.4.** Photographs of Erosion Included at pp. 77 & 82 of EIS

5.255 Costa Rica’s riverside settlements and agriculture are not the only causes of erosion of the banks of the San Juan River. As established in Chapter 4, Costa Rica’s road construction along the banks of the River has also contributed to the problem. Costa Rica’s own governmental agencies, including its

---

<sup>695</sup> Environmental Impact Study, pp. 77-78 (NCM, Vol. II, Annex 7).

Environmental Ministry, recently observed that Costa Rica had caused “[p]otential increase in focused erosion processes.”<sup>696</sup> As can be observed in the following photographs<sup>697</sup> presented to the Central American Court of Justice by environmental NGOs FUNDENIC-SOS and FONARE<sup>698</sup> (see **Figure(s) 5.5.**), erosion of the riverbank caused by Costa Rica’s road construction is a significant problem.

**Figure(s) 5.5.**



---

<sup>696</sup> Costa Rican Environmental Management Plan for the Camino Juan Rafael Mora Porras, p. 22 (NCM, Vol. IV, Annex 116).

<sup>697</sup> Dr. Jaime Incer Barquero, “*Impactos ambientales sobre suelos, aguas y bosques causados por la nueva carretera construida por Costa Rica junto al río San Juan,*” presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Catalogo 50 imagenes comentadas tomadas por los especialistas,*” p. 19, available at [http://lagosdenicaragua.org/index.php?option=com\\_content&view=article&id=134&Itemid=63](http://lagosdenicaragua.org/index.php?option=com_content&view=article&id=134&Itemid=63) (last visited 16 July 2012).

<sup>698</sup> Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Ruta de la Carretera,*” image of site 15, available at [http://lagosdenicaragua.org/index.php?option=com\\_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0](http://lagosdenicaragua.org/index.php?option=com_jdownloads&Itemid=64&view=finish&cid=9&catid=3&m=0) (last visited 16 July 2012).



**Figure(s) 5.5. Photographs of Erosion Presented to Central American Court of Justice**

5.256 In short, Costa Rica has it backwards. Nicaragua's dredging of the river has not caused erosion. Instead, it is Costa Rica's own activities that have caused the banks of the San Juan River to erode, thereby facilitating sedimentation and making Nicaragua's dredging program even more necessary.

### **3. The Absence of Any Risk of Harm to Costa Rica**

5.257 As established above, Nicaragua satisfied its obligations to undertake an environmental impact assessment before commencing the project. The intra-governmental reviewing team, drawing upon the work of professional CORASCO engineers and scientists, concluded – prior to authorizing the project – that it would not cause harm to the navigability of the Colorado River, adversely affect water quality in the San Juan River, or otherwise damage Costa Rica through the deposition of dredged sediments, which had to be deposited at carefully

selected and controlled sites on the left (i.e., Nicaraguan) bank of the River. Likewise, before authorizing the additions to the project, MARENA assessed their likely environmental impacts and concluded that they would be minor and time-limited.

5.258 These conclusions have been borne out by the actual impacts of the project, or more accurately, the lack of impacts. None of the activities Nicaragua has undertaken has caused any material impact to Costa Rica's environment or the flow of its rivers.

5.259 Indeed, in tacit recognition of the fact that it cannot prove any actual harm, Costa Rica relies instead primarily on arguments about purported risks of future harm. Specifically, Costa Rica alleges that "Nicaragua's activities risk causing further significant environmental harm to Costa Rican territory, and affecting the flow of the Colorado River."<sup>699</sup> Based on this purported risk, Costa Rica asks the Court to order Nicaragua to "cease all dredging activities on the San Juan in the area between the point of bifurcation of the Colorado River and the San Juan and the outlet of the San Juan in the Caribbean Sea" pending "(i) an adequate environmental impact assessment; (ii) notification to Costa Rica of further dredging plans for the area, not less than 3 months prior to the implementation of such plans; and (iii) due consideration of any comments of Costa Rica made within 1 month of notification."<sup>700</sup>

---

<sup>699</sup> CRM, p. 70, para. 3.5.

<sup>700</sup> *Ibid.*, pp. 300-301, para. 7.11 & pp. 304-305, Submissions, para. 2(b).

5.260 Costa Rica focuses its attention in the Memorial on the so-called “White Book” published in November 2010, which states that “[i]f Nicaragua dredges and cleans the bank of silt and sand that obstructs navigation in the San Juan River, the interests of Costa Rica will be harmed of course.”<sup>701</sup> But this is not proof that the dredging program poses a risk to Costa Rica. Costa Rica neglects to mention that, in pages excised from the version of the White Book annexed to its Memorial, Nicaragua states that it “has assured that such cleaning [i.e., its dredging program] will not cause any environmental damage.”<sup>702</sup> Further, the White Book quotes Costa Rica’s own Foreign Minister, who stated to the Environmental Commission of Costa Rica’s Legislative Assembly in September 2010 that he saw “no major ecological problems in the dredging of the San Juan River that Nicaragua aims to carry out,” as Costa Rica’s own models had demonstrated that Nicaragua’s dredging project “will not produce the alarming environmental and economic impact that some media have suggested.”<sup>703</sup>

5.261 Costa Rica’s other allegations that the dredging program poses risks to Costa Rican territory are grounded entirely on three documents: the Ramsar Advisory Mission Report No. 69 discussed above <sup>704</sup> the

---

<sup>701</sup> *Ibid.*, para. 3.87; *see also* para. 5.20.

<sup>702</sup> Complete Nicaraguan White Book, p. 46 (NCM, Vol. II, Annex 26). Other pages omitted from Costa Rica’s annexes also illustrate that it is actually Costa Rica that has caused and continues causing damage to the environment, including the San Juan River and other portions of Nicaragua’s sovereign territory. *Ibid.*, pp. 31-37.

<sup>703</sup> Statement by Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, 8 September 2010, pp. 5-6 (NCM, Vol. II, Annex 24), *see also* Complete Nicaraguan White Book, p. 39 (NCM, Vol. II, Annex 26).

<sup>704</sup> *See* CRM, pp. 258-259, para. 5.116, citing Ramsar Report No. 69 (CRM, Vol. IV, Annex 147).

UNITAR/UNOSAT Report of 4 January 2011,<sup>705</sup> and the October 2011 expert report of Professor Thorne,<sup>706</sup> which Costa Rica submitted as Appendix I to its Memorial. None of these documents proves a risk of harm to Costa Rica.

5.262 Ramsar Report No. 69 – which, as established above, is based entirely on information provided by Costa Rica<sup>707</sup> – does nothing to demonstrate any risk of harm to Costa Rica. It is entirely focused on the now-completed efforts to clear the caño, not the program to dredge the San Juan River, and it merely states that, “if deforestation continues” in the area of Isla Portillos, effects that are “very localized to the island and to the south of the southern edge” of the caño would result, leading to “changes in the dynamics of the aquifer with respect to the surface run-off and changes in the island’s flora.”<sup>708</sup> Nicaragua has no intention of engaging in deforestation in the area of Harbour Head. Otherwise, Costa Rica cites Ramsar Report No. 69 for the proposition that “receiving the water supply from the waters of the San Juan via the artificial canal would alter the water balance,” and that flooding might occur to cause harm in the area.<sup>709</sup> Again, Nicaragua has no intention of redirecting the San Juan River through the

---

<sup>705</sup> See *ibid.*, pp. 257-258, para. 5.115, citing UNITAR/UNOSAT, “Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica,” 4 January 2011 (hereinafter “January 2011 UNITAR/UNOSAT Report”) (CRM, Vol. IV, Annex 148).

<sup>706</sup> See *ibid.*, paras. 5.82-5.87, 5.112-5.114, 5.117-5.118, 5.122.

<sup>707</sup> See paras. 5.203 – 5.206, *supra*.

<sup>708</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 118 (emphasis added).

<sup>709</sup> CRM, p. 258, para. 5.116, quoting Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, pp. 122 & 125.

caño, which is not, in fact, artificial, and there is no evidence that flooding has occurred or will occur in the future.

5.263 Ramsar Report No. 69 is also notable in that it predicted “medium term (one year)” impacts that have not come to fruition. For instance, the report estimated in late 2010 or early 2011 (depending on whether Costa Rica’s version or Ramsar’s official version of the report is consulted) that, “within an approximate period of one hydrological cycle (one year) there will be partial or total loss of the Laguna los Portillos” as a result of the breaching of the sandbank between the Lagoon and the Caribbean Sea.<sup>710</sup> In fact, Costa Rica’s own personnel have so far found the Lagoon to be perfectly healthy, with “no plume of sediment [appearing] whatsoever and, moreover, the coastal sandbank, in Punta Castilla...unaltered, with no direct connection between [the] lagoon and the Caribbean Sea.”<sup>711</sup> This is clear in the following image<sup>712</sup> from the 28 October 2011 Costa Rican report to Ramsar:

---

<sup>710</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 126.

<sup>711</sup> Costa Rican 2011 Report to Ramsar, p. 31 & p. 33, Figure 12 (CRM, Vol. IV, Annex 155).

<sup>712</sup> *Ibid.*, p. 33, Figure 12.



5.264 As the Costa Rican authors of the Report concede, this photograph shows the pristine Lagoon and the in-tact barrier beyond.

5.265 Ramsar Report No. 69 also predicted that, within a year, there would be flooding in the disputed area, “giving rise to a growing halo of dead vegetation, with a loss of habitat for terrestrial fauna,”<sup>713</sup> as well as “further erosion in the remainder of the wetlands on Isla Portillos (south-eastern bank of

---

<sup>713</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 127.



the [caño]).”<sup>714</sup> None of these predictions has been realized. Nor are there any allegations by Costa Rica that such harms have occurred.

5.266 Nor does the UNITAR/UNOSAT Report of 4 January 2011<sup>715</sup> help Costa Rica. Like Ramsar Report No. 69, this report was produced in coordination with Costa Rican officials for the January 2011 hearings on provisional measures. Indeed, Costa Rica publicly admitted after those hearings that it commissioned the report in late 2010 and “shared it with a handful of Costa Rican environmentalists who signed non-disclosure forms that prevented them from commenting before the case went to trial” in January 2011.<sup>716</sup> This is also clear from the fact that the version of the report Costa Rica annexed to its Memorial is different than the version of the same report it produced to the Court in January 2011, the latter of which was clearly an unfinished draft, as it was rife with typographical and other errors that have since been corrected.<sup>717</sup>

5.267 According to Dr. Kondolf, the findings of the January 2011 UNITAR/UNOSAT Report also suggest that they are premised on information and conclusions provided by a third party (presumably Costa Rica) to the report’s

---

<sup>714</sup> *Ibid.*, p. 128.

<sup>715</sup> January 2011 UNITAR/UNOSAT Report (CRM, Vol. IV, Annex 148). The version of the report presented in Costa Rica’s annexes does not include page numbers. For this reason, citations to the report in this Counter Memorial refer to the page number of CRM, Vol. IV in which the report appears.

<sup>716</sup> TicoTimes.net, Adam Williams, “Tough talk as Costa Rica - Nicaragua border tightens”, 14 January 2011 (NCM, Vol. III, Annex 95).

<sup>717</sup> See Version of January 2011 UNITAR/UNOSAT Report Submitted at Tab 113 of Costa Rica’s 11 January 2011 Judges’ Folder, pp. 4-7 (NCM, Vol. IV, Annex 112).

anonymous authors.<sup>718</sup> This is because many of the statements in the report are unsubstantiated claims that cannot have been based on the interpretation of satellite imagery, which the report states was the only method used.<sup>719</sup> If such statements are not rank speculation, they must be based on information and conclusions received from a third party whose identity and methods have not been revealed, which severely compromises the credibility and integrity of the report.<sup>720</sup> Indeed, Dr. Kondolf finds that, “[b]y the standards of science,” the January 2011 UNITAR/UNOSAT report “can be dismissed as unreliable and unscientific.”<sup>721</sup>

5.268 Nevertheless, Costa Rica cites the report for the proposition that Nicaragua’s activities will cause harm to Costa Rica, noting that UNITAR/UNOSAT opined that:

If completed [the] cut in the meander [approximately 400 meters upstream from the caño] will redirect the San Juan River approximately 175 meters to the west, and will likely significantly increase the water velocity downstream. Such a velocity increase will also increase the amount of water entering the new channel, thus likely widening the channel due to an acceleration of the erosion process resulting from the increased water velocity and inflow.<sup>722</sup>

---

<sup>718</sup> Kondolf, Section 3.1 (Appendix 1).

<sup>719</sup> *Ibid.*, Section 3. It must be noted, however, that unlike a rigorous scientific paper or report, the UNITAR/UNOSAT report does not include a distinct, detailed methods section, nor does it clearly report its methods elsewhere. *Ibid.*, Section 3.2.

<sup>720</sup> *Ibid.*, Section 3. According to Dr. Kondolf, many of the suspicious statements also betray a lack of scientific competence in hydrology and fluvial geomorphology, which further undermine the credibility of the report. *Ibid.*

<sup>721</sup> *Ibid.*, Section 3.8.

<sup>722</sup> CRM, pp. 257-258, para. 5.115, quoting January 2011 UNITAR/UNOSAT Report (CRM, Vol. IV, Annex 148).

5.269 To the extent that this statement can be interpreted as a prediction of risk, it has been disproven since the preparation of the report. The so-called “meander” was indeed fully cleared by late February 2011, and no significant increase in water velocity downstream or water flow in the caño has resulted, nor has the channel been widened. Indeed, according to Professor Thorne, the caño actually decreased in size from December 2010 to April 2011, and then decreased further still from April 2011 to July 2011.<sup>723</sup> As to the purported risks of “cutting the meander,” Professor Thorne also concludes that the San Juan River is actually “quite resilient to perturbation,” such that “extreme fluvial and morphological responses would not be expected due to cutting off a single bend, especially one that was not particularly old or tortuous.”<sup>724</sup>

5.270 Insofar as the January 2011 UNITAR/UNOSAT Report can be construed as predicting future harm, it has been disproven by other reports prepared by UNITAR/UNOSAT. It appears that Costa Rica commissioned at least four additional “update” reports by UNITAR/UNOSAT, which were produced on 10 February 2011<sup>725</sup> (“Update 1”), 3 March 2011<sup>726</sup> (“Update 2”),

---

<sup>723</sup> Thorne, p. I-60.

<sup>724</sup> *Ibid.*, p. I-80.

<sup>725</sup> UNITAR/UNOSAT, “Update 1: Morphological and Environmental Change Assessment from 14 December 2010 to 24 January 2011) San Juan River Area, Costa Rica,” 10 February 2011 (hereinafter “UNITAR/UNOSAT Update 1”), available at [www.rree.go.cr/file-noti.php?id\\_file=183](http://www.rree.go.cr/file-noti.php?id_file=183) (last visited 15 July 2012) (NCM, Vol. IV, Annex 113).

<sup>726</sup> UNITAR/UNOSAT, “Update 2: Morphological and Environmental Change Assessment for the San Juan River Area, Costa Rica as of 22 February 2011,” 3 March 2011 (CRM, Vol. IV, Annex 149).

12 September 2011<sup>727</sup> (“Update 3”), and 8 November 2011<sup>728</sup> (“Update 4”), respectively. Costa Rica, however, only annexed two of these four – Update 2 and Update 4 – to its Memorial, and it neglected to include the portions of the document titles that make plain the existence of at least two other updates.<sup>729</sup> Although not annexed to the Memorial, Update 1 was – at least as of July 2012 – available on the Costa Rican Foreign Ministry’s website,<sup>730</sup> but Update 3 is included neither in the annexes to the Memorial, nor on Costa Rica’s government websites, nor anywhere else on the internet. This is odd, given that Professor Thorne apparently not only received a copy of Update 3, but also cites it in his expert report.<sup>731</sup>

5.271 Regardless, the UNITAR/UNOSAT update reports that are available to Nicaragua demonstrate that the “risks” outlined in the January 2011 UNITAR/UNOSAT Report – i.e., that a completed cut through the meander 400 meters upstream from the entrance to the caño would increase the amount of water in the caño and widen it<sup>732</sup> – are nonexistent. By the time of the preparation of

---

<sup>727</sup> See Thorne, p. III-4, citing UNITAR/UNOSAT, “Update 3: Morphological and Environmental Change Assessment: San Juan River Area, Costa Rica,” Report to the Government of Costa Rica UTC – Version 4.0, 12 September 2011.

<sup>728</sup> UNITAR/UNOSAT, “Update 4: Morphological & Environmental Change Assessment for the San Juan River, Costa Rica (Covering the Period from 7 June to 25 October 2011),” 8 November 2011 (CRM, Vol. IV, Annex 150).

<sup>729</sup> See CRM, Vol. IV, pp. 2, 147 & 157.

<sup>730</sup> *This report concluded that* from 14 December 2010 to 24 January 2011 there was “no significant change” in the caño connecting the San Juan River to the Harbor Head Lagoon – “no indication of additional structural changes” and no ongoing problem of erosion. UNITAR/UNOSAT Update 1 (NCM, Vol. IV, Annex 113).

<sup>731</sup> See Thorne, pp. I-54, I-55, I-76, II-47 & III-4.

<sup>732</sup> CRM, para. 5.115, quoting January 2011 UNITAR/UNOSAT Report (CRM, Vol. IV, Annex 148).

Update 4 on 8 November 2011, the “cutting of the meander” had long since been completed and, according to UNITAR/UNOSAT, the resulting channel “remain[ed] stable with no indications of erosion or vegetation instability along the river banks.”<sup>733</sup> Instead of the feared increase, the caño actually experienced a continual decline in water flow between June and October<sup>734</sup> (i.e., throughout the rainy season), and flow “may have actually stopped altogether.”<sup>735</sup> In light of the fact that UNITAR/UNOSAT has disproven the accuracy of its own projections from January 2011, it is troubling that Costa Rica quotes those early warnings in its Memorial as if they still reflected UNITAR/UNOSAT’s assessment of the situation.<sup>736</sup>

5.272 Costa Rica’s third purported piece of evidence of risk of harm – the expert report of Professor Thorne – is equally unpersuasive. Professor Thorne has not even attempted to prove that Nicaragua’s dredging program poses a risk to Costa Rica’s environment. As detailed in the sections that follow, Professor Thorne goes no further than to state that “unlikely, but not impossible” risks might

---

<sup>733</sup> UNITAR/UNOSAT Update 4, in CRM, Vol. IV, Annex 150, p. 161.

<sup>734</sup> *Ibid.*, p. 166.

<sup>735</sup> *Ibid.*, p. 160.

<sup>736</sup> See CRM, para. 5.115. Costa Rica does the same thing elsewhere in the Memorial, quoting the January 2011 UNITAR/UNOSAT report in paragraph 3.113 for the proposition that the caño is likely to increase in width “due to erosion as new water flow cuts into the soil” – i.e., the “high rate of erosion [that] is additionally facilitated with the high velocity of water flowing in from the San Juan River.” Of course, UNITAR/UNOSAT’s later reports (including “Update 1,” which Costa Rica affirmatively chose not to present with its Memorial), as well as other documents such as the Thorne Report, have demonstrated that the opposite is actually true. Nevertheless, Costa Rica concludes the substantive portion of Chapter 3 with this misleading quote, as if it were still accurate.

exist if Nicaragua’s dredging activities and plans were radically more ambitious than they actually are.

5.273 In short, Costa Rica simply has not demonstrated that Nicaragua’s activities pose a threat to either the environment of Costa Rica or the navigability of its rivers.

**(a) No Risk of Harm to Costa Rica’s Environment**

5.274 Neither Nicaragua’s manual clearing of the caño nor its dredging of the San Juan River pose any risk of harm to Costa Rica’s environment. Costa Rica’s own expert confirms this.

5.275 As to the now-completed work to clear the caño, Professor Thorne concludes that longer-term impacts of the caño on the “hydrology, hydraulics, sediment dynamics, and morphology”<sup>737</sup> of the San Juan River “will, like the short-term impacts, be small or negligible,”<sup>738</sup> and that “the on-going, adverse impacts of the ‘Caño’ on the Harbor Head Lagoon and wetland are likely to diminish with time.”<sup>739</sup>

5.276 Regarding the dredging program, Professor Thorne states that, in general, dredging “has direct, short-term impacts on river environments and ecosystems through disturbing aquatic flora and fauna, destroying benthic communities and, potentially, increasing turbidity and reducing water quality,

---

<sup>737</sup> Thorne, p. iv.

<sup>738</sup> *Ibid.*, p. I-63 (emphasis added).

<sup>739</sup> *Ibid.*, p. I-70 (emphasis added).

with impacts that will be felt throughout the tropic network.”<sup>740</sup> However, with regard to Nicaragua’s program to dredge the Lower San Juan River, he concludes that the “[n]aturally high sediment and nutrient concentrations in the river are likely to limit impacts on turbidity and water quality that are customarily associated with dredging.”<sup>741</sup> As a result, “[i]mpacts on turbidity and water quality seem unlikely due to the naturally-high concentrations of suspended sediment in the river, which would reduce the downstream impacts of the work on the river ecosystem.”<sup>742</sup>

5.277 Professor Thorne also mentions that dredging too close to riverbanks may cause damage, either by over-steepening or directly disrupting the banks, which “could produce morphological adjustments that are impossible to predict in detail, but which could amplify rather than dampen the impacts of dredging on channel forms, habitats, and ecosystems.”<sup>743</sup> However, as Professor Thorne points out, the San Juan River enjoys particular characteristics that “limit the environmental and ecological impacts”<sup>744</sup> of dredging.

5.278 These physical realities help explain why, when Professor Thorne visited the river in July 2011, he found that “there was no evidence of widespread bank erosion triggered by systemic response to the cumulative effects of the dredging programme.” This caused him to conclude that “widespread erosion of

---

<sup>740</sup> *Ibid.*, p. II-37 (emphasis added).

<sup>741</sup> *Ibid.*, p. vii (emphasis added); *see also* p. II-39.

<sup>742</sup> *Ibid.*, p. II-39 (emphasis added).

<sup>743</sup> *Ibid.*, pp. vii-viii (emphasis added); *see also* p. IV-2.

<sup>744</sup> *Ibid.*, p. v.

the banks would not be expected in response to the cumulative effects of site or reach-scale dredging alone.”<sup>745</sup>

5.279 In short, Costa Rica’s own expert concedes that the project does not pose any significant risk of harm to the environment. As a result, Costa Rica’s case regarding the risks that Nicaragua’s activities supposedly pose to Costa Rica’s environment is largely built on the allegation that its efforts are actually aimed at “redirecting the river’s path in a straight direction towards the newly constructed caño” in order to deviate the San Juan through the channel and into Harbor head Lagoon.<sup>746</sup> Such wholesale deviation of the River through the caño would, Costa Rica asserts, cause “additional permanent damage to Costa Rican territory.”<sup>747</sup>

5.280 With regard to these hypothetical risks of a project that Nicaragua has no intention of undertaking, Professor Thorne states that if Nicaragua were to widen the caño through “further and repeated capital works followed by maintenance digging and dredging to enlarge and keep the channel open” in order to divert the San Juan River along the caño’s course and into Harbor Head Lagoon, this “would be highly damaging to the river and its environment”<sup>748</sup> and

---

<sup>745</sup> *Ibid.*, p. II-41 (emphasis added).

<sup>746</sup> *See* CRM, p. 226, para. 5.62.

<sup>747</sup> *Ibid.*, p. 69, para. 3.1.

<sup>748</sup> Thorne, p. I-64.



could cause “adverse impacts on natural morphologies; hydrologic processes; wildlife habitats; and species in the river, lagoon, and surrounding wetland.”<sup>749</sup>

5.281 But this analysis has a fundamental flaw: no such work to enlarge the caño and divert the River through it to Harbor Head Lagoon is contemplated.

5.282 Indeed, even if, quod non, Nicaragua desired to force the entire river through the caño (which it does not), there is no scientific basis for concluding that its small dredging project can cause such a “fundamental alteration in the character of the river basin morphology”<sup>750</sup> or “substantial alterations in the natural ecological balance.”<sup>751</sup> In other words, there is no real risk of this happening, even if Nicaragua wanted it to occur, which it does not.

5.283 Professor Thorne himself acknowledges that it is “unlikely ... that the impacts of the dredging programme might interact synergistically with those of the renewed attempts to divert flow into the ‘Caño’ by straightening its course through meander cut-offs and enlarging the channel linking the Rio San Juan to the Harbor Head Lagoon.”<sup>752</sup> The most he can say is that such a development is

---

<sup>749</sup> *Ibid.*, p. I-60. Professor Thorne also argues that the diversion of the River through the caño could lead, in the “worst case” scenario, to the “breaching of the barrier beach that separates the lagoon from the Caribbean Sea,” which might – through the “[r]esultant changes in the surficial and sub-surface hydrology, salinity, and trophic state of the lagoon and surrounding wetland” – “lead to irreversible collapse of the ecosystem in the northern Isla Portillos.” *Ibid.*, p. IV-2; *see also* pp. v & I-67 (“If the areas of wetland and floodplain disturbed by construction of the ‘Caño’ are not allowed or assisted to recover as necessary, and were further actions taken to re-excavate or enlarge the ‘Caño’, then the environmental consequences would be likely to lead to a collapse in the wetland and lagoonal ecosystems that would probably prove, in the long-term, to be irreversible.”).

<sup>750</sup> CRM, p. 226, para. 5.62.

<sup>751</sup> *Ibid.*

<sup>752</sup> Thorne, p. II-41.

“not impossible.” A hypothetical – and admittedly unlikely – possibility does not constitute actionable risk.

5.284 This conclusion has been confirmed by Nicaragua’s experts, all of whom have reached the same essential conclusion: “By virtue of its small scale, the impacts of the dredging program are minor,” and there is no meaningful risk that the San Juan River will deviate substantially from its natural course.<sup>753</sup> Indeed, “the San Juan and Colorado Rivers experience seasonal flow variations that are much greater than the change in discharge that is likely to result from Nicaragua’s dredging activities,” making “the rivers themselves as well as all of the species who live in or rely upon them...accustomed to more fluctuation than the dredging will cause. This is another indicator that any negative environmental effect of Nicaragua’s modest activities will be insignificant.”<sup>754</sup> In short, “[t]he ominous predictions of environmental collapse if the dredging is continued and the Caño maintained are not justified based on scientific evidence presented, but are rather assertions that exaggerate the potential impacts.”<sup>755</sup>

5.285 Moreover, Nicaragua’s dredging program is actually important for preserving the environment, including portions of Costa Rica’s territory. As Professor Thorne correctly notes, without human intervention, the Lower San Juan will be “a declining river” because it will “silt and lose conveyance

---

<sup>753</sup> Kondolf, Section 2.12 (Appendix 1); *see also* 2012 Van Rhee & De Vriend Supplemental Report, Chapter 2 (Appendix 2).

<sup>754</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 3.1 (Appendix 2).

<sup>755</sup> Kondolf, Section 1.2 (Appendix 1).

capacity”, while the Colorado branch will “grow and gain conveyance capacity”, capturing ever more of the flow from the upper reaches of the San Juan.<sup>756</sup> Apart from the navigation problems that already exist and will be exacerbated by decreased flows and increased sedimentation, such a process will have adverse environmental effects on the wetlands that are sustained by the lower stretches of the San Juan River. The Ramsar Advisory Mission that visited San Jose, Costa Rica in November 2010 established this point, finding that the main water supply of the Humedal Caribe Noreste “comes from the San Juan River”<sup>757</sup> and concluding that “[i]t is crucial to maintain the river discharge and patterns of the San Juan river upstream of the HCN in order to preserve it as a healthy and sustainable wetland in the long term.”<sup>758</sup> Thus, even according to the sources relied upon by Costa Rica, Nicaragua’s dredging program is not only necessary to ensure the navigability of the waterway, but is also needed to ensure the protection of the wetlands of international importance that rely upon the River and its continued flow, including Costa Rica’s own Humedal Caribe Noreste.

5.286 Professors van Rhee, de Vriend, and Kondolf all agree with this conclusion.<sup>759</sup> As Dr. Kondolf puts it, “[t]he Thorne report warns that the flow of the Lower Río San Juan is slowly declining”<sup>760</sup> and also that “cutting off

---

<sup>756</sup> Thorne, p. II-9.

<sup>757</sup> Ramsar Report No. 69, in CRM, Vol. IV, Annex 147, p. 102.

<sup>758</sup> *Ibid.*, p. 131.

<sup>759</sup> See 2012 Van Rhee & De Vriend Supplemental Report, Chapter 3.2 (Appendix 2); Kondolf, Sections 1.2 & 2.12 (Appendix 1).

<sup>760</sup> Kondolf, Section 1.2 (Appendix 1).

freshwater flow to the river mouth”<sup>761</sup> would “depriv[e surrounding] habitats there of freshwater inflow upon which they now depend,” causing “serious and irreversible morphological and environmental degradation.”<sup>762</sup> Thus, “it would follow that perhaps some steps should be taken to improve flow conditions in the San Juan”<sup>763</sup> and that Nicaragua’s “dredging program, by potentially keeping the San Juan distributary flowing, could actually produce an environmental benefit.”<sup>764</sup>

5.287 The same can be said of the relationship between Nicaragua’s dredging program and the need to maintain the morphology of the area at the River’s mouth, which Costa Rica insists is an important environmental consideration.<sup>765</sup> Reducing flows in the Lower San Juan would dramatically reduce sediment transport to the mouth of the river, which would have a significant influence on the morphology of the coastal area. According to Professors van Rhee and de Vriend, “[e]rosion of the coast line that is no longer receiving sediment deposits from river flow will be the inevitable result, together with the associated loss of natural habitat and other environmental consequences.”<sup>766</sup> This process is already underway as a result of the reduction in the San Juan’s flow since the nineteenth century, which – as is clear from Professor Thorne’s analysis of the geomorphology of the delta region – has

---

<sup>761</sup> *Ibid.*

<sup>762</sup> *Ibid.*, Section 2.12.

<sup>763</sup> *Ibid.*

<sup>764</sup> *Ibid.*, Section 1.2.

<sup>765</sup> *See* CRM, Chapter 5.

<sup>766</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 3.2 (Appendix 2).

already led to the disappearance of much of the land at the coast.<sup>767</sup> Thus, Nicaragua's efforts to dredge the Lower San Juan and maintain its flow to the sea are important for preventing future geomorphologic change which, according to Costa Rica itself, would result in environmental harm to Costa Rica's territory.

**(b) No Risk of Harm to the Navigability of the Colorado River**

5.288 Costa Rica's assertion that the project will materially affect the flow of the Colorado River fails just as badly. The reality is – as Costa Rica's Foreign Minister acknowledged in September 2010 – that the project will have no significant impact on the flow of the Colorado River.

5.289 The Environmental Impact Study for the dredging project concluded, on the basis of a large quantity of measurement data, that even the original, broader dredging project (which is not being implemented and even if it were, at its most ambitious it would not reach the levels necessary to return navigation to what it was in 1858) would not materially impact the flow of the Colorado River, as it would result in less than a 5% diminution in the Colorado River's flow, and even less in the rainy season.<sup>768</sup> Such a small change would not be noticeable, much less affect navigation or the Costa Rican wetlands and wildlife reserves fed by the Colorado River. The impact of EPN's current plan –

---

<sup>767</sup> See Thorne, Part I.

<sup>768</sup> See paras. 4.30, 5.43 and 5.78 above.

which has reduced the amount of sediment to be removed by over 70% – will be even less.

5.290 Moreover, as noted above, at the January 2011 hearing on provisional measures Nicaragua presented the Court with the expert report of Professors van Rhee and de Vriend of the Delft University of Technology, which confirmed the conclusions of Nicaragua’s EIS and further concluded that, “conservatively estimated,” the dredging project as described in the EIS – that is, the broader project that was initially envisioned and authorized – was “likely to decrease no more than 20 cubic meters per second of the flow in the Colorado River (which is of the order of 1400-1700 m<sup>3</sup>/s).”<sup>769</sup> This would constitute a reduction of flow of less than 2% of the maximum flow in the Colorado River.<sup>770</sup> In its Memorial, Costa Rica made no attempt to refute these conclusions of Professors van Rhee and de Vriend, who have since confirmed and updated their findings based on actual conduct of the dredging project and its further reduced scope.<sup>771</sup>

5.291 Indeed, Costa Rica itself reached the same conclusion in September 2010, when its Foreign Minister, René Castro Salazar, reported to the Environmental Commission of the Costa Rican Legislative Assembly that Costa Rican experts had “developed a volume calculation model that projects the impact on the volume of the Colorado River from the different types of projects and

---

<sup>769</sup> 2011 Van Rhee & De Vriend Report, p. 4 (Appendix 2).

<sup>770</sup> *See ibid.*, see also CR 2011/2, p. 40, para. 26 (Reichler).

<sup>771</sup> 2012 Van Rhee & De Vriend Supplemental Report, Chapter 3.2 (Appendix 2).

dredging operations in the San Juan River.”<sup>772</sup> Based on these studies and his own substantial expertise, he assured the Environmental Commission that any fears of harm to the Colorado River had been assuaged because “all the models analyzed calculate volume reductions of less than 12%,” a change that, as he explained, would not be sufficient to adversely impact the Colorado River or Costa Rica.<sup>773</sup> “Moreover,” the Foreign Minister continued, “for [Nicaragua’s] announced \$7 million investment, the reduction of volume would be even smaller and, therefore, will not produce the alarming environmental and economic impact that some media have suggested.”<sup>774</sup>

5.292 As the Court knows, Costa Rica was not forthcoming with its own studies referenced in Foreign Minister Castro’s September 2010 speech. Indeed, no copy was produced by Costa Rica until 7 January 2011, after the Agent of Nicaragua asked the Court to exercise its authority under Article 62 of the Rules and ask Costa Rica to produce its studies.<sup>775</sup> In the study, entitled “Estudio de comportamiento de caudales en la bifurcación Río San Juan – Río Colorado,” Costa Rica’s own technical experts concluded that the dredging of the San Juan River to a width of 120 meters – that is, 90-100 meters wider than proposed in

---

<sup>772</sup> Statement by Mr. René Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, 8 September 2010, p. 5 (NCM, Vol. II, Annex 24).

<sup>773</sup> *Ibid.*

<sup>774</sup> *Ibid.*, pp. 5-6.

<sup>775</sup> CR 2011/2, p. 41, para. 28.

Nicaragua's EIS or authorized by MARENA – would diminish the flow of the Colorado River by only 4.5%.<sup>776</sup>

5.293 Professor Thorne agrees with the assessment that the project will not negatively impact the flow of the Colorado River, despite the fact that he has drastically overestimated the scope of Nicaragua's dredging project in running his HEC-RAS model, as discussed above. He reports that, "[t]o date, there is no evidence that the dredging program has significantly affected flows in the Rio Colorado."<sup>777</sup> As to the risk of future harm to the Colorado River, Professor Thorne characterizes such risk as the even "less likely but not impossible 'worst-case' scenario"<sup>778</sup> that "might" result from the already "unlikely, but not impossible" synergistic interaction of the dredging program with the cutting of meanders and (wholly hypothetical) efforts to enlarge the caño.<sup>779</sup> Put simply, Professor Thorne has found no meaningful risk of harm to the Colorado's flow.

5.294 Dr. Kondolf confirms this analysis: "Given the small scale of the dredging program, it is extremely unlikely to harm the flow of the Colorado River."<sup>780</sup>

---

<sup>776</sup> C.S. Diseño, "Study of flow behavior in the bifurcation San Juan River – Colorado River," p. 5 (NCM, Vol. II, Annex 11). It also illustrates that the 12% reduction, which Foreign Minister Castro said in September 2010 would not materially affect the flow of the Colorado or cause material environmental impacts, would only result from dredging the San Juan to a width of 180 meters – eight to nine times wider than Nicaragua proposed, much less authorized, during the EIA process. *Ibid.*

<sup>777</sup> Thorne, IV-3.

<sup>778</sup> *Ibid.*, p. II-42.

<sup>779</sup> *Ibid.*, p. II-41.

<sup>780</sup> Kondolf, Section 1.2 (Appendix 1); *see also* Section 2.12.



5.295 Thus, all of the qualified sources to address the issue have concluded that Nicaragua's dredging project poses no threat to the flow of the Colorado River. The actual evidence – including Costa Rica's own official statements and internal scientific assessments – affirms there is no risk of material harm to the flow of the Colorado River, much less a risk of harm to the river's navigability. The fact that the scope of the dredging project has since been reduced only reinforces this conclusion.

5.296 In sum, there is no basis for Costa Rica's argument that Nicaragua's activities have harmed Costa Rica or pose a significant risk of harming Costa Rica, or that Nicaragua has in any other way violated its obligations under international environmental law. Costa Rica has failed to prove that any harm has occurred to its territory, and has not produced evidence that there is a significant risk of harm. This is not surprising, in view of the limited nature of Nicaragua's dredging and cleaning activities. Nicaragua's dredges have very small capacities by international standards and, unfortunately, have been beset by mechanical problems, causing the project to proceed slowly. The cleaning of the caño was done by hand by local people using picks and shovels. This method pales into virtual insignificance when compared with the extensive deforestation that for decades has been in process in Costa Rica's right bank, or more recently, with the hundreds of earth moving machines deployed by Costa Rica to construct its right-bank road, denuding of forests and other vegetation on

untold hectares of land in the process. Before casting stones at Nicaragua, Costa Rica should put its own house in order.

## CHAPTER 6

### TERRITORIAL SOVEREIGNTY

6.1. In this Chapter, Nicaragua will deal with the territorial sovereignty issues presented in Costa Rica's Application and argued in its Memorial. Nicaragua will show that the territory in dispute around the area of Harbour Head is unmistakably Nicaraguan because it is on Nicaragua's side of General Alexander's "first channel met" connecting the Harbour Head Lagoon to the San Juan River proper and that this channel also heads towards the east, the right side of the River, the direction indicated by Alexander. This conclusion is supported by the plain text of the Alexander Award. It is also supported by a considerable number of maps, including some prepared by Costa Rica itself, satellite photographs, and the historic practice of the Parties, all of which confirm the long-standing existence of the caño at the heart of this case, as well as Nicaraguan sovereignty over the area. The conclusion is also supported by common sense. As will be seen, the border for which Costa Rica argues simply makes no sense.

6.2. This Chapter will further deal with another territorial sovereignty issue around the area in dispute at the mouth of the San Juan River. This is the question regarding the status of the present day non-existent Bay of San Juan that was formerly understood to be common to both Parties.

6.3. Before turning to these issues, however, Nicaragua will first address Costa Rica's contention that Nicaragua's assertion of sovereignty over the

area constitutes a novel, “ex post facto” claim that is inconsistent with the settled understanding of the Parties.<sup>781</sup> As will be seen, Costa Rica is mistaken.

#### **A. NICARAGUA’S ALLEGED ‘FAILURE’ TO RAISE A DISPUTE**

6.4. Costa Rica bases its case in large measure on the existence of a number of maps that purport to show the international boundary following the line it claims.<sup>782</sup> From this, Costa Rica would have the Court draw the conclusion that there was a settled understanding between the Parties as to the location and direction of the boundary between them, neither of which Nicaragua ever challenged.<sup>783</sup> The facts are to the contrary, however. Nicaragua never considered settled the boundary currently claimed by Costa Rica. Nor did it accept as definitive any maps that depict the border as following the present westward bend of the River. If Nicaragua never formally raised the existence of a dispute, it was only because it understood Costa Rica to agree that the Parties had not yet engaged in the joint cartographic exercise necessary to draw the modern boundary with precision. There was thus no occasion to raise an issue on which Nicaragua considered there to be an alignment of views. This was all the more true because, as discussed in Section D below, Nicaragua considered itself to be in possession of the area. In this respect too, there was no active opposition of views.

6.5. The reality is that the boundary as depicted on the maps Costa Rica is so fond of invoking was never accepted as accurate by *either* Party, not just

---

<sup>781</sup> CRM, paras. 4.70-87.

<sup>782</sup> CRM, paras. 2.50-2.58, 4.20-4.22.

<sup>783</sup> CRM, paras. 4.38-4.42.

Nicaragua. For precisely that reason, the Parties have, since the end of the regional conflicts in the 1980's, conducted several meetings in which the issue of the precise definition and cartographic depiction of the boundary was discussed.

6.6. In late January 1991, the then Presidents of Nicaragua, Mrs. Violeta Chamorro, and Costa Rica, Mr Rafael Calderon, met in Managua. Point VII of the Joint Declaration issued upon conclusion of the meeting called for the creation of a Bi-national Commission that would include Sub-commissions on a variety of subjects, including the definition of the territorial limits between the two States.<sup>784</sup>

6.7. The 4<sup>th</sup> Meeting of the Bi-national Commission was held in the Nicaraguan city of Granada in May 1997 and presided over by the Foreign Ministers of both States. Among the decisions taken by the members of the Sub-commission on Limits and Cartography was to address the geodesic and cartographic questions of the border zone, including the preparation of detailed, large-scale maps in the border area between Punta de Castilla and Peñas Blancas; that is, between the starting point of the border on the shore of the Caribbean Sea and a point near the western or Pacific side of the Great Lake of Nicaragua.<sup>785</sup>

---

<sup>784</sup> Joint Declaration of the Presidents of the Republics of Costa Rica, Rafael Angel Calderon Fournier and Nicaragua, Mrs. Violeta Barrios de Chamorro, Managua, Republic of Nicaragua 31 January 1991(NCM, Vol. III, Annex 78 (1)).

<sup>785</sup> See Final Record of the IV Binational Nicaragua – Costa Rica Meeting (12-13 May 1997). (NCM, Vol.III, Annex 78 (2.))

6.8. The Bi-national Commission held its 5<sup>th</sup> Meeting in October 2006 in San Jose, Costa Rica. The delegations were again headed by the Foreign Ministers of the two States. At this meeting, the two delegations agreed that the Territorial Institute of Nicaragua (INETER) and the Geographic Institute of Costa Rica (IGN) should continue their geodesic studies in order to determine the precise location of Marker I; that is, the location of the land boundary terminus on the Caribbean coast in the area now in dispute.<sup>786</sup>

6.9. Subsequently, at the 7<sup>th</sup> Meeting of the Bilateral Commission in San Jose in October 2008, it was agreed that INETER and IGN would begin the process of preparing the basic compatible cartography in the common border area.<sup>787</sup>

6.10. The records of these meetings thus reflect a mutual recognition of the absence of fully satisfactory or accurate maps depicting the actual border. They also reflect a mutual understanding of the fact that the exact location of the boundary was not defined with precision, particularly in the area presently in dispute. This is perhaps most obvious in the Parties' 2006 agreement to work together to determine the precise location of Marker I on the Caribbean coast in the vicinity of the Harbour Head Lagoon. Nicaragua would respectfully ask: if there is no agreement on the location of Marker I, and Marker II is located 138

---

<sup>786</sup> Final Record of the V Binational Nicaragua-Costa Rica Commission (19-20 October 2006) (NCM, Vol. III, Annex 78 (3))

<sup>787</sup> See VII Meeting of the Nicaragua – Costa Rica Bi-national Commission (3 Oct. 2008). NCM, Vol. III, Annex 78 (4.)

kms upstream on the San Juan proper, how could it possibly be that there is an agreed boundary defined with precision?

6.11. It is for these reasons that all Nicaraguan and Costa Rican maps contain express disclaimers to the effect that they have not been verified on the ground.<sup>788</sup>

6.12. It is also for these reasons that Nicaragua expressly reserved its rights on all matters relating to the location of the boundary at the mouth of the San Juan River during proceedings in the case concerning the Dispute regarding *Navigational and Related Rights (Costa Rica v. Nicaragua)*. The Court will recall that during that case, Costa Rica filed maps and sketches of the San Juan River, including the area around its mouth. Nicaragua did not agree with those depictions. Yet, since that case did not relate to questions of territorial sovereignty, Nicaragua limited itself to reserving its rights on the matter in its written pleadings.<sup>789</sup> The Agent of Nicaragua reiterated the point at the oral hearings in 2009, during which he stated a general reservation on all questions relating to the Bay of San Juan, formerly located in the area of the River's mouth.<sup>790</sup>

6.13. The fact that Nicaragua never even implicitly accepted the boundary currently claimed by Costa Rica is also reflected in the practice of the

---

<sup>788</sup> See e.g. CRM, Vol. V, Annex 179, 185 and 188, (“This map has not been verified on the ground.”).

<sup>789</sup> *Dispute Concerning Navigational and Related Rights*, Counter-Memorial of Nicaragua, Vol. I, p. 9, fn. 14.

<sup>790</sup> CR 2009/4, p. 17, para. 35 (Argüello).

Parties. As described in Section D below, Nicaragua has continuously exercised undisputed sovereignty over the area, including but not limited to the past 30 years. This conclusion is supported not only by the affidavits Nicaragua submitted at the time of the hearings on Provisional Measures in January 2011 but also by contemporaneous documentary evidence.

6.14. Nicaragua recalls that during the hearings on Provisional Measures, a Member of the Court asked Nicaragua:

“Considering the physical changes in the area of the delta of the San Juan River already known at the time of the Cleveland and Alexander awards, why has Nicaragua, within the last century or so, never made an attempt to negotiate a new course of the boundary, or at least to change its maps?”<sup>791</sup>

6.15. The answer is simple and flows from points stated above. Namely:

- *First*, as reflected in the agreements of the Bi-National Commission, both Parties understood that the cartography of the border area was neither reliable nor accurate, and that this problem remained to be addressed.
- *Second* and relatedly, the existing maps (which, as elaborated below, are contradictory in any event) did not reflect a definitive boundary. That is why they all bear the legend that they had not been verified on the ground.

---

<sup>791</sup> *CR 2011/4*, p. 40, para. 1 (Simma).



- *Third*, Nicaragua had been acting as sovereign over the area in dispute for many years without any objections, much less an active competing claim, from Costa Rica.

6.16. To these three points, a fourth can be added. As detailed in the next Section, the text of the Alexander Award describes the boundary clearly and in a manner that confirms Nicaragua's position. There was therefore no need for Nicaragua to raise a dispute about a matter about which there was no active opposition of views.

6.17. It is in view of the above mentioned reasons that since the very first exchange of notes regarding the events of October 2010, Nicaragua proposed to retake in the "Bi-National Commission the actions of densification and marking of the boundary (demarcation) in accordance with the rights established in Jérez-Cañas Treaty of Limits and its instruments, Cleveland Award and Alexander Awards"<sup>792</sup>.

6.18. Meanwhile, Costa Rica's reaction to Nicaragua's proposals for an immediate dialogue or for the meeting of the bi-national commission already scheduled for November was the deployment to the border of no less than 50

---

<sup>792</sup> CRM, Volume III, Annex 48, Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Workship of Costa Rica, Ref: MRE/DVM/AJST/660/10/10, 26 October 2010.

members of the Costa Rican National Police heavily armed<sup>793</sup> and the closure of all bilateral diplomatic channels with Nicaragua<sup>794</sup>:

6.19. Costa Rica had no intention whatsoever to discuss and solve the situation with Nicaragua on a bilateral level, but rather went to the Organization of American States with the intention of continuing and escalating a political show, after having closed the diplomatic channels that traditionally existed among both nations.

6.20. During the OAS meetings Nicaragua from the first moment reminded Costa Rica of the agreements of previous meetings of the Bi-National Commission, and expressed that the current situation should be seen and solved within that context. Furthermore, Nicaragua stated in case the bilateral dialogue was not fruitful, that the forum to deal with boundary delimitation issues was the International Court of Justice and not the OAS. On 2 November 2010 the President of Nicaragua announced that Nicaragua would bring the issue before the

---

<sup>793</sup> "...Costa Rica begun a military operation along its northern border...Barra del Colorado, the small village in northeast Costa Rica, has become an armed camp. The local community center has been taken over as a command center, and security ministry aircraft, fixed wings and helicopters, are making numerous flights. At least 50 security ministry troops are on the ground, and many are in battle dress with heavy weaponry...Fuerza Pública officers resembled soldiers. They are wearing battle helmets, carrying M-16 rifles and a few weapons described as 50-caliber machine guns...Many are dressed in camouflage and wearing bullet-proof vests..." A.M. Costa Rica Third NewsPage, Costa Rica mobilizes troops along Nicaraguan line, 22 October 2010, available at <http://www.amcostarica.com/102210.htm> (last visited 21 July 2012) (NCM, Vol.III ,Annex 94.); see also TicoTimes.net, Costa Rican Police forces sent to Nicaraguan Border, 22 October 2010 available at <http://www.ticotimes.net/Current-Edition/News-Briefs/Costa-Rican-Police-Forces-Sent-to-Nicaraguan-Border-Friday-October-22-2010> (last visited 21 July 2012) (NCM, Vol III. ,Annex 92(1)).

<sup>794</sup> See CRM, Volume III, Annex 49, Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Ministry of Foreign Affairs of Nicaragua, Ref: DM-430-10, 1 November 2010. Costa Rica conditions the bilateral meeting to the suspension of the dredging works on the river.

International Court of Justice<sup>795</sup>. A few weeks after, Costa Rica gave the reason to Nicaragua by rushing to file the present application before Nicaragua could do so.

## **B. THE PLAIN LANGUAGE OF THE ALEXANDER AWARD**

6.21. This section will review the Alexander Awards that determined the boundary between both Parties near the mouth of the San Juan River. This will be divided in two parts: Part A will demonstrate that on the basis of the Alexander Awards the border must follow the “first channel met” and that this channel is presently the channel or caño which is the object of the present dispute. Part B will show that the border line currently claimed by Costa Rica was the same line it claimed before Alexander who clearly rejected it.

### **1. Location of the Border: the First Channel Met**

6.22. As discussed in Chapter 3 concerning the law applicable to this dispute, and as the Court well knows in any event, the wellspring of the Parties’ rights and obligations in this case is the 1858 Treaty of Limits. Article II of the 1858 Treaty describes the boundary line between the Parties in the following terms:

“The boundary line between the two Republics, setting out from the Northern Ocean, shall commence at the extremity of Punta de Castilla, in the mouth of the River San Juan de Nicaragua, and shall continue, always following the right bank of said river, up to a point distant from Castilla Viejo 3

---

<sup>795</sup> El 19 Digital, Nicaragua will go to The Hague for delimitation of the border with Costa Rica, 2 November 2010 (NCM, Vol. III, Annex 93).

English miles, measured from the outer fortifications of the said Castilla to the said point.”<sup>796</sup>

6.23. Like most significant watercourses, the San Juan River discharges into the sea through a delta, its mouth undergoing changes over time due to such factors as increases or decreases in flow and deposition of sediment. Between the conclusion of the Treaty in 1858 and its interpretation by U.S. President Cleveland in 1888, the area at the mouth of the river had already changed significantly. Taking this characteristic of the San Juan into account, President Cleveland, in his Arbitral Award of March 22, 1888, decided as follows with respect to the location of the boundary:

“The boundary line between the Republics of Costa Rica and Nicaragua, on the Atlantic side, begins at the extremity of Punta de Castilla at the mouth of the San Juan de Nicaragua River, *as they both existed on the 15<sup>th</sup> day of April, 1858*. The ownership of any accretion to said Punta de Castilla is to be governed by the laws applicable to that subject.”<sup>797</sup>

6.24. In his First Award rendered some nine years later, General Alexander was called upon to implement President Cleveland’s decision. Concerning the starting point of the boundary, Punta de Castilla, he said:

“A careful study of all available maps and comparisons between those made before the treaty and those of recent date ... makes very clear one fact: The exact spot which was the extremity of the headland of Punta de Castillo [sic: Castilla] April 15, 1858, has long been swept over by the Caribbean Sea, and there is too little concurrence in the shore outline of the old maps to permit any certainty of statement of distance or exact direction to it from the present headland. ... Under these circumstances it best fulfills the demands of the treaty and of President Cleveland’s award to adopt

---

<sup>796</sup> Costa Rica-Nicaragua Treaty of Limits (Jerez – Cañas), *op cit.*, Art. II (CRM Vol II, Annex 1).

<sup>797</sup> Cleveland Award , p. 209 (CRM, Vol. II, Annex 7).

*what is practically the headland of to-day, or the northwestern extremity of what seems to be the solid land, on the east side of Harbor Head Lagoon.*”<sup>798</sup>

6.25. General Alexander accordingly declared “the initial line of the boundary to run as follows, to wit:

“Its direction shall be due northeast and southwest, across the bank of sand, from the Caribbean Sea into the waters of Harbor Head Lagoon. It shall pass, at its nearest point, 300 feet on the northwest side from the small hut now standing in that vicinity. On reaching the waters of Harbor Head Lagoon the boundary line shall turn to the left, or southeastward, and *shall follow the water’s edge around the harbor until it reaches the river proper by the first channel met.* Up this channel, and up the river proper, the line shall continue to ascend as directed in the treaty.”<sup>799</sup>

6.26. It bears noting the clear distinction the Award draws between the “river proper”, on the one hand, and the “first channel met”, on the other. It states that the boundary will follow the harbour’s edge until it reaches “the river proper by its first channel met.” The boundary then proceeds “[u]p this channel, and up the river proper”. In this way, the Award makes clear that the boundary need not follow what might be viewed as the main channel of the river at any given time. It would instead follow the “first channel met” whether or not it might be said to constitute the main flow of the river at any given point in time.

6.27. Nicaragua also invites the Court to note the considerable uncertainty that confronted Alexander as to where to begin the demarcation of the boundary – an uncertainty that remains to the present day. Indeed, the uncertainty

---

<sup>798</sup>First Award, at p. 220 (emphasis added) (CRM, Vol. II, Annex 9).

<sup>799</sup>*Ibid.*, p. 220 (emphasis added).

was so great that he was even unable to determine that the “northwestern extremity” was “solid land” – only that it “seem[ed] to be the solid land”.

6.28. In addition to having to deal with the changes that had already taken place, General Alexander also recognized the inevitability of continued changes in the future. In ruling on a dispute between the parties as to whether to demarcate the boundary line, General Alexander stated as follows in his Second Award:

“It should be noted, for a clearer understanding of the question at hand, that the San Juan river runs through a flat and sandy delta in the lower portion of its course and that it is obviously possible that its banks will not only gradually expand or contract but *that there will be wholesale changes in its channels*. Such changes may occur fairly rapidly and suddenly and may not always be the result of unusual factors such as earthquakes or major storms. *Examples abound of previous channels now abandoned and banks that are now changing as a result of gradual expansions or contractions.*

“*Today’s boundary line must necessarily be affected in future by all these gradual or sudden changes. But the impact in each case can only be determined by the circumstances of the case itself, on a case-by-case basis in accordance with such principles of international law as may be applicable.*

“The proposed measurement and demarcation of the boundary line will not have any effect on the application of those principles.

“*The fact that the line has been measured and demarcated will neither increase nor decrease any legal standing that it might have had it not been measured or demarcated.*

“The only effect obtained from measurement and demarcation is that the nature and extent of future changes may be easier to determine.”<sup>800</sup>

---

<sup>800</sup> Second Award at p. 224 (emphasis added) (CRM, Vol. II, Annex 10).

6.29. General Alexander's message could not be clearer: the boundary will shift with changes in the channels of the lower San Juan. General Alexander elaborated further on the effect of these changes in his Third Award, in which he stated that

“Fluctuations in the water level will not alter the position of the boundary line, but *changes in the banks or channels of the river will alter it*, as may be determined by the rules of international law applicable on a case-by-case basis.”<sup>801</sup>

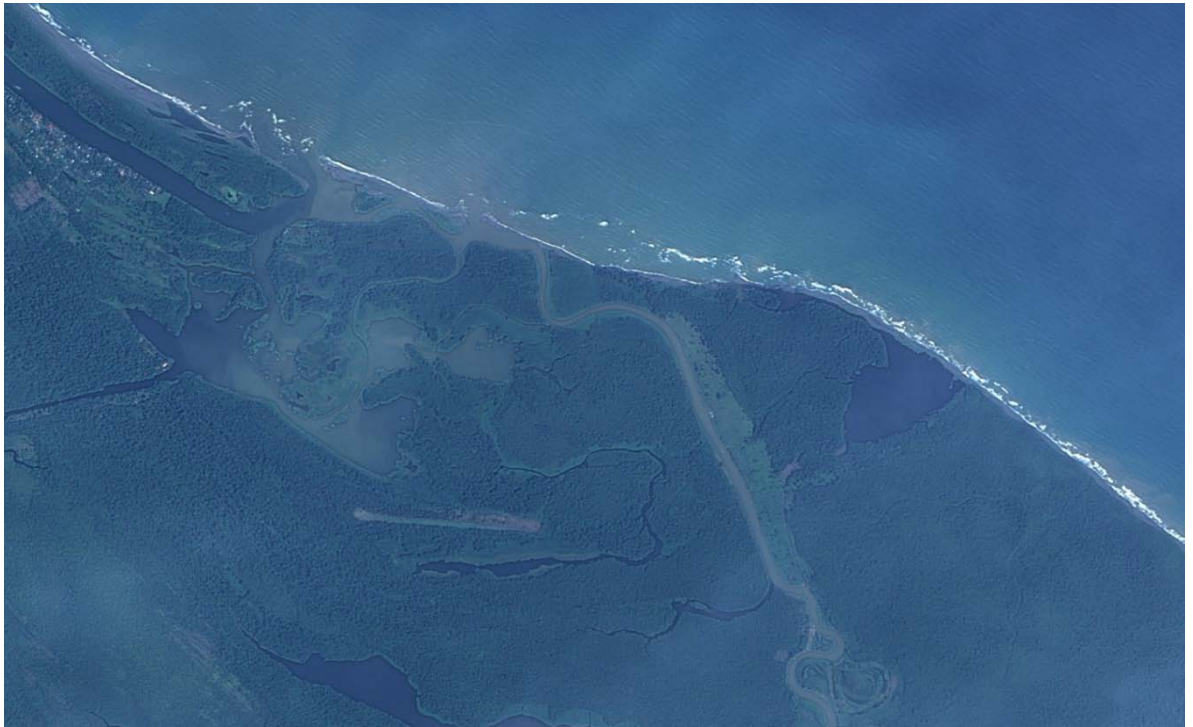
6.30. It therefore follows that an indication on any particular map is, at best, only a reflection of conditions prevailing when the map was made (or, more likely, when the original map on which it is based was made). It does not, indeed it cannot, constitute a definitive definition of the boundary.

6.31. The current geography of the area in the vicinity of the Harbour Head Lagoon is a vivid manifestation of General Alexander's recognition more than a century earlier of the ever-changing nature of the river and the channels at its delta. As he predicted, the situation on the ground has continued to evolve. A comparison between Alexander's 1897 sketch map reproduced on **Figure 6.2** below with a more recent satellite photograph of the region reproduced on **Figure 6.1** show how little correspondence remains.

---

<sup>801</sup> Third Award at p. 230 (emphasis added) (CRM, Vol. II, Annex 11).

**Figure 6.1**<sup>802</sup>



**Figure 6.1:** 2010 Satellite Image

6.32. Today, the Harbour that, existed in 1858, in Alexander’s time has disappeared.

6.33. One hundred and fifteen years ago, the “first channel met” may have been the watercourse splitting eastward along the banks of the San Juan Island (shown in Alexander’s sketch map). But that is no longer the case. Today, and for some time now, there is a new “first channel met”; namely, the one in dispute in this case.

---

<sup>802</sup> 2010 Satellite image (NCM, Vol. IV, Annex 136.).



6.34. This newer first channel begins at the southwest corner of the Harbour Head Lagoon and runs some 1,560 meters from its opening in the Lagoon to the point where it meets the river proper. Starting from the Lagoon, its path runs first in a south-westerly direction toward the San Juan River before it turns south and runs nearly parallel to the river proper before connecting with it.

6.35. When measured in December 2010, the water flow was 2.38 m<sup>3</sup>/second. It may not represent the main flow of the river in that area but, as the Alexander Award makes clear, it does not need to. The point is that it is there, it is the first channel met and it has been for quite some time. Nicaragua's position is now and has always been nothing more than that the words and intentions of the Alexander Award should be respected: "under these circumstances, it best fulfills the demands of the treaty and of President Cleveland's award to adopt what is practically [the first channel met] of to-day."<sup>803</sup>

## **2. Costa Rica's Claims Were Already Rejected by General Alexander**

6.36. The Alexander Award and its attached sketch of the demarcation in 1897 directly contradict the border claimed by Costa Rica. Costa Rica claims that the situation at the mouth of the San Juan has not changed since the time of the First Alexander Award of 30 September 1897. As proof of this, Costa Rica offers the sketch map attached to this Alexander Award. A simple reading of the text

---

<sup>803</sup> First Alexander Award, p. 220 (CRM Vol. II, Annex 9).

and the geographical references it makes, which can be appreciated in the sketch and charts, belies this.

Figure 6.2<sup>804</sup>

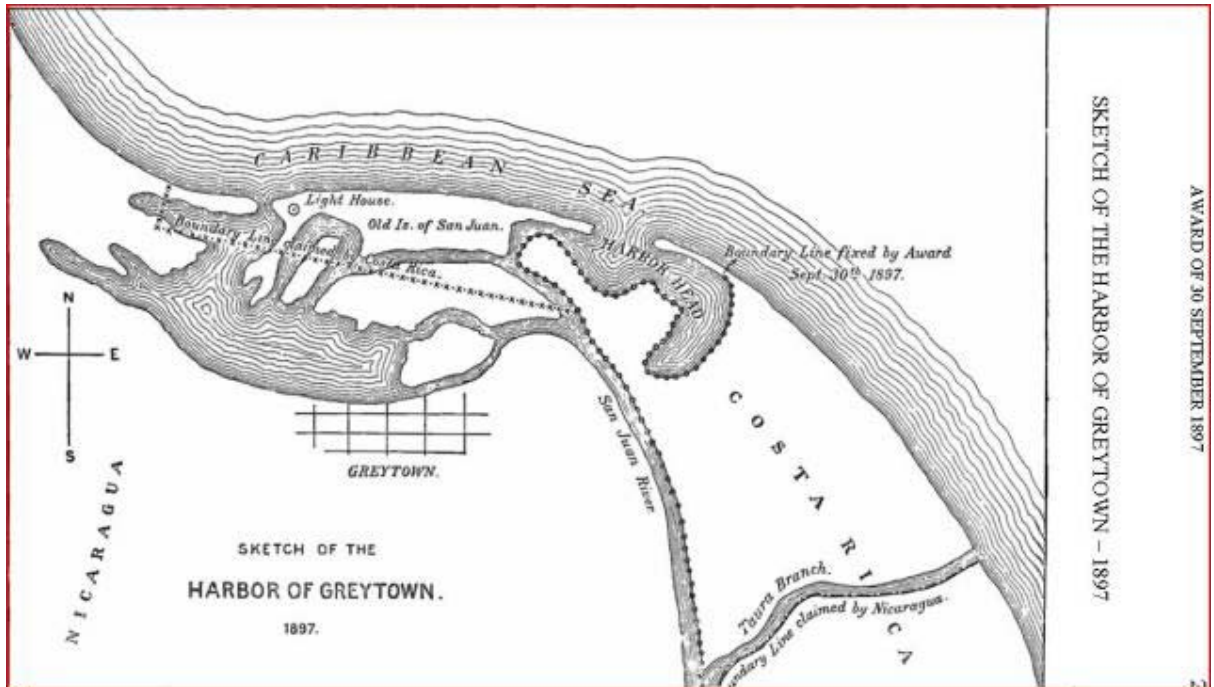


Figure 6.2 Sketch of the Harbour of Greytown-1897, First Alexander Award of 30 September 1897.

<sup>804</sup> First Alexander Award, p. 221 (CRM, Vol. II, Annex 9).

Figure 6.3<sup>805</sup>



Figure 6.3 Map of San Juan del Norte surveyed by Ensign W.J. Maxwell in 1888.

6.37. The Alexander sketch clearly indicates that at the time of the Award there was an island in the outlet of the San Juan River, causing the water current to divide into a western branch that headed in the direction of the western

<sup>805</sup> Central America , Nicaragua San Juan del Norte or Greytown , Maxwell chart of 1888 (NCM, Vol. IV, Annex 121).

sector of what had been the bay of San Juan, and another eastern branch that headed into the eastern section of the San Juan into what is called Harbor Head. As can be appreciated in the sketch, Costa Rica claimed that the River followed the western branch, but the Arbitrator decided that it followed the eastern branch towards Harbor Head, leaving the island at the outlet entirely under Nicaraguan sovereignty.

6.38. The Award makes these points in the following text:

“The great feature in the local geography of this bay, since our earliest accounts of it, has been the existence of an island in its outlet, called on some early maps the island of San Juan. It was an island of such importance as to have been mentioned in 1820 by two distinguished authors, quoted in the Costa Rican reply to Nicaragua’s argument (page 12), and it is an island to-day, and so appears in the map accompanying this award. The peculiarity of this bay, to be noted, is that the river brings down very little water during the annual dry season. When that happens, particularly of late years, sand bars, dry at all ordinary tides, but submerged more or less and broken over by the waves at all high ones, are formed, frequently reaching the adjacent headlands, so that a man might cross dry-shod.”

“Now, the whole claim of Costa Rica is based upon the assumption that on April 15, 1858, the date of the treaty, a connection existed between the island and the eastern headland, and that this converted the island into mainland, and carried the initial point of the boundary over to the western extremity of the island. To this claim there are at least two replies, either one seeming to me conclusive.”

“First, the exact state of the bar on that day cannot be definitely proven, which would seem to be necessary before drawing important conclusions.”

“However, as the date was near the end of the dry season, it is most probable that there was such a connection between the island and the eastern Costa Rican shore as has been described. But even if that be true, it would be unreasonable to suppose that such temporary connection could operate to change permanently the

geographical character and political ownership of the island. The same principle, if allowed, would give to Costa Rica every island in the river to which sand bars from her shore had made out during that dry season. But throughout the treaty the river is treated and regarded as an outlet of commerce. This implies that it is to be considered as in average condition of water, in which condition alone it is navigable.”

“But the overwhelming consideration in the matter is that by the use of the name of Punta de Castillo for the starting point, instead of the name Punta Arenas, the makers of the treaty intended to designate the mainland on the east of the harbor...”

“It must be borne in mind that for some years before the making of this treaty Punta Arenas had been by far the most important and conspicuous point in the bay. On it were located the wharves, workshops, offices, etc., of Vanderbilt’s great transit company, conducting the through line from New York to San Francisco during the gold excitement of the early fifties. Here the ocean and river steamers met and exchanged passengers and cargo. This was the point sought to be controlled by Walker and the filibusters.”

“The village of San Juan cut no figure at all in comparison, and it would doubtless be easy to produce by hundreds references to this point as Punta Arenas by naval and diplomatic officers of all prominent nations, by prominent residents and officials, and by engineers and surveyors constantly investigating the canal problem, and all having a personal knowledge of the locality.”

“In view of all these circumstances, the jealousy with which each party to the treaty defined what it gave up and what it kept, the prominence and importance of the locality, the concurrence of all the original maps in the name, and its universal notoriety, I find it impossible to conceive that Nicaragua had conceded this extensive and important territory to Costa Rica and that the latter’s representative had failed to have the name Punta Arenas appear anywhere in the treaty. And for reasons so similar that it is unnecessary to repeat them, it is also impossible to conceive that Costa Rica should have accepted the Taura as her boundary and that Nicaragua’s representative should have entirely failed to have the name Taura appear anywhere in the treaty.”

6.39. In sum, the Arbitrator decided that the island of San Juan was entirely Nicaraguan since he found it “impossible to conceive that Nicaragua had

conceded this extensive and important territory to Costa Rica” and also found that the San Juan branch was the branch heading east towards Harbour Head. General Alexander compared Costa Rica’s claim that the border should follow the channel in a westerly direction at the mouth of the River – leaving Harbour Head, the isle of San Juan and the front section of the western remnants of the Bay of San Juan under Costa Rican sovereignty – with the Nicaraguan claim that the border should follow the Taura Branch located some 20 km up river.

6.40. What is clear in Alexander’s intention and the wording of his Award is that, heading downstream, the border should follow a channel or caño east into Harbour Head and not west in the direction of that sector of the Bay of San Juan or much less directly into the sea as Costa Rica now claims. If Costa Rica’s claims were successful, Nicaragua would be left with a water enclave (Harbour Head) surrounded by Costa Rican land territory and only accessible to Nicaragua by sea. This result was never in Alexander’s mind. That is why he carefully indicated that: “On reaching the waters of Harbor Head Lagoon the boundary line shall turn to the left, or southeastward, and shall follow the water’s edge around the harbour until it reaches the river proper by the first channel met.”

6.41. The maps on which Costa Rica bases its claim<sup>806</sup> follows the present day stronger channel of the San Juan which heads westwards and ignore any other channels that head eastward and leave the island of San Juan as part of

---

<sup>806</sup> See e.g. CRM p. 61, Figure 2.8.

Costa Rican territory. What was impossible for Alexander to conceive is what Costa Rica is now again claiming 115 years after the Award.

6.42. Since at least Alexander's time, there have always been caños traversing the land territory between the "river proper" and Harbour Head Lagoon. Because they offer the quickest route from the town of San Juan de Nicaragua to Harbour Head, they have been used continuously in both the rainy and dry seasons by Nicaraguan official personnel, and by fishermen and other private persons, to travel between these Nicaraguan locations. By contrast, Costa Rican personnel have never been seen in the area. In compliance with the Order of the Court of 8 March 2011, Nicaraguan personnel have refrained from entering any of these caños since the date of the Order, and have been constrained to reach Harbour Head by the sea. But the existence of these caños, some of which have dried up and been replaced by others in the century since Alexander issued his awards, confirms that what was once called the island of San Juan is not attached to Costa Rican territory, but is still separated by a smaller channel connecting the "river proper" to Harbour Head. This is a physical reality that can be ascertained by a simple inspection.

6.43. Alexander recognized that old caños would disappear, and new ones would come into existence, through natural processes. For this express reason, instead of designating a particular caño as the boundary between Nicaragua and Costa Rica at the mouth of the river, he determined that the boundary would be the "first channel met". While there are other channels

heading from the river proper into Harbour Head, the one which Nicaragua has identified as complying with Alexander's Award as being the "first channel met", is precisely the caño in dispute in these proceedings. But whatever the changing situation on the ground, the fact is that Alexander never conceived that the border, heading downstream, should follow the river west ("the river proper"), but rather a channel to the east into Harbour Head, from "the river proper".

6.44. In sum, Costa Rica's position turns the Award of 1897 on its head and attempts to take from Nicaragua what the Arbitrator had seen as an "extensive and important territory".

### **C. THE CAÑO HAS LONG EXISTED IN ITS CURRENT LOCATION**

6.45. Costa Rica's Memorial wisely does not deny that the boundary must change as the river changes. Nor does it deny that if there is a new "first channel met", the boundary must follow that channel. General Alexander's Second Award leaves no room for doubt in either respect. What Costa Rica chooses to argue instead is that the caño at issue in this case "never previously existed" but rather is an "artificial canal" constructed by Nicaragua.<sup>807</sup> But as demonstrated below, Costa Rica is mistaken. The evidence, consisting of maps, satellite images and photographs (some from Costa Rica itself), shows that a channel has long existed in this location.

---

<sup>807</sup> CRM, para. 5.93.



## 1. The Relevance of Maps and Satellite Photographs

6.46. Before turning to an examination of the evidence, however, a few observations about the relevance of maps and satellite photographs in this case are in order.

6.47. First, the general principle that a boundary indicated on a map is secondary to a textual description of the boundary is well-established and has been recognized by the Court and by other international tribunals.<sup>808</sup> This principle, together with General Alexander's clear rulings, show that the great reliance Costa Rica puts on its maps is misplaced.<sup>809</sup> It is the text of the relevant instruments, as applied to the changing circumstances on the ground, which must control.

6.48. This is especially true in the present case because, despite General Alexander's sage observations about its fluidity, the boundary in the area of the river's mouth has not been definitively mutually confirmed by the Parties in more than a hundred years. The mouth of the river that General Alexander inspected in the late 19<sup>th</sup> century would be almost unrecognizable to him today. What he described as a "flat and sandy delta" is now a wetland, a swamp, the waters of which traverse paths that were non-existent in his time.

---

<sup>808</sup> See, e.g., *Case Concerning the Frontier Dispute (Burkina Faso/Republic of Mali)*, I.C.J. Reports 1986, pp. 582-583, paras. 54-56; *Case Concerning Sovereignty Over Pulau Ligitan and Pulau Sipadan (Indonesia/Malaysia)*, I.C.J. Reports 2002, p. 667, para. 88; and the *Island of Palmas Arbitration*, 2 *Int'l Arb. Awards* p. 829, at p. 853 (1949), 22 A.J.I.L. p. 867, at p. 891 (1928).

<sup>809</sup> See CRA, para. 8; CRM, paras. 2.50-2.58, 4.20-4.22.

6.49. That said, maps are, in Nicaragua's view, not entirely irrelevant to the issues in dispute. Costa Rica's case is premised in large measure on the twin, and very much inter-related, assertions that (1) the maps demonstrate an unbroken international understanding that the boundary is where Costa Rica claims it to be; and (2) that there is no evidence for the existence of the caño in dispute prior to 2010. Thus the existence of even a single map that shows the boundary where Nicaragua claims it to be and/or that shows that a caño has long existed in the current location is sufficient to remove the foundation of Costa Rica's entire case. As discussed in the subsection (2) below, there is much more than just a single map to that effect. Indeed, there is more than one map from Costa Rica itself that depicts the existence of the caño and shows the border following the course advocated by Nicaragua.

6.50. The fact that different maps may not have depicted the presence of the caño, or shown the boundary following its course, is unsurprising. Different maps will be drawn with different degrees of precision based on different amounts of information.<sup>810</sup> The fact that a comparatively small feature like the caño may not appear on some, or even most, maps cannot be considered proof of its non-existence as such. It may well be that the preparers of the map in question were simply copying from previous, out-dated maps and did not have enough current information in their possession to record its presence. Indeed, as the records of

---

<sup>810</sup> See also Kondolf, Section 2.6, regarding the limitations of maps (NCM, Vol.I Appendix 1).

the Bi-national Commission already discussed demonstrate, the Parties have long recognized that the boundary in the area is in need of precise survey and definition.

6.51. On the other hand, the inclusion of the caño, even on a single map, can be considered powerful evidence of its existence. There is simply no credible reason for a map to depict a feature that does not exist. Modern professional cartographers are not in the habit of inventing elements of geography that are not there. As will be seen in the next section, Costa Rica itself prepared just such a map more than 60 years ago. That map plainly depicts a watercourse that corresponds precisely with the caño that lies at the heart of this case. That can be no accident.

6.52. Similarly, the existence of even a single map that shows the border following a direction different from the one Costa Rica claims is sufficient to show uncertainty on the subject and thus disprove Costa Rica's assertions about the supposedly unbroken recognition of its sovereignty over the area in dispute.

6.53. Similar observations can be made about the variations in the satellite imagery offered by the Parties. Relying on photographs taken from outer space poses evident issues.<sup>811</sup> This is all the more true when the area being photographed is a wetland delta, much of which is covered by a thick tree canopy, through which the flow of water is highly seasonal. These difficulties are as real

---

<sup>811</sup> Ibid. Section 2.6 (“[W]hether a given feature shows up on aerial imagery is influenced by factors such as sun angle and the optics of the aerial camera and landscape.”) (NCM, Vol. I, Appendix 1).

today as they were in 1961 when the first of the satellite images that Costa Rica offered into evidence was taken. The caño is difficult to discern even in the most modern satellite photographs taken soon after the time when Costa Rica claims Nicaragua artificially constructed it.

6.54. Accordingly, the mere fact that the caño is not as obvious as the main flow of the San Juan is of little importance. What matters is that its contours can be seen and traced even by the untrained eye (as can other caños in the same area) in satellite images taken across a large expanse of time, from 1961, 1997 and 2007. Indeed, the fact that it can be seen at all, despite the difficulties associated with the technology and terrain, is testament to its existence and persistence, as demonstrated below.

## **2. The Existence of the Caño**

6.55. Perhaps the most compelling evidence of the caño's existence dates back more than 60 years. In 1949, the National Geographic Institute of Costa Rica issued a "Map of Costa Rica" that the Applicant State helpfully includes as Annex 176 to its Memorial. Nicaragua considers it telling that Costa Rica offers the 1949 Map affirmatively, contending at paragraph 2.52 that this "official cartography of Costa Rica" portrays the boundary line that Costa Rica now claims. Costa Rica nowhere suggests that it questions the map's reliability in any respect. For reasons that will be immediately apparent, this 1949 map, an inset of

which appears below, disproves Costa Rica’s case about the artificiality of the caño in a single stroke.

**Figure 6.4**



**Figure 6.4** 1949 Costa Rica Map

6.56. As the Court can see, the caño at issue in this case is depicted in Costa Rica’s 1949 map in precisely the same location where it flows today. This, of course, is highly significant. Had no such feature existed at this location, there is no reason it would have been portrayed on the map. The fact that it is constitutes compelling evidence of its existence there. Indeed, Nicaragua considers this map a powerful “admission against interest” within the meaning of the Court’s jurisprudence relating to the weight to be accorded various sources of evidence.<sup>812</sup> In this most direct and visually undeniable way, Costa Rica must be

---

<sup>812</sup> See *Military and Paramilitary Activities In and Around Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, I.C.J. Reports 1986, p. 41, para. 64; *Armed Activities on the Territory of the Congo (Democratic Republic of Congo v. Uganda)*, Merits, Judgment, I.C.J. Reports 2005, p. 39, para. 78.

deemed to admit that there has long been a caño exactly where Nicaragua says there is.

6.57. Nicaragua recognizes, of course, that the 1949 map does not depict the international boundary as following the course of the caño that is so clearly depicted on it. But that is of substantially lesser import than the fact of the caño's existence. Whether or not the boundary follows the caño or the river proper in the area is largely a question of law for the Court to decide. While the depiction of a boundary on a map may, depending on the circumstances, be suggestive of a State's position on the legal question, it is not by itself conclusive of anything. That is all the more true when, as here, there is compelling evidence to the opposite effect, and when, as here, the arbitrator charged with demarcating the boundary found that it was fluid.

6.58. In particular, twenty-two years after it produced the 1949 map, Costa Rica's National Geographic Institute, acting in collaboration with the Inter-American Geodesic Service, produced another map that, although not depicting the caño itself, depicts the international boundary as conforming to the essential location and direction of the caño. An excerpt of that 1971 map appears below.

Figure 6.5<sup>813</sup>

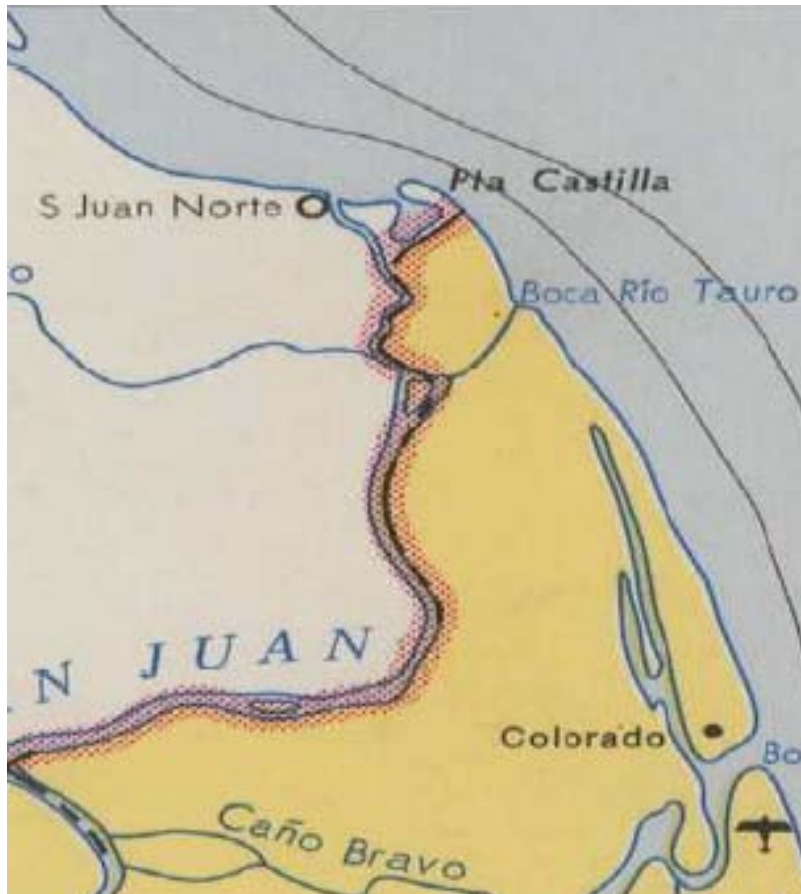


Figure 6.5 1971 Costa Rica Map

6.59. For the reasons already stated, Nicaragua recognizes that the location of the international boundary as depicted in this map is not by itself determinative of any of the issues in dispute in this case. That is not the purpose for which Nicaragua offers it. Rather, Nicaragua offers it for two other reasons. *First*, by itself it contradicts Costa Rica's claims that since the time of the Alexander Award there has been an unbroken recognition of the international

---

<sup>813</sup> Official Map of Costa Rica, Geographic Institute of Costa Rica, 1971 (NCM, Vol. IV, Annex 126). {See Nicaragua's answers to judge's questions, map 3}.

boundary as claimed by Costa Rica in this case. The map above disproves Costa Rica's central argument. Unlike the boundary that Costa Rica now claims, the boundary with Nicaragua is shown on the 1971 Costa Rican map as turning east in the direction of Harbour Head Lagoon before reaching the terminus of the western channel of the river proper. The land at the northern tip of Harbour Head is plainly shown as being Nicaraguan. *Second*, the fact that the border generally tracks the location and direction of the caño constitutes additional evidence suggestive of its existence. Put simply, there is no reason for the border to follow the direction indicated on this map if not for the presence of an alternate water course cutting its way through the swamps of the Harbour Head area into the lagoon.

6.60. Nicaragua brought the 1971 map to the Court's attention during the course of the hearings on Provisional Measures in January 2011. Costa Rica's Memorial now asserts that this map contains a "material error".<sup>814</sup> This is perhaps predictable: how else could Costa Rica deal with this clear contradiction of its fundamental position?

6.61. In her affidavit submitted with the Memorial, the Acting Director of Costa Rica's National Geographic Institute offers several justifications for this "error".<sup>815</sup> She first notes that the map was printed abroad, so that any errors could

---

<sup>814</sup> CRM, para. 4.30.

<sup>815</sup> CRM, Annex 68, Note by the Acting Director of the National Geographic Institute of Costa Rica (18 Jan. 2011).



not be detected before printing.<sup>816</sup> True or not, they could certainly be detected after. Yet, the Government of Costa Rica not only approved the map, it publicly disseminated it.

6.62. The Acting Director also claims that once the error was detected the map was “withdrawn from sale and circulation”.<sup>817</sup> Yet, aside from this unsubstantiated assertion, there is no other evidence that Costa Rica actually determined that the map was in “error” until this dispute arose.

6.63. The Acting Director still further speculates that the film used to create the border could have accidentally moved during the map’s construction.<sup>818</sup> This, of course, is wishful thinking, not evidence. It would, moreover, be quite remarkable if the film just happened to move accidentally to a location that just happened to track the location of the caño as depicted on the 1949 Costa Rican map, in regard to which no “error” has ever been identified by Costa Rica.

6.64. Costa Rica’s 1949 and 1971 maps are far from the only pieces of evidence that prove the existence of the caño and/or depict the boundary as following its general course. Indeed, there are multiple such items, including maps, satellite images and more recent, on-the-ground photographs. Below,

---

<sup>816</sup> CRM, Annex 68, Note by the Acting Director of the National Geographic Institute of Costa Rica (18 Jan. 2011).

<sup>817</sup> CRM, Annex 68, Note by the Acting Director of the National Geographic Institute of Costa Rica (18 Jan. 2011).

<sup>818</sup> CRM, Annex 68, Note by the Acting Director of the National Geographic Institute of Costa Rica (18 Jan. 2011).

Nicaragua offers a chronological sampling of these sources which, individually and cumulatively, thoroughly refute Costa Rica's case.<sup>819</sup>

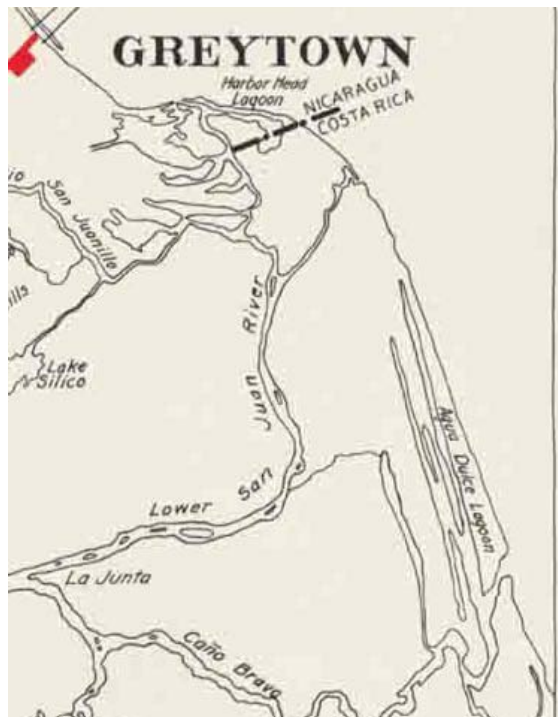
6.65. The first in the series is a map dated 1931 that was prepared by the United States Army Corps of Engineers following an extended, three-year survey of the area conducted between 1929 and 1931.<sup>820</sup> The reason for the survey was that the San Juan River had once again become the centre of international attention, particularly in North America, as a site for a major inter-oceanic canal. The geography and location of the border were therefore of obvious importance for determining the canal's potential route. An excerpt appears below.

---

<sup>819</sup> Still other examples were cited by Nicaragua at the hearing on provisional measures in January 2011 and/or attached to its responses to questions from the Court. Copies of those maps are included again as annexes to this Counter-Memorial. (NCM, Vol. IV, Annex 122 (A) (B) (C) (D) (E) (F) (G).

<sup>820</sup> U.S. Engineers Office, Nicaragua Canal Survey, 1929-1931 (NCM, Vol.IV, Annex 123.).

**Figure 6.6**



**Figure 6.6** 1931 U.S. Army Corps of Engineers Map

6.66. Nicaragua previously presented this map at the January 2011 hearing on provisional measures. Costa Rica appears to find it particularly troubling, as the Memorial targets it for special attack. It first notes that the map was not prepared by either of the Parties to this dispute.<sup>821</sup> This is, of course, true but in Nicaragua's view it only enhances the map's significance; it does not diminish it. The fact that it was made by an independent third party following a painstaking survey of the region for a major international infrastructure project only adds to the weight it should be accorded.

---

<sup>821</sup> CRM, 4.31

6.67. Costa Rica’s Memorial then observes that this is a “general” map that shows the “canal route”,<sup>822</sup> again as if this detracts from the map’s value. It does not. To the contrary, it enhances it. Although a “general” map, it is specifically focused on the location of the San Juan River, giving close attention to the territory surrounding the proposed canal route. In this respect, the details of the border between Nicaragua and Costa Rica on the Caribbean coast are striking. The boundary cuts westward across the northern portions of Harbour Head from Harbour Head Lagoon to the main flow of the San Juan River. Just as in Costa Rica’s own 1971 map, the territory now in dispute is shown as being Nicaraguan.

6.68. The Memorial also contends that although the 1931 map gets the boundary wrong, it nonetheless “accurately depicts the geographic configuration of the area”, in that it does not indicate the existence of a caño in the area.<sup>823</sup> Although that may be technically true, the map is at a small scale and plainly not drawn with the degree of detail sufficient to depict the caño. Nevertheless, the fact remains: the international border is drawn in the area of the caño connecting the lagoon to the river proper. This is inexplicable but for the presence of an alternate watercourse there. The U.S. Army Corps of Engineers can safely be presumed to have been well aware of the details of the decision their colleague General Alexander rendered just a generation earlier, especially given its evident relevance to the issue before them.

---

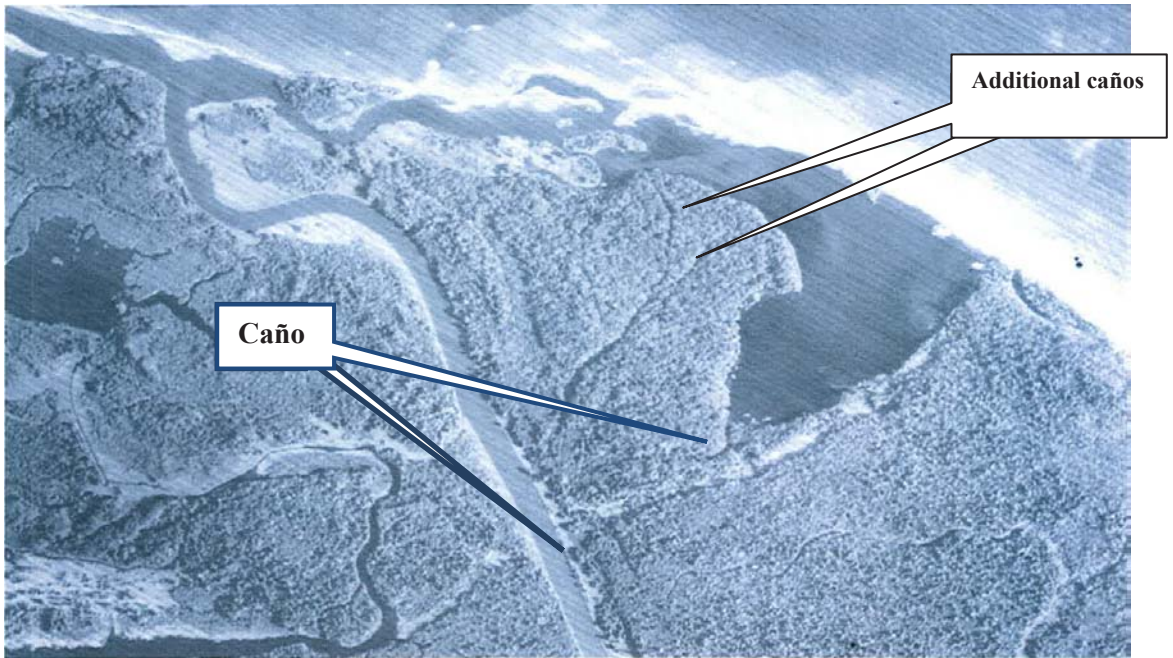
<sup>822</sup> CRM, 4.31.

<sup>823</sup> CRM, para. 4.31.

6.69. The existence of the caño so plainly depicted in Costa Rica's own 1949 map is confirmed also by aerial and satellite imagery, one of the earliest which dates back to 1961, just 12 years after the issuance of Costa Rica's 1949 map. Although taken from high above, these images reveal the reality on the ground. Given the inherent limitations of photographs taken from outer space, they cannot depict the caño in exacting detail (although the photographs presented further below can and do). This is all the more true given the comparatively small nature of the watercourse and the forest canopy that surrounds much of it. Nevertheless, the existence of the feature is clear.

6.70. As seen in the first image below, the initial section of the channel runs westward from the south-western edge of the Harbour Head Lagoon in the direction of the river proper, clearing its way through the thick vegetation. It then turns south and runs parallel to the main flow of San Juan River before meeting it just outside the frame of the photograph.

**Figure 6.7** <sup>824</sup>



**Figure 6.7** 1961 Aerial Image

6.71. Another interesting feature of this 1961 image is that it shows that the caño at issue in this case is not the only one that cuts through the Harbour Head swamp and connects the lagoon to the river proper. Indeed, there appear to be several such additional caños, the most conspicuous of which are also labelled in the picture above.<sup>825</sup>

---

<sup>824</sup> 1961 Aerial Image (NCM, Vol. IV, Annex 132.). *See also* CR 2011/3, p. 22, para. 16 (Crawford).

<sup>825</sup> *See also* Kondolf, Section 2.5, discussing “Distributaries of the Río San Juan” (NCM, Vol. I, Appendix 1).

6.72. Costa Rica's expert argues that there is no caño in this image.<sup>826</sup> Nicaragua very much disagrees and considers that the correspondence between 1961 image and Costa Rica's 1949 map is, to say the least, telling. In this respect, it is worth comparing the 1961 image with the January 2011 image in Professor Thorne's report and reproduced below. The comparison is revealing because Costa Rica does not question the caño's existence in this later image (although it does, of course, challenge how it came to be in that location). The images share evident similarities: the path of the caño follows precisely the same course in both images. Yet, even with the superior satellite technology used to acquire this 2011 image, the caño is not overwhelmingly obvious. It is evident only from the slight darkening of the line marking its path through the vegetation. (Notably, the additional caño evident in the 1961 image is still there, too.)

---

<sup>826</sup> Thorne, p. I-18-19.

**Figure 6.8**<sup>827</sup>



**Figure 6.8** January 2011 Satellite Image

6.73. A second aerial photograph from 1961 shows the same path naturally cleared through the vegetation as the channel flows first westward from the lagoon and thence southward parallel to the main flow of the San Juan. The increased contrast in this image highlights the white and grey lines tracing the channel's course. It also plainly depicts the additional channels to the north.

---

<sup>827</sup> Thorne, p. I-29.



Figure 6.9<sup>828</sup>

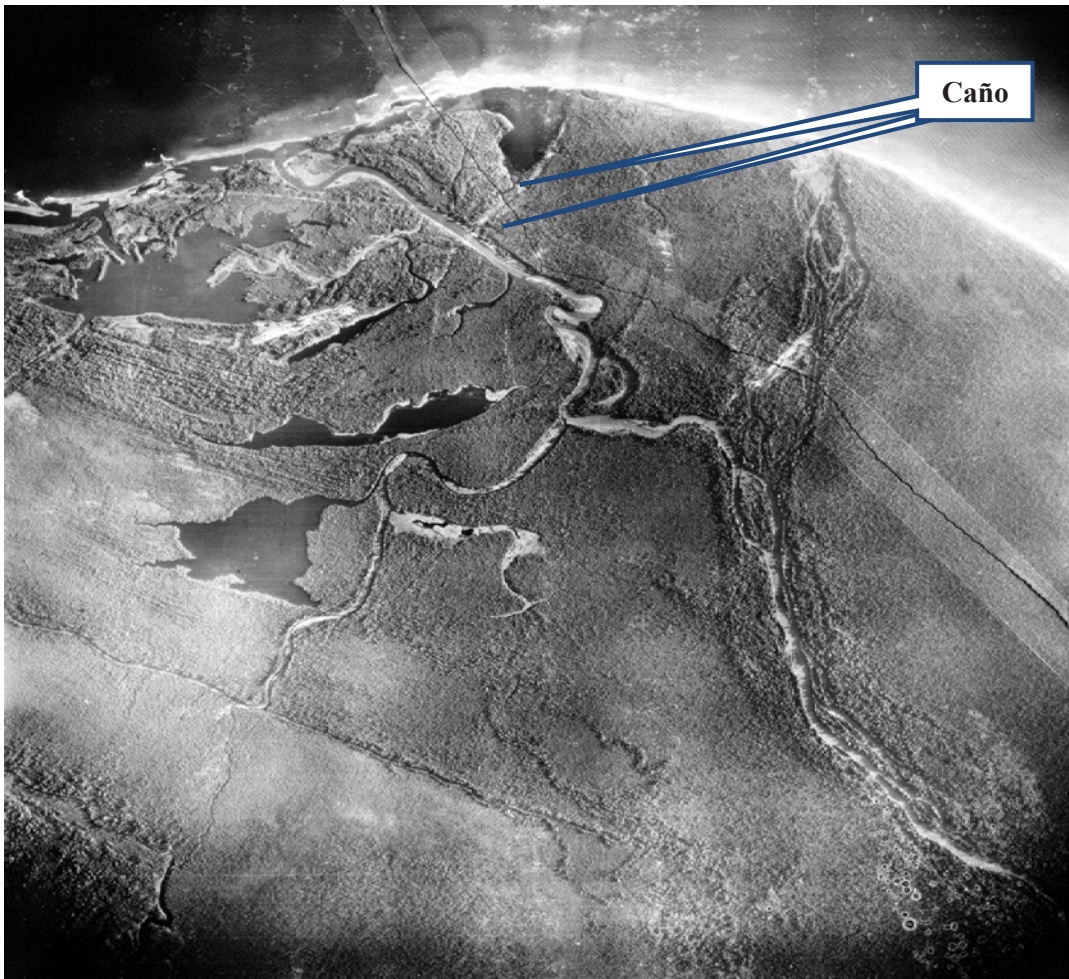


Figure 6.9: 1961 Aerial Image (2) <sup>829</sup>

6.74. Consistent with this evidence, as well as Costa Rica's own maps of 1949 and 1971, the chronological narrative continues with a sizable number of later third-party maps that similarly show the international boundary as running

---

<sup>828</sup> 1961 Aerial Image (2) (NCM, Vol. IV, Annex 133).

through the Harbour Head swamp south of where Costa Rica now claims it to be. As with the 1931 map prepared by the U.S. Army Corps of Engineers, these maps make little sense unless they are premised on the assumption that there is a watercourse – a “first channel met” – connecting the area around Harbour Head Lagoon to the main flow of the San Juan – the “river proper”. And as is also true of the Army Corps of Engineers map, the fact that they were prepared by independent third parties only adds to their credibility, it does not diminish it.

6.75. In the 1970s and early 1980s, the United States Central Intelligence Agency published a series of maps depicting the international boundary in a manner consistent with Nicaragua’s position. In Nicaragua’s view, these maps are particularly noteworthy because of the CIA’s well-known interest in the area, a fact about which the Court needs no reminding.<sup>830</sup>

6.76. The first CIA map in the series dates to 1970 and appears below. The boundary is plainly shown as tracking the general direction and location of the caño depicted in Costa Rica’s 1949 map and evident from the 1961 satellite imagery. The tip of Harbour Head north of the line connecting the lagoon to the first channel met is unmistakably depicted as Nicaraguan.

---

<sup>830</sup> See *Military and Paramilitary Activities In and Around Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, I.C.J. Reports 1986.

**Figure 6.10**<sup>831</sup>



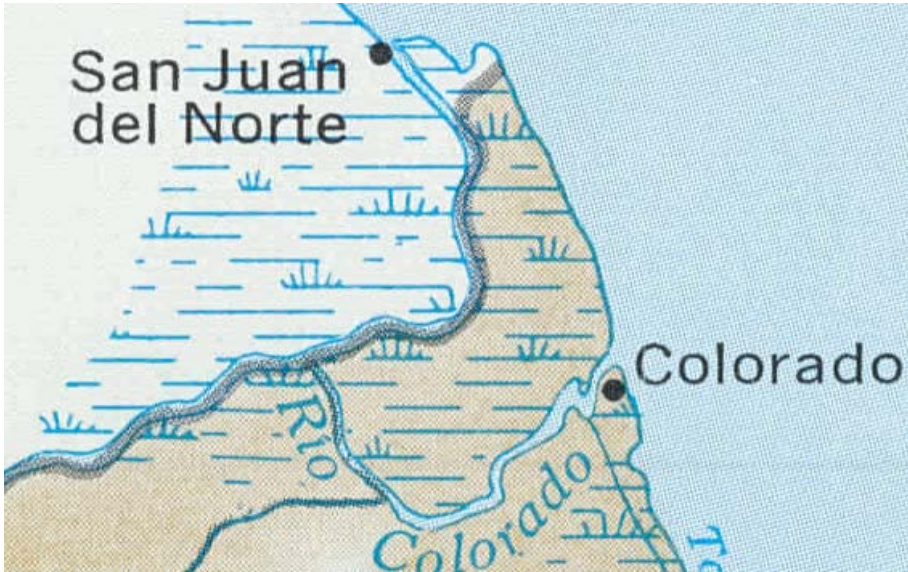
**Figure 6.10** 1970 U.S. CIA Map

6.77. This 1970 map cannot be dismissed as an aberration, as Costa Rica might like it to be. First, it is consistent in all respects with Costa Rica's own contemporaneous maps as described above. Second, the same essential view of the border is repeated in a series of other maps. Excerpts of those maps, from 1970, 1979 and 1983, respectively, appear immediately below. At this stage of the presentation, Nicaragua is confident they require no additional comment. Their significance speaks for itself.

---

<sup>831</sup> Costa Rica, U.S. Central Intelligence Agency, 1970, G4860 1970 U 51. (NCM, Vol IV, Annex 124).

**Figure 6.11**<sup>832</sup>



**Figure 6.11** 1970 U.S. CIA Map

**Figure 6.12**<sup>833</sup>



**Figure 6.12** 1979 U.S. CIA Map

<sup>832</sup> Costa Rica, U.S. Central Intelligence Agency, 1970 (2), G 4860 1970 U52. (NCM, Vol. IV, Annex 125).

<sup>833</sup> Nicaragua, U.S. Central Intelligence Agency (1979). (NCM, Vol. IV, Annex 128).

**Figure 6.13**<sup>834</sup>



**Figure 6.13** 1983 U.S. CIA Map

6.78. Still another map in the series of maps refuting Costa Rica's case was prepared in 1978 by the American oil company Texaco. Similar to the American CIA maps presented above, it depicts the border as deviating east from the main flow of the San Juan River in the direction of the Harbour Head Lagoon as it approaches the Caribbean Sea.

---

<sup>834</sup> Costa Rica, U.S. Central Intelligence Agency, 1983, G 4860 1983 U5. (NCM, Vol. IV, Annex 129).

**Figure 6.14**<sup>835</sup>



**Figure 6.14** 1978 Texaco Map

6.79. The reality on the ground – the continued existence of the caño depicted in Costa Rica’s own 1949 map – is further evidenced by satellite photographs taken in the period after all the above described maps were created.

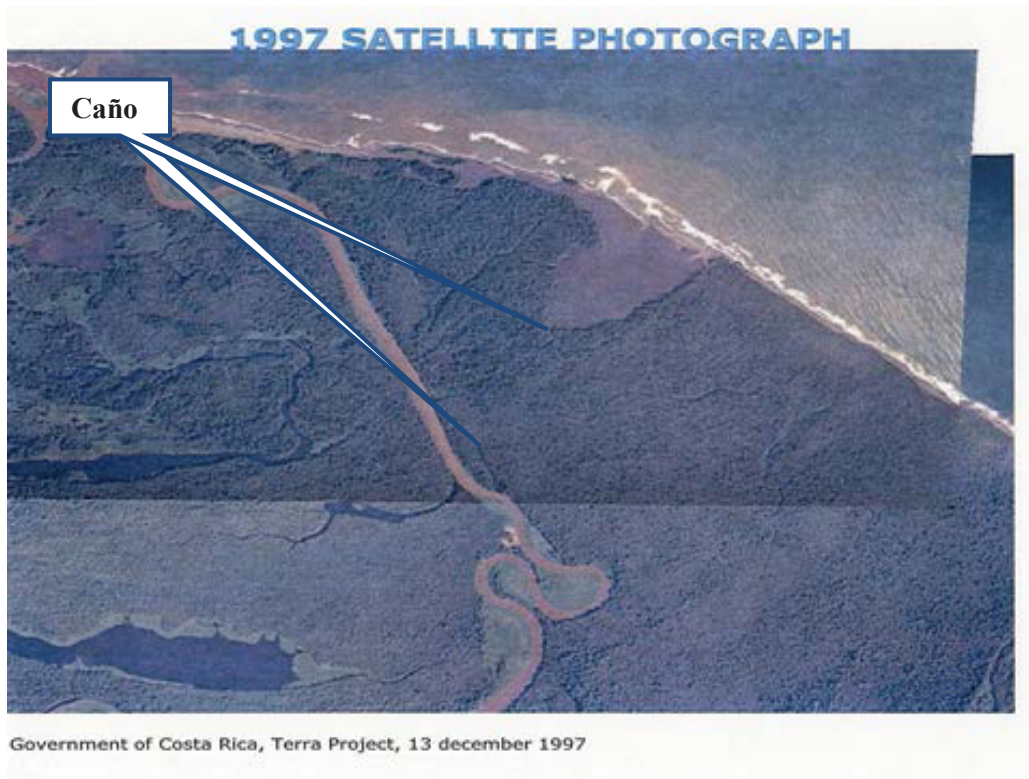
6.80. The first such image is from 1997 and was first produced by Costa Rica during the provisional measures hearing.<sup>836</sup> Once more, evidence Costa Rica earlier intended to support its case actually contradicts it. Despite the difficulties posed by the thick tree canopy, the channel’s path is nonetheless visible as a thin dark line through the forest in the same location and direction as it appears in Costa Rica’s 1949 map and the 1961 aerial images.

---

<sup>835</sup> Texaco (1978). (NCM, Vol. IV, Annex 127).

<sup>836</sup> See CR 2011/3, p. 22, para. 6 (Crawford).

**Figure 6.15**<sup>837</sup>



**Figure 6.15** 1997 Satellite Image

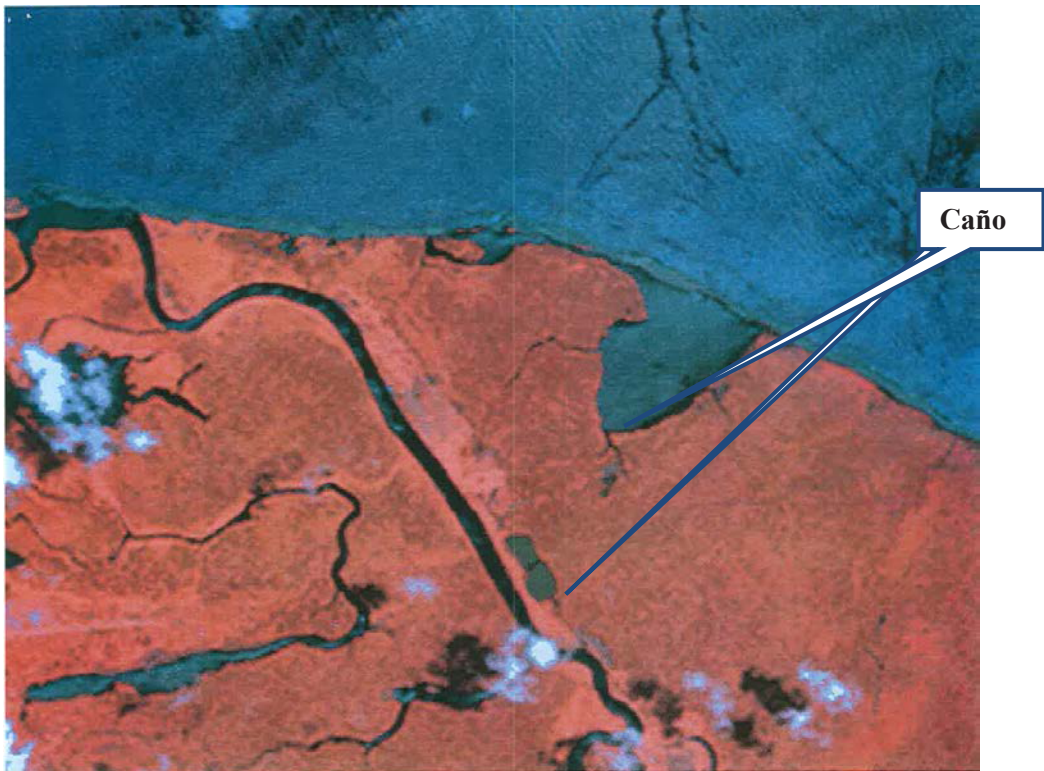
6.81. The next satellite image, taken 10 years later in 2007, which was also presented at the provisional measures hearing,<sup>838</sup> reveals the caño's continued existence even more clearly than the photograph above. This image, taken fully 58 years after Costa Rica's 1949 map first identifying it with specificity and 46 years after the 1961 photo showing its existence at that time, shows the presence of several small bodies of water along the caño's course. A significant pond-like formation appears in the southern portion of the caño and is connected to the river

<sup>837</sup> Government of Costa Rica, Terra Project, 13 December 1997. (NCM, Vol. IV, Annex 134). See also CR 2011/3, p. 22, para. 6 (Crawford).

<sup>838</sup> See CR 2011/3, p. 22, para. 6 (Crawford).

proper in the south by an obvious watercourse that coincides with the present-day location of the caño. The northern end of this pond-like formation is equally clearly connected to the Harbour Head Lagoon by a perceptible stream.

**Figure 6.16**<sup>839</sup>



**Figure 6.16** 2007 Satellite Image

6.82. Among the other interesting elements of these 1997 and 2007 images is the fact that both continue to show the existence of additional caños north of the one in dispute. Even if Costa Rica were somehow able to overcome the obvious, and disprove the existence of this particular caño, the fact would therefore remain that there are other caños running east toward Harbour Head that

---

<sup>839</sup> 2007 Satellite Photograph (NCM, Vol. IV, Annex 135).



would constitute the “first channel met” and thus mark the location of the international boundary between Nicaragua and Costa Rica. No matter how viewed, then, a single conclusion emerges: the area around Harbour Head, is Nicaragua’s, not Costa Rica’s.

6.83. The Memorial presents two other satellite images that are intended to buttress Costa Rica’s case that the caño did not previously exist.<sup>840</sup> The images were taken in 2009 and 2010 – both less than a year before Nicaragua’s cleaning activities.<sup>841</sup> But this evidence misses the point. Flow in the San Juan, and thus also in the caño, is highly variable. The fact that the caño may not be immediately obvious from outer space at one moment in time does not mean that it is not present. Indeed, as shown just above in the 2007 false colour image, there are times when the flow is substantial and obvious, and the caño can be identified even from outer space. Moreover, the siltation and reduction of flow in both the San Juan and the caño over time is the principal reason for the wider dredging program Nicaragua is undertaking on the lower San Juan, as well as the cleaning of the caño.

6.84. Remote sensing data like satellite imagery will always be no more than second best to data collected at ground level. This evidence, especially given its recent provenance, provides the final confirmation of the reality Costa Rica

---

<sup>840</sup> The only satellite images discussed in Costa Rica’s Memorial are found on p. 125 and 141 (as well as an image of the channel after Nicaragua’s clearing activities on p. 124).

<sup>841</sup> *Ibid.*

would prefer to avoid: there is a caño, it has been there for some time, and it continues to be there now.

6.85. Recent photographs show that the caño existed before Nicaragua's 2010 clearing activities. Many of these photographs Nicaragua previously offered in evidence at the time of the provisional measures hearings.<sup>842</sup> Costa Rica had ample time and opportunity to respond to them. Yet, what does the Memorial say about these photographs? Nothing. It maintains a complete, and telling, silence. The same is true of the video of the caño Nicaragua introduced into evidence during the January 2011 hearings.<sup>843</sup>

6.86. The photos below were taken prior to Nicaragua's cleaning of the caño. In particular, they were shot on 7 and 8 September 2009, during the initial inspection of the channel to determine if MARENA would approve the request for cleaning operations and establish the environmental safeguards required during any approved activities.<sup>844</sup>

6.87. The first photographs, which were taken at the starting point of the journey at the Harbour Head Lagoon, unmistakably demonstrate the existence a natural channel. The images show its wide entrance, clearing a path through the

---

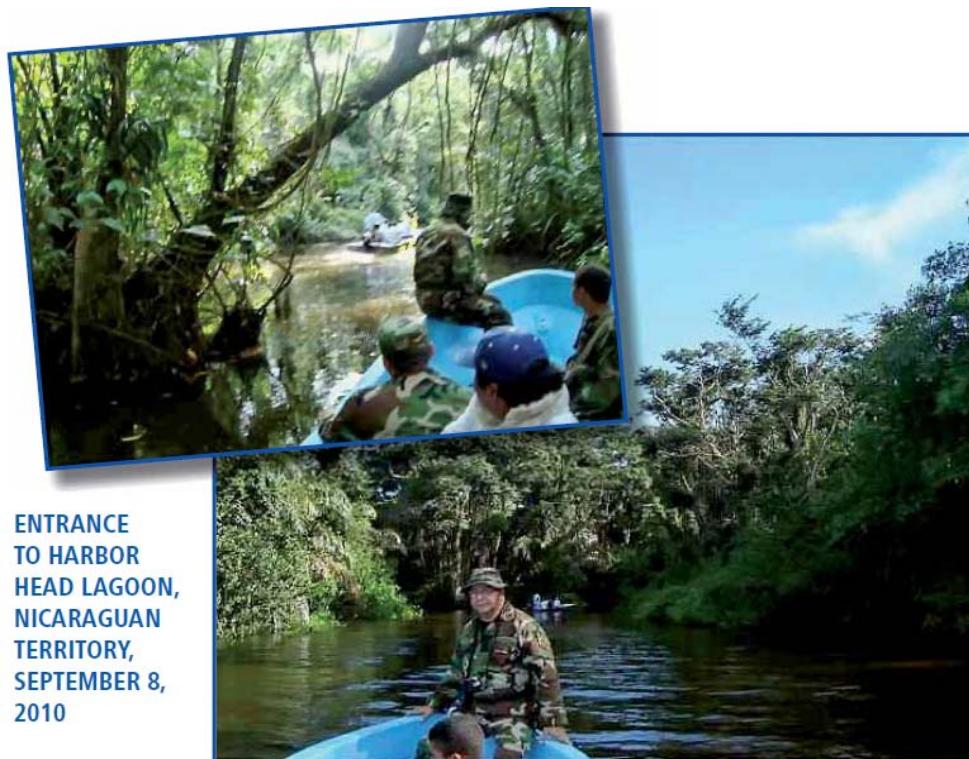
<sup>842</sup> See *CR 2011/4*, p. 10, para. 9 (McCaffrey).

<sup>843</sup> See *CR 2011/4*, p. 11, para. 10 (McCaffrey).

<sup>844</sup> Vivas Declaration, p. 1 (NCM, Vol.III, Annex 90) ; *see also* Complete Nicaraguan White Book, San Juan de Nicaragua River, The Truths That Costa Rica Hides, 26 November 2010, p. 63 (NCM, Vol. II, Annex 26).

otherwise dense vegetation that grows along its banks.<sup>845</sup> The Court will also note that even this portion of the channel, where it is widest, is shielded by the tree canopy that springs up from both banks. It is this fact that accounts for the difficulty in seeing the caño clearly in overhead imagery. Indeed, the fact that the caño is clearly visible in the satellite images from 1961, 1997 and 2007 despite the thick tree canopy is a compelling testament to its existence and to its significance.

**Figure 6.17**<sup>846</sup>



**Figure 6.17** 2009 Photographs

<sup>845</sup> Complete Nicaraguan White Book, San Juan de Nicaragua River, The Truths That Costa Rica Hides , p.63 (NCM, Vol. II, Annex 26.).

<sup>846</sup> *Ibid.*

6.88. Elsa María Vivas Soto, the Environmental Management specialist at MARENA who conducted the environmental evaluation of the channel, relates her observations during this pre-cleaning visit in her witness statement:

“While we were traveling through the caño, the fluidity of the water could be seen, which allowed small vessels such as the boat that we were in to navigate up to a certain point. The caño had a width of some five meters, surrounded by a riparian, flooded forest.”<sup>847</sup>

6.89. The fallen trees from the forest, combined with years of built-up sedimentation, eventually made navigation difficult, however. The photograph below shows the fallen and overhanging trees blocking the boats’ passage, as well as the increased levels of sedimentation along the river’s banks and in its waters.

---

<sup>847</sup> Vivas Declaration, para. 9 (NCM, Vol. III, Annex 90).

**Figure 6.18**<sup>848</sup>



**Figure 6.18** 2009 Photograph

6.90. Ms Vivas Soto describes how these obstructions made it impossible for the boats to continue past a certain point:

“We traveled through the caño until we found a layer of sediment and dried fallen trees that prevented the passage of water and transportation toward the San Juan River side [of the caño], thus affecting the flow volume, the depth and the width of the caño. Due to this sedimentation of the section, we were forced to continue the trip on foot, because the sedimentation made navigation through the caño difficult.”<sup>849</sup>

---

<sup>848</sup> Vivas Declaration , photo 3 (NCM, Vol. III, Annex 90).

<sup>849</sup> Vivas Declaration, para. 9 (NCM, Vol. III, Annex 90).

6.91. The need to clear the channel of the accumulated debris and sediment to restore it to its prior state was evident:

“The need to remove the sediment to restore the flow volume of the caño was visible, so that it could again flow from the Lagoon to its natural mouth in the San Juan River. The need to remove the vegetation that obstructed the caño was also visible, to improve its navigability as part of the sustainable development of the region.”<sup>850</sup>

6.92. In light of these findings, the clearing operation began just over a month later.

### **3. Costa Rica’s Experts Do Not Assist Its Case**

6.93. To rebut the evident force of the evidence presented above, Costa Rica relies primarily on reports prepared by external consultants. The first is the satellite imagery analysis prepared by UNITAR/UNOSAT. The second is the Thorne Report.

6.94. Costa Rica offers the UNITAR/UNOSAT Report for the ostensible conclusion that “there were no signatures within the satellite imagery indicating the existence of an ephemeral stream to explain the appearance of this channel”.<sup>851</sup> Many of the reasons the UNITAR/UNOSAT Report is not reliable and does not support the propositions for which it has been offered have already been addressed in Chapter 5 dealing with the issues of harm and the threat of harm to

---

<sup>850</sup> Vivas Declaration, para. 10 (NCM, Vol. III, Annex 90).

<sup>851</sup> CRM, Annex 148, p. 140.

Costa Rica.<sup>852</sup> Nicaragua will not repeat those observations here but rather will limit itself to the additional critiques offered below.

6.95. The UNITAR/UNOSAT Report purports to be based on a review of a series of satellite images “from 1979, 1986, and 2005, 2007-2010.”<sup>853</sup> Yet, none of the images nominally examined, except only those from 2010, are included in the report.<sup>854</sup> Neither are they identified in a manner that would make it possible to obtain copies of them. This omission makes it impossible for Nicaragua, or anyone else, to assess the value of the conclusions drawn from them.

6.96. In addition, a number of conclusions the report purports to reach are plainly incorrect. The report concludes, for instance, that the channel increased in size between August 2010 and December 2010 due to erosion “as the new water flow [from the main flow of the river] cuts into the soil.”<sup>855</sup> What actually happened is far less dramatic. As one of Costa Rica’s other expert consultants, Professor Thorne, acknowledges in his report, December 2010 coincided with a “flood event in the Río San Juan”.<sup>856</sup> The unremarkable result of

---

<sup>852</sup> See paras. 5.274 – 5.296. above

<sup>853</sup> CRM, Annex 148, p. 140.

<sup>854</sup> See also Kondolf, Section 3.2 (“It seems implausible that UNITAR would have seen nothing worthy of mention on the earlier satellite imagery. The failure to report observations from its ‘review’ of the earlier imagery, or at least to explain why it chose not to report on the earlier imagery, is a serious inconsistency between the stated methods and the ‘results’ presented, which undermines the credibility of the UNITAR reports.”) (Vol. I, Appendix 1).

<sup>855</sup> CRM, para. 3.113, p. 130

<sup>856</sup> Thorne, p. I-46.

this flood event was that the water in the caño over-spilled its banks. It distinctly did *not* increase in size as a result of erosion.

6.97. This simple truth is clear by comparing the two photographs on pages I-47 and I-48 of the Thorne Report, where it can be seen that the caño returned to its original size when the flood waters receded. It can also be seen in the photographs Costa Rica presented at the provisional measures hearing, in which the original, unwidened banks of the caño remain very much visible just beneath the flood waters (as does the source of the flood: rain, drops of which can be seen on the window of the airplane from which the pictures were taken).<sup>857</sup>

6.98. The eagerness of the authors of the report to reach conclusions helpful to Costa Rica is also shown by their wholly errant attempt to assess the velocity of the river flow based only on satellite imagery. The report warns that “the high velocity of water flowing in from the San Juan River” will facilitate a “high rate of erosion” in the caño.<sup>858</sup> Again, this is plainly false.<sup>859</sup> In fact, the flow of the San Juan is exceedingly slow, a function of what Dr Thorne himself refers to as the “low-gradient and limited stream power” of the river.<sup>860</sup> Water in the lower San Juan moves at a mere 0.569 meters per second, or approximately

---

<sup>857</sup> *Report of the OAS Secretary General Pursuant to Resolution CP/RES. 979 (1780/10)*, OEA/Ser.F/II.26 (7 Dec. 2010) (CRM, Vol. IV Annex 146).

<sup>858</sup> CRM, Annex 148, p. 140.

<sup>859</sup> See Kondolf, Section 3.5 (“[S]atellite images alone cannot indicate the velocity of flowing water. Either the UNITAR (2011a) report authors are speculating about the velocity of water ‘flowing in from the San Juan River’, or the statement is based on field observation by a third party and incorporated without attribution or acknowledgment in the methods section.”) (NCM, Vol.I, Appendix 1).

<sup>860</sup> Thorne, p. I-80.



2 km/hour<sup>861</sup> – anything but the “high velocity” imagined in the UNITAR report. These obvious errors render the UNITAR report unreliable for the purposes for which it was nominally offered.

6.99. Costa Rica’s Memorial also includes an expert report from Professor Thorne, which purports to conclude “conclusively” that no pre-existing “natural watercourse has linked the Río San Juan to the southern part of the Harbour Head Lagoon.”<sup>862</sup> But the evidence supporting this conclusion is far from “conclusive” as the author claims. Indeed, Costa Rica’s own maps prove the contrary, and show that the caño has connected the lagoon to the river proper since at least 1949. The report’s conclusions are based on Professor Thorne’s desk-review of a series of selected historical maps and images of the area and his personal over-flight of the area in dispute in July 2011, as well as a compilation of evidence and studies produced by Costa Rica after the dispute had commenced.

6.100. Professor Thorne’s analysis of historical maps and images simply does not allow the author to draw the “firm conclusions” that he claims.<sup>863</sup> First, the report does not examine any Costa Rican maps of the area in dispute, let alone the 1949 Costa Rican map depicting the caño that Costa Rica included in its Memorial.<sup>864</sup> Nor does it review *any* maps or aerial images between 1899 and

---

<sup>861</sup> Environmental Impact Study for Improving Navigation on the San Juan de Nicaragua River (Excerpts), September 2006, p. 12 (NCM, Vol. II, Annex 7).

<sup>862</sup> Thorne, p. I-58.

<sup>863</sup> Thorne, p. I-58.

<sup>864</sup> See also Kondolf, Section 2.6 (NCM, Vol.I, Appendix 1).

1961, a significant gap of over 60 years. As a result, the report lacks a thorough and complete review of the evidence, leading to inherently questionable results.

6.101. Second, even the limited evidence he reviewed indicates that Professor Thorne's conclusion is anything but firm. While he claims that there was previously no watercourse exactly where the caño currently flows, he admits that there was both a watercourse flowing in the direction of the river from the southwest corner of the Lagoon<sup>865</sup> and a channel in the same area linking it to the right (east) bank of the river proper.<sup>866</sup> In effect then, his "firm conclusion" is limited to the contention that these admitted flows of water from either side did not meet.

6.102. Yet, even this limited contention is disproven by Costa Rica's own maps and by Professor Kondolf's analysis. As explained in Professor Kondolf's report, it is implausible that the watercourse found at the southwest corner of the lagoon would "grow just so far and then stop."<sup>867</sup> Dr Thorne's report does not explain how this "inlet" would have avoided gradually filling in with sediment over the course of many decades without carrying flowing water to keep itself open.<sup>868</sup> Indeed, Thorne's conclusions are "inconsistent with the well-documented behavior of deltas."<sup>869</sup> Dr Thorne also argues that if the caño had connected the river to the lagoon it would have led to changes in the formation of the lagoon's

---

<sup>865</sup> See Thorne, pp. I-7, I-18, I-20, and I-22.

<sup>866</sup> See Thorne, pp. I-7 and I-19.

<sup>867</sup> Kondolf, Section 2.4 (NCM, Vol.I, Appendix 1).

<sup>868</sup> *Ibid.*

<sup>869</sup> *Ibid.*

shoreline, which he claims has remained unaltered, based on the “close correspondence” between the contemporary shoreline and 18<sup>th</sup> century maps.<sup>870</sup> As shown in Professor Kondolf’s report “one of the main problems with this argument is that Thorne has *not* demonstrated that the contemporary shoreline corresponds to the 18<sup>th</sup> century shoreline. In fact, if one brings the maps to similar scales and attempts to overlay them, it is impossible to make them line up in the ‘close correspondence’ that Thorne asserts. The shapes and locations of the shorelines do *not* line up.”<sup>871</sup> An examination of the evidence reveals that “Thorne’s theory is not backed up by rigorous science, but only his assertion of the ‘close correspondence’ between maps, which is demonstrably not the case.”<sup>872</sup>

6.103. Similarly, Professor Thorne’s later over-flight of the area permitted little more than speculation. For example, the report openly acknowledges that “the flow in the inlet and ‘Caño’ was imperceptible”.<sup>873</sup> Yet, despite this, he somehow still manages to conclude that “it *seems* likely that water was moving from the Harbour Head Lagoon into the wetland rather than from the Río San Juan to the Harbour Head Lagoon.”<sup>874</sup> The author’s self-admitted conjecture is no substitute for evidence.

6.104. Professor Thorne also relies on the conjecture offered by Costa Rica’s own scientists from the Costa Rican Environmental Commission, whose

---

<sup>870</sup> See Thorne, p. I-19; *see also* para.6.140 below.

<sup>871</sup> Kondolf, Section 2.4 (NCM, Vol.I, Appendix 1).

<sup>872</sup> *Ibid.*

<sup>873</sup> Thorne, p. I-56.

<sup>874</sup> Thorne, p. I-56 (emphasis added).

survey attempted to estimate the ages of tree stumps allegedly found within the channel of the caño. Borrowing a conclusion from the Costa Rican survey, Thorne asserts that “it is unlikely that either of the [tree species identified] took root in the bed of a pre-existing stream because the buoyancy of their seeds greatly decreases the chances of a successful sub-aqueous rooting.”<sup>875</sup> Firstly, there is no evidence that these trees or any trees were alleged or supposed to have taken “root in the bed of a pre-existing stream”. What is correct is that the type of trees indicated are trees that naturally grow in the margins (not the bed) or near water courses such as the caño. Secondly, the scientific evidence shows that the proximity to the caño appears to be the ideal location for these types of trees to grow. It is well established that these tree species flourish in wet areas, including seasonal and perennial wetlands, and often form stands adjacent to mangroves.<sup>876</sup> The seasonal nature of the caño’s water flow provides the tree seeds the best opportunity to grow, as they implant in the channel during the low-flow of the dry season then benefit from the increased flow during the wet winter.<sup>877</sup>

6.105. Despite the clear limitations of his review, Professor Thorne declares that this evidence provides “a sound basis on which to draw firm conclusions.”<sup>878</sup> One of these firm conclusions is the start date for Nicaragua’s

---

<sup>875</sup> Thorne, p. I-52.

<sup>876</sup> See Kondolf, Sections 2.8 & 7 (NCM, Vol.I, Appendix 1).

<sup>877</sup> *Ibid.* Professor Kondolf also notes several fundamental flaws in the technical methods used to estimate the tree ages. In fact, the appropriate growth rate calculus would “halve the age estimates for the largest trees to about 125 years.” See Kondolf, Sections 2.8, 6.1-6.4, and 7 (NCM, Vol.I, Appendix 1).

<sup>878</sup> Thorne, p. I-58.

clearing operations in the caño, which he identifies as 1 November 2010.<sup>879</sup> This is a firm and specific conclusion indeed, but what is the basis for it? The report does not say but rather points only vaguely to a variety of sources, none of which support his conclusion.<sup>880</sup>

6.106. The point here is not that Professor Thorne should have been able to identify the start date with precision despite the limited nature of the evidence with which he was provided. Rather, is that his report purports to reach “firm” conclusions that are simply not supported by the evidence. In other words, he tries too hard to support Costa Rica’s case.

#### **D. NICARAGUA’S HISTORIC ACTIVITIES IN THE CAÑO AND THE AREA IN DISPUTE**

6.107. Costa Rica’s Memorial is premised on the assertion that the “constant recognition of the boundary was ruptured in October 2010...”<sup>881</sup> This contention has already been deconstructed in the Sections above. As described there, contrary to Costa Rica’s central thesis, there has never been a “constant recognition of the boundary” that Costa Rica now claims. This is demonstrated by the Parties’ failed efforts prior to this case to give definition to the undefined

---

<sup>879</sup> Thorne, p. I-58.

<sup>880</sup> He points, for example, to the UNITAR/UNOSAT Report’s conclusion that the work commenced between “8 August and 19 November 2010.” Thorne, p. I-55. There is also an aerial photograph taken on 1 November 2010 but Professor Thorne does not say how this image reveals the start date. *See* Thorne, p. I-43.

<sup>881</sup> CRM, para. 4.18

border as it approaches the sea, and by the large number of maps that directly contradict Costa Rica's position.

6.108. Costa Rica's argument is also refuted by the fact that Costa Rica has never exercised sovereignty in the area in dispute whilst Nicaragua has exercised unchallenged sovereignty over the disputed area, including the caño, which is well documented for at least the past 30 years.<sup>882</sup> During these decades of regular and repeated sovereign activity, Costa Rica never once questioned Nicaragua's actions. It was only when the present dispute erupted late in 2010 that it began to do so. The artificiality of Costa Rica's more recent complaints is amply demonstrated by the fact that it has never exercised authority in the area in dispute and that throughout this last well documented 30-year period it has been notably absent from the disputed territory. The "presence" Costa Rica claims in its Memorial is, at best, a paper presence only, and a conspicuously limited one at that.

6.109. This paper presence may be exemplified by the fact that Costa Rica claims the area in dispute as a Costa Rican Ramsar site. This site has never – until this case began – been verified or inspected on the ground. In fact the coordinates of the site given by Costa Rica to Ramsar indicate that the starting point is more

---

<sup>882</sup> There are more antique records that could be brought forth. It must be recalled that the only population in the area at the mouth of the San Juan River was Nicaraguan since colonial times. The town of San Juan (later Greytown and now relocated nearby and again called San Juan) was until the present day the only inhabited area in a radius of more than 30 kilometers.

than 10 kilometres inside undisputed Nicaraguan territory. So much for Costa Rican maps!

### **1. Nicaragua's Sovereign Activities**

6.110. Since at least the late 1970s, the Nicaraguan Army, Navy and Police have all patrolled the area in and around the Harbour Head Lagoon, including the swamps at the northern tip of Harbour Head and the caños connecting the lagoon with the river proper.

6.111. The Army presence dates back to the Nicaraguan civil war, during which the Harbour Head zone was a hotspot for counter-revolutionary activity. As a result, the Nicaraguan Army stationed a contingent of border guards in San Juan de Nicaragua (formerly, Greytown), the closest town on either side of the border to the lagoon.<sup>883</sup>

6.112. As early as 1979, a detachment of troops was assigned to permanently monitor the Harbour Head area, including the swampland now in dispute. As attested by Mr Gregorio Aburto Ortiz, the Chief of Police of the San Juan Delegation, this detachment was “located in a rustic construction, a stall, supported by a wooden base in the Harbour Head swamp”.<sup>884</sup> Another officer stationed on the San Juan in the 1980s and early 1990s, Mr Juan Francisco

---

<sup>883</sup> Affidavit of Gregorio de Jesús Aburto Ortiz (POLICE), 15 December 2010. (NCM, Vol. III, Annex 81).

<sup>884</sup> *Ibid.*

Gutiérrez Espinosa, similarly notes that “the Border Guard Troops had a base in the swamps of the Harbor Head.”<sup>885</sup>

6.113. The Army presence continued even after the end of the civil war as the area around San Juan de Nicaragua “turn[ed] into a focal point of criminal activity” because of its proximity to the river’s exit to the Caribbean Sea.<sup>886</sup> In the 1990s and after, the Army’s mission thus turned to combating smuggling and other forms of delinquency.<sup>887</sup>

6.114. During all these periods, Nicaragua’s Navy too was active in the area, patrolling it in the exercise of its responsibility to protect the nation’s borders. Naval patrols frequently “entered Harbor Head [Lagoon] through the streams that connect it to the San Juan River.”<sup>888</sup> They would particularly use the channels connecting the lagoon with the river proper during the rainy season (known locally as “winter”), when navigating these waterways became easier as water levels rose.<sup>889</sup>

6.115. Along with the Army and Navy, Nicaragua’s Police too were active in the zone where they together with the military exercised their “duty of ensuring

---

<sup>885</sup> Affidavit of Juan Francisco Gutiérrez Espinoza (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 85). He explained that the structure was “burned together with the town in Greytown” during the armed conflict in the 1980s .

<sup>886</sup> Affidavit of Denis Membreño Rivas (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 88).

<sup>887</sup> *Ibid.*; *see also* Affidavit of Douglas Rafael Pichardo Ramírez (POLICE), 15 December 2010. Statement (NCM, Vol. III, Annex 83).

<sup>888</sup> Affidavit of Juan Francisco Gutiérrez Espinoza (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 85). *See also*, Affidavit of Manuel Salvador Mora Ortiz (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 86), Affidavit of Norman Javier Juárez Blanco (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 87).

<sup>889</sup> *Ibid.*



public order and security in the zone between the Harbor Head Lagoon and the surrounding streams, where [they] constantly had patrols to prevent crime and drug trafficking.”<sup>890</sup> As explained by the Chief of the Police Delegation of the San Juan River, stationed there beginning in 1979: “The patrol activities were carried out by two methods, one by small ‘panga’ boats, and the other by walking where it was possible.”<sup>891</sup> The water patrols “were carried out through the different entrance routes of the Harbour Head Lagoon”<sup>892</sup> that is, via the channels that connected the lagoon to the river proper.<sup>893</sup>

6.116. These police patrols continued throughout the 1980s, and right up to the time the present dispute began at the end of 2010. During all this time, the police carried out “constant patrol activities throughout all the Harbour Head zone and its streams.”<sup>894</sup> The Chief of Police of the San Juan River in the 1980s waged a “constant battle against narcotics trafficking groups” throughout the disputed area.<sup>895</sup> When he returned years later, in 2008, as the Second Chief of the

---

<sup>890</sup> Affidavit of Luis Fernando Barrantes Jiménez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 82), Affidavit of Douglas Rafael Pichardo Ramírez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 83), Affidavit of Gregorio de Jesús Aburto Ortiz (POLICE), 15 December 2010. (NCM, Vol. III, Annex 81), Affidavit of Jose Magdiel Perez Solis (POLICE), 15 December 2010. (NCM, Vol. III, Annex 80).

<sup>891</sup> Affidavit of Gregorio de Jesús Aburto Ortiz (POLICE), 15 December 2010. (NCM, Vol. III, Annex 81).

<sup>892</sup> *Ibid.*

<sup>893</sup> *Ibid.*

<sup>894</sup> Affidavit of Douglas Rafael Pichardo Ramírez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 83).

<sup>895</sup> *Ibid.*

Narcotics Directorate of the Special Forces Detachment, he observed that little had changed. Indeed, if anything the patrols were more frequent and intense.<sup>896</sup>

6.117. In addition to regular patrols, Nicaraguan Police also carried out special operations “overseeing the commonly utilized routes for narcotics trafficking, as it was the case in Harbour Head.”<sup>897</sup> The Second Chief of the Narcotics Directorate explains that during such operations “we fluidly navigated from the river’s Delta to its mouth using 115 horsepower motor boats. During the winter time [*i.e.*, the rainy season], the Harbour Head’s canals became navigable, but not all of them, there were some places in which we pushed the boats.”<sup>898</sup> Despite the at-times difficult navigation “these canals were included in [their] patrol activities.”<sup>899</sup>

6.118. Another officer similarly attests, “During the winter we used to enter Harbour Head through the streams that connect it to the San Juan river, even during summer [*i.e.*, the dry season] the Harbour Head Lagoon was accessed through its streams, even though it was more complicated and more than once we had to push the boats in the sedimentary sand bank due to the river’s low flow.”<sup>900</sup>

6.119. These police activities, and Nicaragua’s presence more generally, are evidenced in a June 2008 report from the Second Chief of the San Juan River Section of the National Police, Mr Enrique Arteaga Núñez, to the Chief

---

<sup>896</sup> *Ibid.*

<sup>897</sup> *Ibid.*

<sup>898</sup> *Ibid.*

<sup>899</sup> *Ibid.*

<sup>900</sup> Affidavit of Juan Francisco Gutiérrez Espinoza (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 85).

Commissioner of Police, Mr José Pérez Solís. The report recounts the details of Mr Artegaga's visit to the area around San Juan de Nicaragua. In it, he states:

“On 15 June 2008, we made a review of the aquatic patrol sectors of the San Juan River, using a boat and a 40 HP motor ....

“On our return, we had the opportunity to enter through a caño that conducted us to a lagoon known as Harbour Head. According to Captain González's [the officer in charge in the area] explanation, that caño and that lagoon as well as the swamp of the same name are Nicaraguan and periodic surveillance must be carried out, given that the area is besieged by Costa Rican poachers ....”<sup>901</sup>

6.120. Nicaragua's sovereign presence was particularly conspicuous during visits to the area by then-President Arnoldo Alemán, who twice visited San Juan de Nicaragua during his 1997-2002 presidency. Both times, the Nicaraguan police units in the area conducted security operations to ensure the President's safety, including the stationing of three police officers in the Harbour Head wetlands to secure the perimeter of the area.<sup>902</sup> A clearly identifiable Nicaraguan Army helicopter also flew overhead to monitor activities in the Harbour Head zone.<sup>903</sup>

6.121. An August 2000 letter from Mr Pedro Minas of the San Juan River Police Delegation to the then Chief of Police, Mr Luis Barrantes, attests to these activities. In his letter, Mr Minas states:

“For this purpose [i.e., to ensure the safety of the President during his visit], we made a trip on the San Juan River, from the place known as

---

<sup>901</sup> Work Report of Enrique Jardiel Artega Núñez, Second Chief of the National Police, Río San Juan Delegation to Commissioner José Miguel Pérez Solís, Head of Police Division, Río San Juan (20 June 2008) (NCM, Vol. III, Annex 58).

<sup>902</sup> See Affidavit of Luis Fernando Barrantes Jiménez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 82).

<sup>903</sup> *Ibid.*

Delta, to the mouth of the river and to the place known as Harbour Head Lagoon, entering through a caño that connects to the same and to the place where there is a small garrison of the Nicaraguan Army in a house on stilts.”<sup>904</sup>

## 2. Costa Rica’s Acquiescence

6.122. During these more than three decades of open and obvious Nicaraguan sovereign activity in the disputed area, Costa Rica never once raised its voice to challenge Nicaragua’s activities. Costa Rican security forces along the border were well aware of this activity, as they were in constant communication with their Nicaraguan counterparts. Costa Rica’s failure to object is therefore conspicuous and, in Nicaragua’s view compelling.

6.123. In 2008, for example, a delegation from the Costa Rican Police met with their Nicaraguan counterparts headquartered on the river where they exchanged information regarding their respective operations, specifically including the presence and activities of the Nicaraguan police in the Harbour Head zone.<sup>905</sup> Neither this discussion nor any similar, earlier exchanges resulted in any protest from the Costa Rican side.<sup>906</sup>

6.124. Unable to produce any record of even a single protest of Nicaragua’s continuous activities in the area, Costa Rica’s Memorial adopts a different approach and claims that Nicaragua’s evidence does not support the propositions for which it is offered. Costa Rica claims in the first instance that the

---

<sup>904</sup> See NCM Vol. III, Annex 38

<sup>905</sup> Affidavit of Jose Magdiel Perez Solis (POLICE), 15 December 2010. (NCM, Vol. III, Annex 80).

<sup>906</sup> *Ibid.*

witness declarations from the Nicaraguan Army, Navy and Police officers that patrolled the area are vague and do not clearly refer to the disputed territory.<sup>907</sup>

Nicaragua disagrees.

6.125. To cite only two of many examples, the Chief of Police of the San Juan River during the early 1980s states that a detachment of Border Guards “was located ... in the *Harbour Head swamp*” and that they had “a permanent presence in the *Harbour Head zone*.”<sup>908</sup> Similarly, the current Head of Counter-Narcotics attests to specific patrolling activity in October 2010 “*in the caños and swamps of the Harbour Head Lagoon*.”<sup>909</sup> The references to the “Harbour Head swamp” and “Harbour Head zone” could not mean any other territory. The disputed area is the only Nicaraguan territory abutting Harbour Head Lagoon. If these are not descriptions of the area in dispute, Nicaragua invites Costa Rica to state where it is.

6.126. Costa Rica similarly attempts to question the witness statements regarding the caño, claiming that they do not specifically identify the caño in dispute in this case.<sup>910</sup> Again, Nicaragua disagrees. The reality is that this small channel of water, and others like it, has no name. General Alexander himself did

---

<sup>907</sup> CRM, para. 4.55.

<sup>908</sup> Affidavit of Gregorio de Jesús Aburto Ortiz (POLICE), 15 December 2010. (NCM, Vol. III, Annex 81).

<sup>909</sup> Affidavit of Farle Isidro Roa Traña, 16 December 2010. (NCM, Vol. III, Annex 89). *See also* Affidavit of Jose Magdiel Perez Solis (POLICE), 15 December 2010. (NCM, Vol. III, Annex 80), Affidavit of Douglas Rafael Pichardo Ramirez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 83), Affidavit of Norman Javier Juárez Blanco (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 87), Affidavit of Manuel Salvador Mora Ortiz (MILITARY), 15 December 2010. (NCM, Vol. III, Annex 86).

<sup>910</sup> CRM, para. 4.55.

not identify any caño or channel by name. This remains true even now after it has been placed under an international magnifying glass. Nevertheless, Nicaragua's witness statements, as well as the contemporaneous police reports from 2000 and 2008 cited above, are clear. The 2008 report, for example, states: "On our return, we had the opportunity to enter through a caño that conducted us to a lagoon known as Harbour Head. According to Captain González's [the officer in charge in the area] explanation, that caño and that lagoon as well as the swamp of the same name are Nicaraguan".<sup>911</sup> If this statement does not refer to the caño in dispute, Nicaragua again invites Costa Rica to identify whatever other channels that connect the river proper to the lagoon it thinks are being referenced.

6.127. Costa Rica's arguments about the alleged lack of specificity about which caño was being navigated also miss the point. The critical point here is that Nicaragua consistently and over a period of several decades, at least, exercised sovereign authority in exactly the area Costa Rica now claims has always been understood to be Costa Rican territory. This core point would be undisturbed

---

<sup>911</sup> Work Report of Enrique Jardiel Arteaga Núñez, Second Chief of the National Police, Río San Juan Delegation to Commissioner José Miguel Pérez Solís, Head of Police Division, Río San Juan (20 June 2008) (NCM, Vol. III, Annex 58). *See also, e.g.*, Affidavit of Juan Francisco Gutiérrez Espinoza (MILITARY), 15 December 2010. ("during the winter we used to enter Harbour Head through the streams that connect it to the San Juan River, even during the summer the Harbour Head lagoon was accessed through its streams.") (NCM, Vol. III, Annex 85); Affidavit of Manuel Salvador Mora Ortiz (MILITARY), 15 December 2010. ("During the period in which I patrolled the Caribbean coast line, Harbor Head zone was accessed through two points: during winter and on certain occasions during summer, with difficulties due to the low flow, through the streams that connect the San Juan River with Harbor Head, and during winter through the bar in front of Punta Castilla...") (NCM, Vol. III, Annex 86).

even if Costa Rica were right – *quod non* – that the evidence refers to another caño (or caños).

6.128. In addition to arguing that Nicaragua’s evidence is vague, Costa Rica also argues that its witness statements should be given “no weight” because they were made by military and/or police personnel when this case was pending before the Court.<sup>912</sup> The Court’s jurisprudence and the nature of the statements refute Costa Rica’s argument. Since as early as the Corfu Channel case, the Court has admitted sworn statements as evidence.<sup>913</sup> In its Judgment in that case, the Court noted that it “gave much attention to this evidence...”.<sup>914</sup> To be sure, in *Military and Paramilitary Activities (Nicaragua v. United States)* the Court did observe that statements provided by State personnel should be treated with caution.<sup>915</sup> But treating evidence “with caution” is not the same thing as giving it no weight.

6.129. It must be recalled that the area in dispute is a wetland or swamp. Thus the main evidence must rely on the authorities that patrolled the area. This was not a “no man’s land”, a modern pirate’s hideaway, as it would have been if left to the non-existent exercise of authority in the area by Costa Rica. Furthermore, it could be noted that if this area had any commercial use it would have been an interesting tourist attraction. The Court will recall that in the first

---

<sup>912</sup> CRM, para 4.55.

<sup>913</sup> *Corfu Channel (United Kingdom v. Albania)*, Judgment, I.C.J. Reports 1949, p. 19.

<sup>914</sup> *Ibid.*, p. 16 (referring to written and verbal witness statements presented by the United Kingdom).

<sup>915</sup> *See Military and Paramilitary Activities In and Around Nicaragua (Nicaragua v. United States of America)*, Judgment, I.C.J. Reports 1986, p. 43, para. 70.

case brought by Costa Rica against Nicaragua one of the main arguments was based on the right of Costa Rican tourists to navigate the San Juan. Yet, there is no record of any Costa Rican tourist boats visiting this area. On the other hand, Nicaragua could easily flood the Court with evidence of tourists and fishermen living in or visiting San Juan de Nicaragua that frequently visited the area in dispute.

6.130. More recently, in the case concerning *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)* the Court stated that witness statements were of limited value except to the extent that they described facts – not opinions – peculiarly within the knowledge of the declarant.<sup>916</sup> That is exactly the case here. The declarations at issue have been provided by Nicaraguan Army, Navy and Police personnel precisely because they are the ones with direct personal knowledge of the facts, which are uniquely within their ken.

6.131. The accuracy and veracity of the witness statements Nicaragua offers are also confirmed by contemporaneous official documentation. Both the 2000 and 2008 police reports quoted above show the facts to be exactly as attested by Nicaragua's witnesses: for years, Nicaraguan authorities have patrolled the area, including the Harbour Head swamp, the caño and the lagoon on the understanding that it was Nicaragua's sovereign right to do so. At the same time,

---

<sup>916</sup> See *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)*, Judgment, I.C.J. Reports 2007, p. 371, para. 244.



Costa Rica was entirely absent from the area. Nicaragua trusts that the Court will understand that the nature and remote location of the activities in question were not such as to generate reams of paperwork that can now be retrieved years afterward. In any event, the point remains: Nicaragua's affidavit evidence is confirmed by what contemporaneous official documentation there is. Equally, the sum total of Nicaragua's evidence, including affidavit evidence, must be evaluated against the utter lack of any evidence of any kind offered by Costa Rica.

6.132. Finally, the Memorial attempts to diminish the significance of Nicaragua's sovereign activities by arguing that they were "covert" and thus unknown to Costa Rica.<sup>917</sup> The truth is to the contrary, however. In fact, Nicaragua openly patrolled and carried out sovereign activity within the disputed area not just for several days, weeks or years, but for decades – and as often as *several times a week*.<sup>918</sup> If Costa Rica was truly unaware of Nicaragua's actions, it could only be as a result of its own absence from the area, a fact addressed in the following section that further undermines Costa Rica's arguments about the allegedly accepted nature of its sovereignty over the northern tip of Harbour Head.

---

<sup>917</sup> CRM, para. 4.57

<sup>918</sup> Affidavit of Norman Javier Juárez Blanco (MILITARY), 15 December 2010. ("as a Marine of the Naval Force of the Nicaraguan Army, our duties consisted in three or four patrol journeys per week in the Harbor Head zone.") (NCM, Vol.III, Annex 87). *See also*, Affidavit of Jose Magdiel Perez Solis (POLICE), 15 December 2010. (NCM, Vol. III, Annex 80).

### 3. Costa Rica's Lack of Effectivités

6.133. Costa Rica's Memorial tellingly does not present a single piece of evidence that demonstrates its presence or activity in the area in dispute. The only items it offers are a set of land use permits from 2006 and the vague invocation of international treaties. There is no hint of actual conduct on the ground of the sort, much less quantity, shown by Nicaragua.

6.134. Indeed, not one of the Nicaraguan Army, Navy or Police officers who monitored the area for years at a time ever saw Costa Rican officials in the area. As one Nicaraguan officer explains, the closest Costa Rican presence was located some 24 km upriver at the Delta post, where the Colorado River joins the San Juan: "The only Costa Rican presence has been the rural guard or public force post located in the Delta, from the San Juan River Delta throughout the river's mouth we never saw any presence of Costa Rican civil authorities or public force."<sup>919</sup> Another officer stationed in the area in the 1990s similarly confirms: "During the period in which I rendered my service as Chief of the Delegation of the National Police at San Juan River, we never received any complaint or protest from any Costa Rican authority or public force and, in the same way; we never saw any presence of Costa Rican civil or public force authorities at Harbor Head."<sup>920</sup>

---

<sup>919</sup> Affidavit of Suban Antonio Yuri Valle Olivares (POLICE), 15 December 2010. (NCM, Vol. III, Annex 84).

<sup>920</sup> Affidavit of Luis Fernando Barrantes Jiménez (POLICE), 15 December 2010. (NCM, Vol. III, Annex 82).

6.135. Nicaragua notes that Costa Rica’s absence from the area is revealed by more than the affidavit evidence. The Nicaraguan police reports from 2000 and 2008 cited above both explicitly state that there was no Costa Rica presence observed in the area. The 2000 report, for example, notes: “During our visit, we did not observe any members of the Costa Rican Police in the area.”<sup>921</sup> For its part, the 2008 report states: “When we passed through the area, we did not observe any poachers, nor did we observe any Costa Rican police or any settlers in the area.”<sup>922</sup>

6.136. Instead of providing evidence of actual possession or use, the Memorial invokes two treaty documents – the Si a Paz Agreement and a RAMSAR designation – along with an environmental decree as “proof” of Costa Rica “exercising sovereignty” over the area.<sup>923</sup> None of this advances Costa Rica’s case. Neither of the treaty documents refers to the area in dispute at the northern tip of Harbour Head. Indeed, the Memorial does not even attempt to show how the Si a Paz Agreement demonstrates Costa Rica’s sovereignty over the area.<sup>924</sup> The Agreement refers only vaguely to a geographic location beyond “the border area of Costa Rica and Nicaragua.”<sup>925</sup> Similarly, the only identifying

---

<sup>921</sup> Work Report of Official Pedro José Minas Núñez, National Police to the Assistant Commissioner, Chief of the National Police, Río San Juan, 2 August 2000. (NCM, Vol. III, Annex 38).

<sup>922</sup> Work Report of Enrique Jardiel Arteaga Núñez, Second Chief of the National Police, Río San Juan Delegation to Commissioner José Miguel Pérez Solís, Head of Police Division, Río San Juan, 20 June 2008. (NCM, Vol. III, Annex 58).

<sup>923</sup> CRM, paras. 4.43, 4.48.

<sup>924</sup> CRM, para. 4.43.

<sup>925</sup> CRM, Vol. II, Annex 22.

information provided in RAMSAR's description of Costa Rica's *Humedal Caribe Noreste* is that it is located in "Limon and Heredia; 75, 310 ha, 10°N 83°30' W." This sole coordinate and identifying point refers to a point located more than 50 km south of the disputed area.<sup>926</sup>

6.137. Costa Rica's environmental decree fares no better. Executive Decree No. 22962 simply establishes a two-km protected zone along the border "from Punta Castilla in the Caribbean Sea to the Pacific Ocean ... according to what is stipulated in the Cañaz-Jerez Treaty of Limits of 15 April 1858."<sup>927</sup> Costa Rica concludes that this "naturally ... includes the entirety of Isla Portillos."<sup>928</sup> But of course this statement conveniently assumes its own conclusion. The decree includes the entirety of Harbour Head if and only if Costa Rica is correct on the sovereignty question now pending before the Court. If it is not, it does not.

6.138. Costa Rica's remaining evidence is a series of six land use permits, all of which were issued in 2006.<sup>929</sup> In reality, however, at most two of these permits pertain to the disputed area – those belonging to Jose Alberto Alvarez Nuñez<sup>930</sup> and to Juan Carlos Segura Carvajal<sup>931</sup> Even accepting these documents at face value, the fact remains that two land use permits dug out from the archives of

---

<sup>926</sup> CRM, Vol. IV, Annex 141.

<sup>927</sup> CRM, para. 4.43.

<sup>928</sup> CRM, para. 4.43.

<sup>929</sup> CRM, para. 4.44.

<sup>930</sup> See CRM, Vol. V, Annex 216.

<sup>931</sup> See CRM, Vol. V, Annex 217.

the Costa Rica's Ministry of Environment and Energy do not a sovereign make.<sup>932</sup> If they reflect a Costa Rican presence at all, it is only a presence on paper of the thinnest sort. Besides, land use permits in a supposedly Costa Rican Ramsar wetland?

6.139. The Memorial rather curiously attempts to make much of Nicaragua's lack of reaction to these supposed effectivités.<sup>933</sup> But, as shown, there was nothing to object to, except possibly for two land use permits that Nicaragua did not even know existed. In no meaningful sense can Nicaragua therefore be said to have acquiesced to Costa Rica's non-existent displays of sovereignty over the area.

#### **E. THE PRESENT DAY NON-EXISTENCE OF THE BAY OF SAN JUAN**

6.140. In this section Nicaragua will demonstrate that the Gulf of San Juan del Norte has been, in certain areas, washed away and in others silted over and hence has ceased to exist as a physical reality. The consequences of this natural loss were recognized in the Awards of President Cleveland in 1888 and General

---

<sup>932</sup> Costa Rica calls on the *El Salvador/Honduras* judgment for assistance, noting that the Chamber considered the "republican titles" as a way to "elucidate the *uti possidetis juris* of 1821 applicable to the case or as effectivités." CRM, para. 4.45. But, unlike here, the Chamber only considered the titles as evidence of *uti possidetis juris* to the extent that "both parties have offered them as such." *El Salvador/Honduras, Judgment*, p. 395, para. 55. The Chamber concluded that it would "therefore, consider republican titles on their merits, as possible evidence of the *uti possidetis juris* position in 1821, wherever they have been pleaded as such by the Parties." *Ibid.* Nicaragua, of course, rejects the land use permit as such evidence. This judgment, thus, offers Costa Rica no assistance.

<sup>933</sup> CRM, paras. 4.54 & 4.46.

Alexander in 1897 as well as by the subsequent practice of the Parties. Changes in the Gulf of San Juan.

### **1. Physical disappearance of the Bay of San Juan**

6.141. Article IV of the 1858 Treaty of Limits between Nicaragua and Costa Rica stipulates that,

“The Bay of San Juan del Norte, as well as the Salinas Bay, shall be common to both Republics, and, therefore, both the advantages of their use and the obligation to contribute to their defence shall also be common.”

6.142. When this Treaty was signed on 15 April 1858, the San Juan River debouched into the Bay of San Juan. This can be appreciated in Figure 6.19 and Figure 4.1. At the time, the Bay was the natural entrance to the San Juan River on which Costa Rica had been granted rights of navigation for commercial purposes.

Figure 6.19<sup>934</sup>

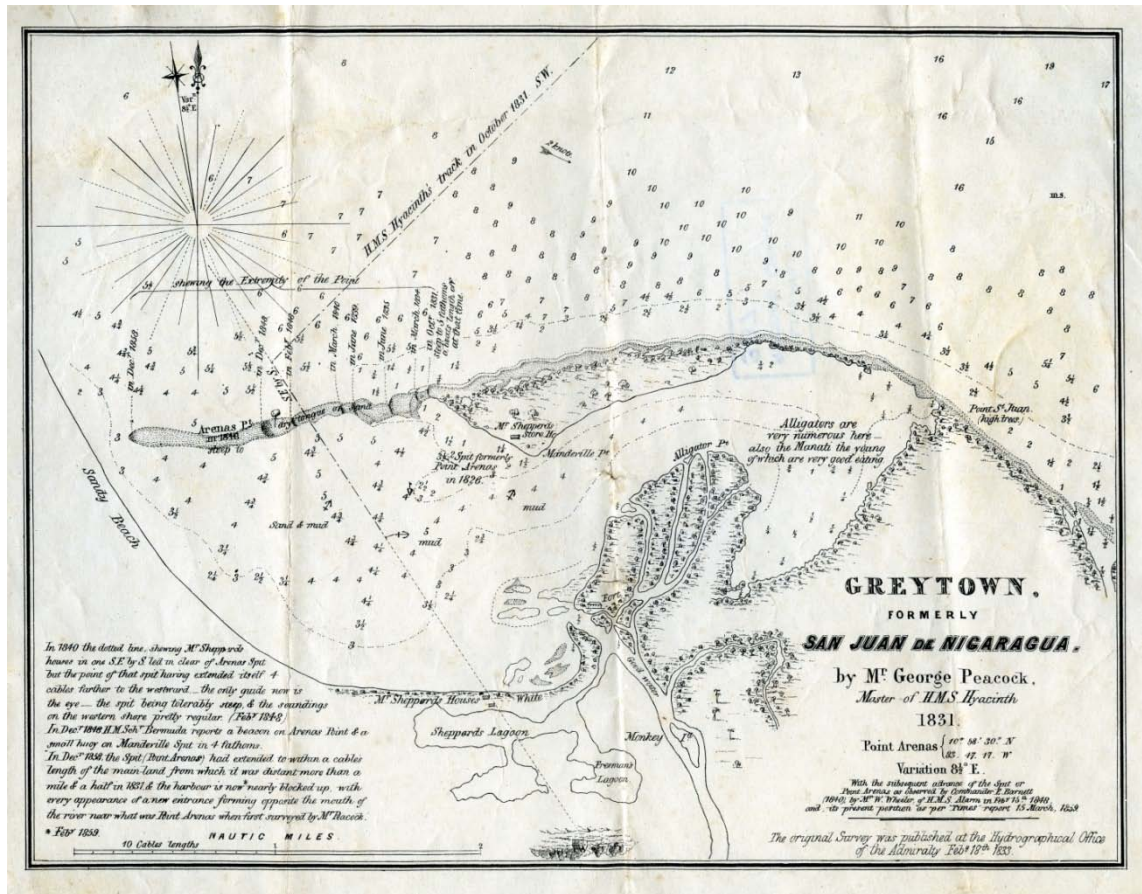


Figure 6.19 Map of 1831 by Mr. George Peacock with additions up to 1859

6.143. Shortly after the Treaty came into force, the direction of the main water current of the San Juan changed its course and largely found an outlet through the branch of the Colorado; that is, the main volume of water of the San Juan River poured to the sea through Costa Rican territory.

6.144. The “Despatches from United States Consuls in San Juan del Norte” from 1851 to 1906 are available in microfilm and can be obtained from the

<sup>934</sup> See Annex (NCM, Vol. IV, Annex 120).

United States National Archives<sup>935</sup> and Records Administration. The dispatch sent by the Consul on 26 February 1859, a year after the signing of the Treaty, gives a detailed description of the changes in the Harbour of Greytown:

“The harbor of this port has for several months past, been filling up and the entrance to it gradually growing narrower and shallower, until none but the lighter draft vessels can enter it. I was told by the pilot of the port this morning that yesterday afternoon there was but fifteen feet water at the mouth, where six months ago the soundings showed twenty-five feet!”<sup>936</sup>

6.145. A former President of Costa Rica, Mr. Cleto Gonzalez Viquez, in 1910 published a record of “Tremors, Earthquakes, Floodings and Volcanic Eruptions in Costa Rica (1608-1910)”<sup>937</sup>. His record for the year 1861 confirms what the US Consul had reported. President Gonzalez notes:

“Floods have been and are frequent in the Atlantic region. It is known that in that sector of the country, during the period of torrential rains, the rivers often change their course and that...the River San Juan has mostly changed its course to run through the branch of the Colorado”<sup>938</sup>

6.146. By 1872 the situation had become even more dramatic. The dispatch from the United States Consul on 30 September of that year reports:

“At one time this harbor ranked high its depth of water having been variously sounded by the exploring parties inspecting for an interoceanic route and by the anchors of the ship cast almost any where while engaged in trading here. Even frigates entered here and the expanse of water from the town to the inlet was the admiration of all. At that date the San Juan River debouched here.

---

<sup>935</sup> <http://www.archives.gov/shop/> (*last visited*, 21 July 2012).

<sup>936</sup> Despatches from United States consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 3), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C. (NCM, Vol. II, Annex 2).

<sup>937</sup> Cleto González Viquez, *Temblores, Terremotos, Inundaciones y Erupciones volcánicas en Costa Rica (1608-1910)*, Tipografía de Avelino Alsina, San José, Costa Rica, 1910. (NCM, Vol. II, Annex 6).

<sup>938</sup> *Ibid.*



And being a broad stream and the sole outlet of the great lake of the interior spread itself over the basin formed by nature for it. The warehouse being built along the harbor front, could then receive the vessels alongside without expense or trouble. But some years ago, the San Juan suddenly changed its main channel, pouring nearly its entire volume through a branch called the Colorado, where the channel continues. This change of course left the harbour destitute of water enough to cover the area before occupied, and the soil being alluvium of course vegetation commenced in earnest, soon making for the bar itself. Hence at present rushes and grass extend all in front of the town leaving wandering channels here and there, which boats navigating must strictly follow, and making, it may be inferred, miasma in proportion to the space of marsh so exposed to the ordinary temperature of this climate. Where all this will end no one knows. The inhabitants look on without ability to remedy it. Dredging would scarcely do, as the sole cause is lack of water from the river.”<sup>939</sup>

6.147. Later that year, the Consul, in his dispatch of 15 December 1872, reports,

“Since forwarding my report proper, it is evident that the harbor of Greytown or San Juan del Norte has virtually closed. There is only one opening called “Harbor Head”<sup>940</sup> with three feet of water (the dangerous point where the Kansas lost so many). How long this opening will continue is uncertain. When it does fill up, the little water coming down this arm of the river, settles in the town, becomes a lagoon, passing off alone by evaporation.”<sup>941</sup>

6.148. The situation during the time of these 1872 reports of the Consul can be appreciated in the Hatfield and Lull map of 1872-1873 (See Figure 6.20). This map shows that the river no longer debouched into what is left of the Bay,

---

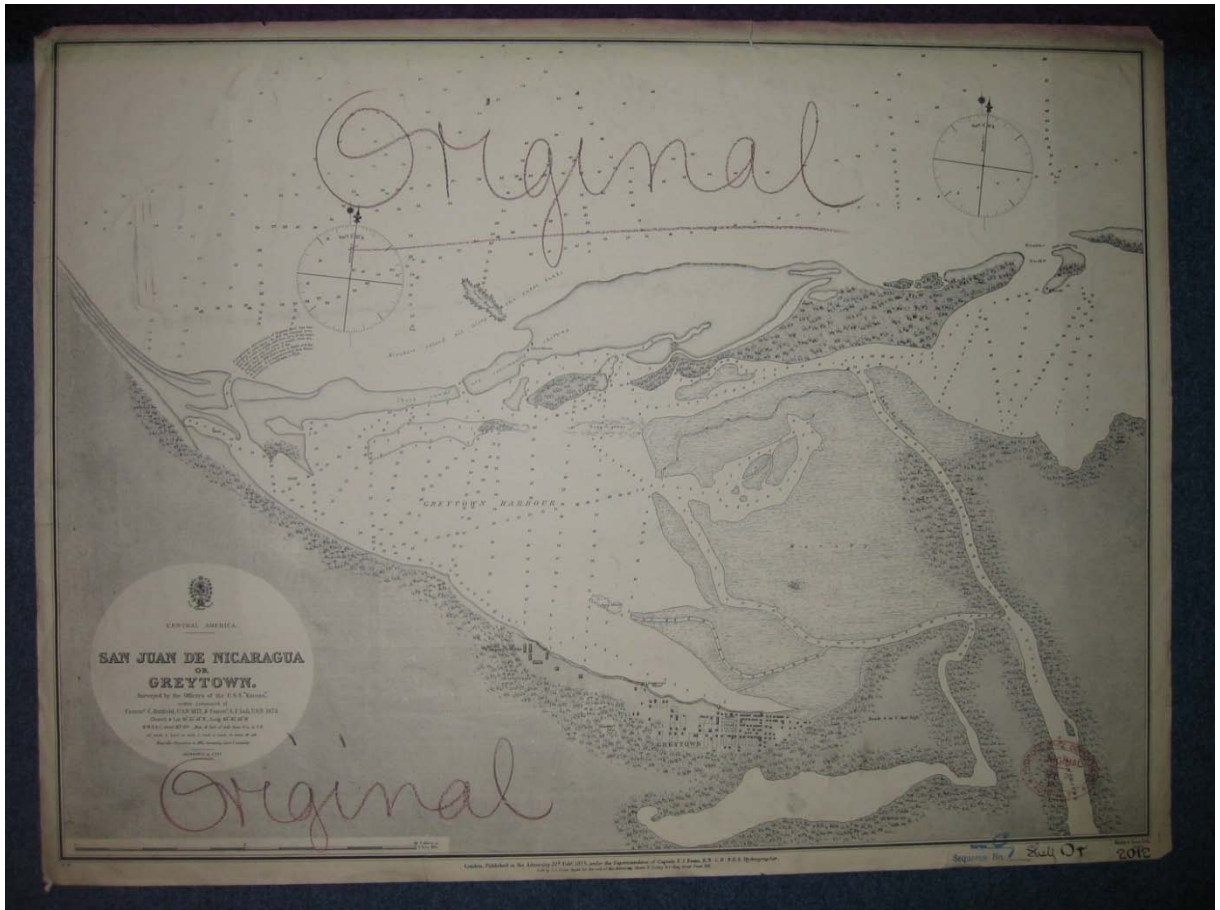
<sup>939</sup> Despatches from United States consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 5), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C. (NCM, Vol. II, Annex. 3).

<sup>940</sup> Harbor Head was the eastern part of the Bay of San Juan. It is recognized by Costa Rica as an undisputed part of Nicaraguan territory. It was so established in the Alexander Award of 1897.

<sup>941</sup> Despatches from United States consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 5), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C. (NCM, Vol. II, Annex. 3).

and that the Bay, as the consul noted “has virtually closed” and had become a “lagoon”.

**Figure 6.20**



**Figure 6.20** San Juan de Nicaragua or Greytown surveyed under command of Comm. C. Hatfield U.S.N. 1872 and Com. E.P. Lull U.S.N. 1873.

6.149. On 24 June 1885, shortly before the Nicaragua/Costa Rica dispute was submitted to arbitration by President Cleveland, the Consul reported the,

“...completely ruined condition to which the once magnificent harbor of Greytown is reduced. What in former days was a spacious harbor of safe anchorage, and of easy approach is now graphically described as a « mere lagoon with and uncertain inlet » and the approach to it is dreaded and avoided by all navigators. As

the department knows, since 1865, no ordinary sea going vessel has been able to enter the harbor; its use has been monopolized by light draft coasting vessels and the flat-bottomed steam boats...”<sup>942</sup>

6.150. The Map of San Juan del Norte surveyed by Ensign W.J. Maxwell in 1888 (see **Figure 6.3**) shows why the Bay of San Juan could by then be “graphically described as a mere lagoon”. Again, the map makes clear that the San Juan River no longer flowed into the San Juan Bay, but rather divided into smaller branches, some heading towards Harbor Head Lagoon and others to what was left of the former Bay.

6.151. This was the geomorphological situation at the mouth of the San Juan River when the territorial dispute was submitted to the arbitration of President Cleveland in 1887, a situation similar to that encountered by General Alexander 10 years later. Thus, Assistant Secretary of State, George L. Rives reported to President Cleveland that the Harbour of San Juan (Greytown) closed in 1862<sup>943</sup>.

6.152. The reality today, more than 100 years after the Alexander Awards is, if possible, more conclusive. The satellite images<sup>944</sup> clearly show that the main course of the San Juan River presently flows directly out to the sea and not into the present day non-existent Bay of San Juan. This satellite image also shows that the indentation in the coast line called the Gulf of San Juan del Norte, which was

---

<sup>942</sup> Despatches from United States consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 7), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C. (NCM, Vol II. , Annex 4).

<sup>943</sup> See para.4.6 above.

<sup>944</sup> See Figures 6.1 and 6.8.

formed by the projection of Punta Arenas into the sea,<sup>945</sup> has completely disappeared.

## 2. The Cleveland Award

6.153. The mandate for the Cleveland Arbitration was contained in the Treaty signed by both parties at Guatemala City on 24 December 1886. Article I of this Treaty submitted to arbitration the validity of the 15 April 1858 Treaty. It further provided in Article VI that if the Treaty was declared valid, then “the same award shall declare whether Costa Rica has the right to navigate the River San Juan with ships of war or revenue boats. Also the decision aforesaid shall, in case of the validity of said Convention, decide the other points of doubtful interpretation found by either of the Parties in the Treaty...”

6.154. Since the Treaty was declared valid, Nicaragua for its part communicated to the Arbitrator eleven points it considered of doubtful interpretation.

6.155. In its Argument presented to President Cleveland on 27 October 1887, Costa Rica’s representative, Mr. Pedro Perez Zeledon, indicated that,

“For Costa Rica there is not one single point in the treaty of limits which is not perfectly clear...For this reason I do not submit to the consideration of the Arbitrator any question relative to this point...”<sup>946</sup>

---

<sup>945</sup> See Figure 6.19 (NCM, Vol. IV, Annex 120).

<sup>946</sup> Whether Costa Rica is bound to co-operate in the preservation and improvement of the San Juan River and the Bay of San Juan, and in what manner; and whether Nicaragua can undertake any work without considering the injury which may result to Costa Rica, Argument on the Question of the validity of the Treaty of Limits between Costa Rica and Nicaragua and other supplementary points connected with it, (Washington, Gibson Bros., 1887) p. 139.

6.156. Notwithstanding this categorical statement, it is clear that in its response to the questions submitted by Nicaragua, Costa Rica was also presenting its own position and requesting the Arbitrator to decide the question in its favor.

6.157. Points 4, 5 and 6 on which Nicaragua requested clarification were the following:

“4. Nicaragua consented, by Article IV, that the Bay of San Juan, which always exclusively belonged to her and over which she has exercised exclusive jurisdiction, should be common to both Republics; and by Article VI she consented, also, that Costa Rica should have, in the waters of the river, from its mouth on the Atlantic up to three English miles before reaching Castillo Viejo, the perpetual right of free navigation for purposes of commerce. Is Costa Rica bound to concur with Nicaragua in the expense necessary to prevent the Bay from being obstructed, to keep the navigation of the river and port free and unembarrassed, and to improve it for the common benefit? If so,

“5. In what proportion must Costa Rica contribute? In case she has to contribute nothing—

“6. Can Costa Rica prevent Nicaragua from executing, at her own expense, the works of improvement? Or, shall she have any right to demand indemnification for the places belonging to her on the right bank which may be flooded or damaged in any other way in consequence of the said works?”

6.158. In short, the gist of Nicaragua’s questions were that since the Treaty of 1858 declared that the Bay of San Juan should be common, then (4) should Costa Rica concur in the expenses of keeping the bay from being obstructed and if so, (5) in what proportion was Costa Rica to contribute, and if she has no obligation to contribute, then (6) could she prevent Nicaragua from carrying out these works at her expense.<sup>947</sup>

---

<sup>947</sup> See Chapter. 3 above.

6.159. The questions referred to the works to maintain and improve navigation in both the San Juan River and the Bay of San Juan. Although at this point the analysis has addressed the question of the Bay, the contrasting position of Costa Rica with respect to its own rights and obligations in the River and in the Bay is illuminating. Costa Rica asserted in its written argument submitted to President Cleveland<sup>948</sup> that,

“The right of Costa Rica on the Bay of San Juan is a right of sovereignty which she exercises jointly and in common with Nicaragua; and the right of Costa Rica in the San Juan river...is the right of use and navigation. In the former case Costa Rica is joint owner; in the latter, Costa Rica is simply the cestuy que use.”<sup>949</sup>

“The jus utendi does not involve the obligation to pay expenses for the preservation of the thing used, nor any other expenses alluded to in questions Nos. 4 and 5.”<sup>950</sup>

“In reference to the Bay of San Juan, over which the rights of Costa Rica are sovereign, it seems unnecessary to state that the limitation of abridgment of the said rights cannot take place, whether directly or indirectly, except by an act of the will of Costa Rica, and with her consent.”<sup>951</sup>

“Referring now to Interrogatory No. 6, I shall state positively that Costa Rica has the right to prevent Nicaragua from executing, at her own cost, the works to which she alludes, whenever undertaken without consideration of the rights which belong to Costa Rica, whether as cestuy que use of the river, or as joint owner of the Bay, or exclusive sovereign of the right bank of the San Juan river, and

---

<sup>948</sup> Whether Costa Rica is bound to co-operate in the preservation and improvement of the San Juan river and the Bay of San Juan, and in what manner; and whether Nicaragua can undertake any work without considering the injury which may result to Costa Rica, Argument on the Question of the validity of the Treaty of Limits between Costa Rica and Nicaragua and other supplementary points connected with it, Washington, Gibson Bros., 1887, pp. 162-168. (NCM Vol. II, Annex 5).

<sup>949</sup> *Ibid*, p. 163.

<sup>950</sup> *Ibid*, p. 164.

<sup>951</sup> *Ibid*, p. 165.

of the whole Colorado river, or of the other lands and waters of her territory.”<sup>952</sup>

“Costa Rica can, therefore, prevent any place on the river bank which belongs to her from being occupied. And to prevent one thing from being done is something more than asking indemnification for the occupation and for the damages done in consequence thereof, whether through the flooding of the lands, or by destruction of the river front, or for any other reason.”

“Nicaragua cannot do any work either on the river or bay, whether for the improvement or for the preservation of the same, without first giving notice to Costa Rica and obtaining her consent.”<sup>953</sup>

“If, in consequence of some work surreptitiously done on the river or port, without the consent of Costa Rica, it should happen that some lands become inundated, whether absolutely or temporarily, or that the river bed becomes dry and Costa Rica is deprived of her river front, the right of Costa Rica to demand the restoration of everything to the same condition in which it was before, and, furthermore, the proper indemnification for damages, does not admit of contradiction.”<sup>954</sup>

6.160. The Reply of Costa Rica expounds on the different rights she has over the San Juan River and the Bay of San Juan. In the first case, the rights are of navigation and thus she is simply the *cestuy que use*, whilst in the second case, she was joint owner.

6.161. Based on this distinction, Costa Rica alleged that she had to be consulted regarding any works on the river and was not obliged to make any contribution to this end. On the other hand, since she was co-sovereign of the Bay, the only way that any works could be initiated in the Bay was with the common

---

<sup>952</sup> *Ibid*, p. 167.

<sup>953</sup> *Ibid*, p. 167.

<sup>954</sup> *Ibid*, p. 168.

consent of both co-owners who would, in that case, agree on apportioning the expenses involved.

6.162. The Cleveland Award was clear on these points: Costa Rica was not bound to concur in the expenses of keeping the Bay free or the River flowing (p. 4) nor was she bound to contribute any proportion of such expenses (p. 5) and she could not prevent Nicaragua from executing such works at her own expense (p. 6). President Cleveland decided that,

“4. The Republic of Costa Rica is not bound to concur with the Republic of Nicaragua in the expenses necessary to prevent the Bay of San Juan del Norte from being obstructed; to keep the navigation of the River or Port free and unembarrassed, or to improve it for the common benefit.

“5. The Republic of Costa Rica is not bound to contribute any proportion of the expenses that may be incurred by the Republic of Nicaragua for any of the purposes above mentioned.

“6. The Republic of Costa Rica cannot prevent the Republic of Nicaragua from executing at her own expense and within her own territory such works of improvement, provided such works of improvement do not result in the occupation or flooding of Costa Rica territory, or in the destruction or serious impairment of the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same. The Republic of Costa Rica has the right to demand indemnification for any places belonging to her on the right banks of the River San Juan which may be occupied without her consent, and for any lands on the same bank which may be flooded or damaged in any other way in consequence of works of improvement.”

6.163. Costa Rica’s position before President Cleveland was very clear.

As co-sovereign of the Bay it was an indispensable party to any enterprise in the



Bay and had to contribute to any expenses if it agreed on the works. President Cleveland's decision contradicted this position and treats the rights of Costa Rica in the Bay –if any– in a very limited fashion, giving Nicaragua the right to act as sole sovereign provided it compensated Costa Rica for certain damages.

6.164. Costa Rica by its acceptance of the fact that if it was co-sovereign of the Bay it must of necessity, have an equal say and an equal obligation to pay for any maintenance or improvement of the Bay, admitted that if the contrary were true – that it had no obligations or sovereign rights of decision – then it was not co-sovereign over the Bay. This is what President Cleveland decided and, as will be seen below, this is also what General Alexander decided in his awards.

### **3. The Alexander Awards**

6.165. One of the main stumbling blocks for demarcating the border between the Parties, was the fact that article 2 of the 1858 Treaty stipulated that the boundary line would begin at Punta de Castilla. The Treaty indicated that Punta de Castilla was located at the mouth of the San Juan de Nicaragua River, but since the mouth of the river had changed its outlet, it was not clear where Punta Castilla was to be located.

6.166. General Alexander found that in 1897 the San Juan River divided into several channels that flowed east into Harbour Head Lagoon and west into the former Bay of San Juan proper. Costa Rica argued that the branch flowing west should be the border and Nicaragua argued that the border should follow the

east flowing branches.<sup>955</sup> General Alexander determined that Punta de Castilla was located “on the northwestern extremity of what seems to be the solid land, on the east side of Harbor Head Lagoon”.

6.167. This first Alexander Award determined that Punta de Castilla was located towards the right side (eastward side) of the outlet of the San Juan and thus traced out a delimitation that started at the north east side of Harbour Head Lagoon, in effect leaving what was the original Bay of San Juan entirely on the Nicaraguan side and enclosed by Nicaraguan land territory. General Alexander’s Award confirmed the physical reality that the Bay no longer exists and that Costa Rica has no rights west or north of the line drawn by Alexander.

6.168. The Alexander Award confirmed the Cleveland Award with respect to the situation of the Bay of San Juan; that is, that the present day area where the Bay of San Juan had formerly been located – its eastern and western section – was entirely within and was part of Nicaraguan territory.

6.169. Harbor Head Lagoon was an integral part of the Bay of San Juan as can be appreciated in any of the 19<sup>th</sup> Century maps before the Bay silted up and ceased to exist. In spite of the fact that Harbor Head Lagoon is the closest part to Costa Rican territory of what was once the Bay of San Juan, Costa Rica accepts that it is part of Nicaraguan territory because Alexander’s demarcation attributed it to Nicaragua. There is then no reason for Costa Rica to now claim that it has co-

---

<sup>955</sup> See sketch attached to First Award, p.70 (CRM, Vol II, Annex 9); see paras. 6.37 – 6.44 above.

sovereignty over the western part of the now non-existent Bay of San Juan which was completely located on the Nicaraguan side in Alexander's demarcation.

#### **4. The Practice of the Parties**

6.170. The physical and juridical status of the Bay of San Juan has been further confirmed by the practice of the Parties. For more than 100 years there has never been any transit or act of authority by Costa Rica in the area where the Bay of San Juan was located. During that period, and at least since the Alexander Awards, there has not been any activity directed to the use or exploitation of the areas where the former Bay was located by Costa Rica or by private individuals claiming rights based on Costa Rican nationality.

6.171. Neither Nicaraguan nor Costa Rican official maps indicate that there is any other sovereign besides Nicaragua over the former Bay of San Juan.

6.172. The question of the status of the former Bay of San Juan de Nicaragua has recently come to the fore, after more than 100 years of irrelevance in the relations between the Parties, on the occasion of the dispute over the exact location of the border at the mouth of the San Juan River. Costa Rica delivered a note to Nicaragua dated 26 January 2012 by which it requested information on an airport being built, according to its text, near the Bay of San Juan del Norte over which Costa Rica is co-owner.<sup>956</sup> Nicaragua responded on 13 February 2012 that the Bay of San Juan ceased to exist many years ago and, therefore, any rights that

---

<sup>956</sup> Diplomatic Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-AM-045-12, 26 January 2012 (NCM, Vol. III, Annex 77 (1)).

Costa Rica might claim over it.<sup>957</sup> Costa Rica replied on 14 March 2012 reaffirming its claim that the waters of the Bay of San Juan were common to both Parties.<sup>958</sup>

## **5. Loss of Territory in International Law**

6.173. The loss of territory through the act of nature is not a novelty in international law. It is a question amply discussed in Roman law and carried into the Civil Codes of many nations, including most Latin American nations such as Costa Rica and Nicaragua. It has been a common topic in publications of international law.

6.174. Calvo, referring to changes in the course of rivers, stated: “For the solution of all these questions the principles of roman legislation has generally been applied and these changes have been considered as legitimate means of acquiring property.”<sup>959</sup>

6.175. “Operations of nature as a mode of losing territory correspond to accretion as a mode of acquiring it. Just as through accretion a state may be enlarged, so it may be diminished through the disappearance of land and other

---

<sup>957</sup> Diplomatic Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Worship of Costa Rica Ref: MRE/DM-AJ/118/02/12, 13 February 2012 (NCM, Vol. III, Annex 77 (2)).

<sup>958</sup> Diplomatic Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-AM-144-12, 14 March 2012(NCM, Vol. III, Annex 77 (3)).

<sup>959</sup> “Para la solución de todas estas cuestiones se han aplicado generalmente los principios de la legislación romana y se han considerado estos cambios como un medio legítimo de adquirir propiedad.” Derecho Internacional, Paris 1868 Ed., Vol. 1, Section 171, at p. 272.

operations of nature. And the loss of territory through the operations of nature takes place ipso facto by such operations.”<sup>960</sup>

6.176. Verzijl on the loss of territory: “There is first the automatic acquisition of territorial sovereignty as a result of accretion to the sea coast, and its image, the loss of territorial sovereignty by avulsion.”<sup>961</sup>

6.177. “The three terms in the title (accretion, erosion, and avulsion) describe similar processes resulting in the increase of territory through new formations. Thus, in the simple case, deposits on a sea coast may result in an extension of sovereignty. As Hyde puts it: ‘No formal acts of appropriation are required.’”<sup>962</sup>

In conclusion:

6.178. The Bay of San Juan has ceased to exist. The sea has washed away the promontory of Punta Arenas that formed the Gulf of San Juan de Nicaragua (del Norte). The deviation of the waters of the San Juan River to the Colorado branch has accelerated the silting and closing of what once was the Bay of San Juan.

6.179. President Cleveland determined that Costa Rica had no obligations and no right of decision on matters related to the San Juan Bay, thus putting to rest any claim of co-sovereignty over the former Bay by Costa Rica.

---

<sup>960</sup> Oppenheim’s International Law, 9th ed., Jennings and Watts editors, Volume I, Section 276, p. 717.

<sup>961</sup> International Law in Historical Perspective, Vol. III, p. 348.

<sup>962</sup> Ian Brownlie, Principles of Public International Law, 7th ed., p. 145.

6.180. General Alexander determined that the line of delimitation did not enter or cross into the area where the Bay of San Juan was originally located. The area where the Bay was located was left entirely on the Nicaraguan side of the border.

6.181. The loss of any rights by Costa Rica over the former San Juan Bay has been confirmed by the practice of the Parties.

6.182. For all the reasons discussed in this Chapter, Nicaragua considers to be well-established its sovereignty over the area around Harbour Head and the waters of the caño in dispute, as well as in the former Bay of San Juan.

## CHAPTER 7

### OTHER VIOLATIONS CLAIMED BY COSTA RICA

7.1 This Chapter addresses the groundless claims made by Costa Rica with regard to the alleged violations of the Court's order of 8 March 2011 and of the Court's Judgment of 13 July 2009:

7.2 Section A describes the positive measures of implementation of the Court's order of 8 March 2011 adopted by Nicaragua and demonstrates that no such violations have been committed by or can be attributed to Nicaragua;

7.3 Section B shows that Nicaragua has exercised its sovereignty over the San Juan de Nicaragua River in full consistency with the ICJ's 2009 Judgment.

#### A. NICARAGUA COMPLIED WITH THE INTERNATIONAL COURT OF JUSTICE'S ORDER FOR PROVISIONAL MEASURES OF 8 MARCH 2011

7.4 On 8 March 2011, the International Court of Justice ordered four provisional measures that read as follows:

“(1) Unanimously,

Each Party shall refrain from sending to, or maintaining in the disputed territory, including the *caño*, any personnel, whether civilian, police or security;

(2) By thirteen votes to four,

Notwithstanding point (1) above, Costa Rica may dispatch civilian personnel charged with the protection of the environment to the disputed territory, including the *caño*, but only in so far as it is

necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated; Costa Rica shall consult with the Secretariat of the Ramsar Convention in regard to these actions, give Nicaragua prior notice of them and use its best endeavours to find common solutions with Nicaragua in this respect;

(3) Unanimously,

Each Party shall refrain from any action which might aggravate or extend the dispute before the Court or make it more difficult to resolve;

(4) Unanimously,

Each Party shall inform the Court as to its compliance with the above provisional measures.”<sup>963</sup>

7.5 In its Memorial, Costa Rica accuses Nicaragua of having acted and still acting in violation of three of them. It asserts that:

“Nicaragua has breached the First, Second and Third provisional measures indicated by the Court in its Order with respect to the conduct of the ‘Sandinista Youth’, public officials and journalists on the northern part of Isla Portillos to which the Provisional Measures apply.”<sup>964</sup>

7.6 Not only has Nicaragua not breached any of the provisional measures ordered by the International Court of Justice on 8 March 2011 but Nicaragua has acted with all due diligence and has taken appropriate measures to ensure that the disputed territory remains free of Nicaraguan personnel (1), while the acts of the Guardabarranco Environmental Movement (miscalled “Sandinista Youth” by Costa Rica) cannot be attributed to Nicaragua (2). On the contrary, for its part, Costa Rica has breached the Court’s Order of 8 March 2011 (3).

---

<sup>963</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>964</sup> CRM, p. 263, para. 6.1. See also para. 6.2.



## **1. Nicaragua Has Refrained from “sending to or maintaining in” Harbour Head any State Personnel**

7.7 As an initial matter, Nicaragua recalls that all Nicaraguan military personnel were withdrawn from the disputed territory by December 2010. As Nicaragua made clear in its answer to Judge Bennouna’s second questions

“Aucune troupe nicaraguayenne ne stationne actuellement dans la zone en question et le Nicaragua n’a pas l’intention d’y établir de poste militaire à l’avenir. Il y a eu une présence militaire dans cette zone durant la période de six semaines durant laquelle le caño a été nettoyé, mais ceci aux seules fins de la protection des ouvriers procédant à cette opération. Le Nicaragua n’a pas l’intention de faire stationner des agents dans cette zone. La seule opération qui y soit menée actuellement est la replantation d’arbres. Le Ministère de l’environnement du Nicaragua (MARENA) enverra périodiquement des inspecteurs sur place afin de surveiller le processus de reboisement, ainsi que les changements qui pourraient se produire dans la région, y compris la lagune d’Harbor Head.”<sup>965</sup>

7.8 As early as 9 March 2011, Nicaragua started implementing the Court’s Order of 8 March 2011. The Chief of the South Military Detachment signed two military orders forbidding military personnel “to carry out operations, patrols or any type of presence in the territory”<sup>966</sup> and limiting patrols

---

<sup>965</sup> Letter from H.E. Carlos José Argüello Gómez to the Registrar of the ICJ, Ref: REF: 18012011-01, 18 January 2011. “No Nicaraguan troops are currently stationed in the area in question and Nicaragua does not intend to establish a military post in the future. There was a military presence in the area for a period of six weeks during which the *caño* was cleaned, but that was only solely for the protection of workers conducting this operation. Nicaragua has no intention to station agents in that area. The only operation that is currently being conducted there is the replanting of trees. The Ministry of Environment of Nicaragua (MARENA) will periodically send inspectors on site to monitor the process of reforestation, as well as changes that may occur in the region, including the Harbour Head Lagoon”.

<sup>966</sup> Order n° 005 from the Chief of the South Military Detachment for compliance of order from the Chief of staff regarding the implementation of special measures based on provisional measures of protection ordered by the International Court of Justice and maintenance of the anti-drug

near the area in dispute to the San Juan de Nicaragua River and Harbor Head Lagoon.<sup>967</sup>

7.9 This military order has been scrupulously observed and, contrary to Costa Rica's assertion otherwise, Nicaragua did not send "public officials to the relevant area 'in Air Force helicopters'"<sup>968</sup>. Costa Rica's Memorial is misleading in this respect. As the press article quoted by Costa Rica confirms,<sup>969</sup> these helicopters landed outside the disputed territory, specifically the town of San Juan de Nicaragua, which although located near the area in dispute, unquestionably belongs to Nicaragua.

7.10 On 12 March 2011, three days after the reading of the Court's Order, a technical mission of RAMSAR was carried out in Nicaragua. In order not to contravene the order of the Court, "the inspection did not include a visit of the disputed territory."<sup>970</sup> However, RAMSAR experts visited the biosphere reserve "Refugio de Vida Silvestre Rio San Juan" as well as areas around the territory in dispute in which Nicaragua has undisputed sovereignty, including Harbour Head Lagoon.<sup>971</sup>

---

trafficking plan, rural, security plan and presidential Decree 79/2009 at the San Juan de Nicaragua directorate, 9 March 2011, para. 1 (NCM, Vol. III, Annex 36).

<sup>967</sup> *Ibid.*, para. 2.

<sup>968</sup> *See* CRM, pp. 281-282, para. 6.32.

<sup>969</sup> *Ibid.* (quoting El Nuevo Diario (Nicaragua), "Ticos continue inspection, rejected by Nicaragua, in disputed area" and 'General Avilés aplaudes the "heroic deed" of the 19 July Sandinista Youth"', 6 April 2011 (CRM, Vol. III, Annex 126 (b), p. 456)).

<sup>970</sup> Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Worship of Costa Rica, Ref: MRE-DM-AJST-349-04-11, 1 April 2011, para. 6 (CRM, vol. III, Annex 78, pp. 188-189).

<sup>971</sup> The final report of the Ramsar visit to Nicaragua has not yet been made public. Nicaragua will provide the Court with a copy of the report when it receives the official and final version.

## **2. Acts of the Guardabarranco Environmental Movement cannot be attributed to Nicaragua**

7.11 In its Memorial Costa Rica asserts that :

“The conduct of members of the ‘Sandinista Youth’ in their harassment and obstruction of the Joint Environmental Mission are attributable to Nicaragua on the basis of Article 8 of the ILC’s Articles on State Responsibility. This is because the ‘Sandinista Youth’ acted under the instruction, direction or control of Nicaragua. Members of the ‘Sandinista Youth’ acted as auxiliaries to the Nicaraguan government; they acted for Nicaragua, whether or not they formed part of the official structure of the State”<sup>972</sup>

7.12 In particular:

“[...] Nicaragua has breached its due diligence obligation to prevent members of the Sandinista Youth from entering and remaining in the relevant area contrary to the Court’s Order on provisional measures. Nicaragua was fully aware of the acts and intentions of the ‘Sandinista Youth’; it encouraged them to act accordingly; and it had the capacity to influence the action of the members of the Sandinista Youth, the youth arm of the political party in power.”<sup>973</sup>

7.13 And Costa Rica adds:

“[...] In particular, the term ‘personnel’ clearly encompasses organised groups such as the ‘Sandinista Youth’, a derivative organisation of the ruling political party, FSLN, and a group that has received direct encouragement and logistical support from high ranking Nicaraguan officials, including the Deputy Minister of the Environment, the Chief of the Nicaraguan Army, personnel of the Nicaraguan Ministry of Health, the Nicaraguan President, and the Minister of Communication.”<sup>974</sup>

7.14 In its Memorial, Costa Rica refers to the “Sandinista Youth”. In fact, the private individuals present in the area in dispute are members of the Guardabarranco Environmental Movement. Although some of them are also

---

<sup>972</sup> CRM, p. 283, para. 6.35.

<sup>973</sup> CRM, p. 285, para. 6.38.

<sup>974</sup> CRM, pp. 279-280, para. 6.28.

members of the Sandinista Youth, the Guardabarranco Environmental Movement is an independent organisation with the main objective of protecting the environment throughout Nicaragua. The member of the Guardabarranco Environmental Movement could never be considered “Nicaraguan troops”.

**(a) The Court’s Order does not prohibit private individuals  
to travel to the disputed territory**

7.15 The first provisional measure reads as follows:

“Each Party shall refrain from sending to, or maintaining in the disputed territory, including the *caño*, any personnel, whether civilian, police or security”<sup>975</sup>

7.16 Costa Rica gives a very broad interpretation of this measure. It asserts that:

“Under paragraph 86(1), both parties are under an obligation to prevent *any and all persons* from entering or maintaining a presence in the disputed territory [...]”<sup>976</sup>

“Nicaragua has breached the obligation not to send to or maintain *civilians* in the relevant area.”<sup>977</sup>

“[i]n the present case, the primary obligation “not to send to or maintain in the disputed territory” has as its substantive goal a general prohibition of on citizens from either Party entering the disputed territory. As such, it encompasses a corollary to ensure that no one *is sent* to or *maintained* in the territory, and to not knowingly permit the presence of any person in the territory. This is an obligation of due diligence.”<sup>978</sup>

---

<sup>975</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>976</sup> CRM, pp. 280-281, para. 6.30.

<sup>977</sup> CRM, pp. 201-282, para. 6.32.

<sup>978</sup> CRM, pp. 284-285, para. 6.37.

7.17 Not only does Costa Rica give a broad interpretation of the first provisional measures, it offers a new wording of the measure. In contrast, the scope of the first provisional measure indicated by the International Court of Justice is strict and clearly defined. The Court did not order the Parties to ensure that no one enters the disputed territory in order to create a no-man’s land. It simply prohibits Nicaragua and Costa Rica from sending to or maintaining in the disputed territory any personnel – and not person as Costa Rica wrongly asserts<sup>979</sup> – “whether civilian, police or security.”<sup>980</sup> It cannot be inferred from the wording of the Court’s first provisional measure that the Parties have an obligation to patrol and impede private individuals from entering the area in dispute.

7.18 Interestingly, Costa Rica omits to define the key term of the first provisional measure, that is: “personnel” of the Parties. Personnel may be defined as “people employed in an organization or engaged in an organized undertaking such as military service”<sup>981</sup>. Therefore, the first provisional measure precludes the Parties from sending to or maintaining in the disputed area any State staff or employees, but it does not prohibit private individuals from being present.

7.19 In the present case, the persons who have been present in the disputed territory are the members of the Guardabarranco Environmental

---

<sup>979</sup> CRM, pp. 280-281, para. 6.30, pp. 201-282, para. 6.32 and pp. 284-285, para. 6.37. This repetition shows that the mistake is not inadvertent.

<sup>980</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>981</sup> Oxford English Dictionary Online, available at: <http://www.oed.com/>. Costa Rica uses that same dictionary (CRM, p. 279, para. 6.27, fn. 604).

Movement, “whose main objective is to implement environmental conservation programmes and projects.”<sup>982</sup>

7.20 This attitude of Costa Rica towards the Guardabarranco Environmental Movement is rather surprising, considering the fact that in its Request for the Indication of Provisional Measures Costa Rica only requested the “Immediate and unconditional withdrawal of all Nicaraguan troops from the unlawfully invaded and occupied Costa Rican territories”.

**(b) Members of the Guardabarranco Environmental  
Movement are not de facto personnel of Nicaragua**

7.21 The International Law Commission recalled that “[a]s a general principle, the conduct of private persons or entities is not attributable to the State under international law.”<sup>983</sup> The responsibility of a State for acts committed by persons or groups of persons is exceptional. Such responsibility can be incurred “only if, assuming those acts to be internationally wrongful, they are attributable to it under the rule of customary international law reflected in Article 8.”<sup>984</sup>

---

<sup>982</sup> See El 19 Digital, Nicaragua, “Guardabarranco Youth movement in favor of environmental protection”, 29 August 2009 (CRM, Vol. III, Annex 102, p. 313).

<sup>983</sup> ILC Commentary on the articles on Responsibility of States for Internationally Wrongful Acts, *Yearbook of the International Law Commission*, 2001, vol. II, Part Two, p. 47, Commentary on Article 8, para. 1.

<sup>984</sup> I.C.J., Judgment, 26 February 2007, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, I.C.J. Reports 2007, p. 210, para. 406.

7.22 As the International Court of Justice stated, “this provision must be understood in the light of the Court’s jurisprudence on the subject”<sup>985</sup>; a jurisprudence to which, interestingly, Costa Rica does not refer at all in its Memorial. The Court’s position on that matter is well established and has been recalled in its 2007 Judgment in the case concerning Application of the Convention on the Prevention and Punishment of the Crime of Genocide between Bosnia Herzegovina and Serbia and Montenegro. In its 2007 Judgment, the Court explained that:

“it has to be proved that they acted in accordance with that State’s instructions or under its ‘effective control’. It must however be shown that this ‘effective control’ was exercised, or that the State’s instructions were given, in respect of each operation in which the alleged violations occurred, not generally in respect of the overall actions taken by the persons or groups of persons having committed the violations.”<sup>986</sup>

7.23 In the first place it has not been established that the members of the Movement are responsible for any internationally wrongful act. No harm has been caused to the wetland. Quite the contrary. No impediment has been put by these youths to the Ramsar and Costa Rican personnel who have entered the area.<sup>987</sup>

---

<sup>985</sup> I.C.J., Judgment, 26 February 2007, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, I.C.J. Reports 2007, p. 208, para. 399.

<sup>986</sup> I.C.J., Judgment, 26 February 2007, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, I.C.J. Reports 2007, p. 208, para. 400. See also I.C.J., Judgment, 24 May 1980, *United States Diplomatic and Consular Staff in Tehran*, I.C.J. Reports 1980, p. 29, para. 58 and I.C.J., Judgment, 27 June 1986, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, I.C.J. Reports 1986, p. 62, para. 109 and pp. 64-65, para. 115.

<sup>987</sup> See para. 7.37 below.

7.24 Even if these persons had occasioned harm, which is not the case, this could not be attributed to Nicaragua as is demonstrated below.

7.25 It is apparent that the standard required to attribute acts of private persons to a State is very high. In the case concerning the United States Diplomatic and Consular Staff in Tehran, the Court had to determine whether the “conduct in mounting the attack, overrunning the Embassy and seizing its inmates as hostages”<sup>988</sup> of militants could be attributed to the Iranian State. Although the Court noted that

“it is true, the religious leader of the country, the Ayatollah Khomeini, had made several public declarations inveighing against the United States as responsible for all his country’s problems”<sup>989</sup>

7.26 and that

“the information before the Court also indicates that a spokesman for the militants, in explaining their action afterwards, did expressly refer to a message issued by the Ayatollah Khomeini, on 1 November 1979”<sup>990</sup>

7.27 The Court decided that it had not been “established that, in fact, on the occasion in question the militants acted on behalf of the State, having been charged by some competent organ of the Iranian State to carry out a specific operation.”<sup>991</sup>

7.28 In any event, there is a decisive difference between the *United States Diplomatic and Consular Staff in Tehran* case and the present dispute. Acts

---

<sup>988</sup> *Ibid.*, p. 29, para. 58.

<sup>989</sup> *Ibid.*, pp. 29-30, para. 59.

<sup>990</sup> *Ibid.*

<sup>991</sup> *Ibid.*, p. 29, para. 58.



committed by the Iranian “militants” were clear violations of rules of a “fundamental character”<sup>992</sup> of the law of diplomatic relations whereas, in the present case, the activities carried out by youthful members of the Guardabarranco Environmental Movement are licit and helpful activities and are not breaches of fundamental rules.

7.29 Likewise, in the case concerning *Military and Paramilitary Activities in and against Nicaragua*, the ICJ did not consider that “the assistance given by the United States to the contras warrants the conclusion that these forces are subject to the United States to such an extent that any acts they have committed are imputable to that State.”<sup>993</sup>

7.30 The Court’s findings in that case are even more telling. The Court emphasized that:

“United States participation, even if preponderant or decisive, in the financing, organizing, training, supplying and equipping of the *contras*, the selection of its military or paramilitary targets, and the planning of the whole of its operation, is still insufficient in itself, on the basis of the evidence in the possession of the Court, for the purpose of attributing to the United States the acts committed by the *contras* in the course of their military or paramilitary operations in Nicaragua.”<sup>994</sup>

7.31 Similarly, in the present case, Costa Rica has not shown that Nicaragua exercises effective control over the Guardabarranco Environmental Movement and it is clear that, to say the least, “[t]he information before the Court

---

<sup>992</sup> I.C.J., Judgment, 24 May 1980, *United States Diplomatic and Consular Staff in Tehran*, I.C.J. Reports 1980, p. 40, para. 86.

<sup>993</sup> I.C.J., Judgment, 27 June 1986, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, I.C.J. Reports 1986, p. 65, para. 116.

<sup>994</sup> *Ibid.*, pp. 64-65, para. 115.

does not ... suffice to establish with the requisite certainty the existence at that time of such a link between the militants and any competent organ of the State.”<sup>995</sup> Moreover, here again, the alleged activities have nothing in common with acts of the *contras* in the case concerning *Military and Paramilitary Activities in and against Nicaragua* or the *Scorpions et al.* in the *Genocide* case or even the acts of another type such as that of Argentinian groups blocking the main bridges and roads linking Argentina and Uruguay in the case concerning *Pulp Mills on the River Uruguay*.

7.32 In support of its claims, Costa Rica presents a press report stating that the environmental movements received “full support”<sup>996</sup> of the Nicaraguan government but provides no evidence to support that claim. Nor do any of the statements of Nicaraguan officials relied upon by Costa Rica, as reported in the media, support its assertion:<sup>997</sup>

- “the Chief of the Nicaraguan Army, General Aviles, stated “I applaud the attitude of these boys and girls who have done this, it is a highly patriotic attitude”<sup>998</sup> Although this might show approval, it contradicts Costa Rica’s claims about Nicaraguan government control.
- “the Nicaraguan Deputy Minister of the Environment, Roberto Arquistain expressly stated that the operation was mounted by the Nicaraguan government; and gave praise and encouragement to the

---

<sup>995</sup> I.C.J., Judgment, 24 May 1980, *United States Diplomatic and Consular Staff in Tehran*, I.C.J. Reports 1980, p. 29, para. 58.

<sup>996</sup> CRM, pp. 267-268, para. 6.7 quoting *La Prensa* (Nicaragua), ‘Army provides support for July 19 Sandinista Youth in River San Juan’, 5 April 2011 (CRM, Vol. III, Annex 123).

<sup>997</sup> CRM, pp. 286-287, para. 6.41.

<sup>998</sup> *El Nuevo Diario* (Nicaragua), ‘Ticos continue inspection, rejected by Nicaragua, in disputed area’ and ‘General Avilés aplaudes the “heroic deed” of the 19 July Sandinista Youth’, 6 April 2011 (CRM, vol. III, Annex 126 (a) and (b)). See also p. 271, para. 6.15.

presence of the ‘Sandinista Youth.’”<sup>999</sup> This statement is simply untrue: contrary to what Costa Rica asserts, Mr Arquistain, did not say that the “operation” was set up by the Nicaraguan government.<sup>1000</sup>

- “President Ortega’s stated that the ‘youngsters’ had a right to demonstrate and to ‘defend this wetland’; and that: ‘[w]e are obliged to defend our territory, and the Army has an obligation to protect the area (of the Harbour Head wetland)’”<sup>1001</sup>. However, the relevant passages of the extracts of the President’s declarations read as follows:

- “They decided to go to face up to what is, in effect, an invasion. How? In a peaceful, unarmed way, simply because who better to take care of a wetland than environmentalists?” said Ortega.

- “Don’t young people have the right to demonstrate? Don’t they have the right to defend this wetland? Isn’t it their duty to defend their Nicaraguan heritage? Ortega mused.”<sup>1002</sup>

- “Nicaragua’s First Lady and Minister of Communication, Rosario Murillo, stated how proud she is of the work of the Sandinista Youth taken to defend the environment of Nicaragua, and of the boys and girls located on the San Juan River.”<sup>1003</sup> Again, this may indicate that Ms Rosario Murillo approves of the actions of the young people, but it clearly demonstrates that they are not under the control of the Government of Nicaragua.

7.33 Thus, by no stretch of the imagination can the Guardabarranco Environmental Movement and its members be seen as “acting under the direction or control” of Nicaragua within the meaning of the case-law of the Court or of article 8 of the ILC Articles on State Responsibility. As aptly explained in the commentaries of the ILC, even “a general situation of dependence and support

---

<sup>999</sup> *La Jornada* “Costa Rican plan to stay, says General Aviles”, 6 April 2011 (CRM, vol. III, Annex 125).

<sup>1000</sup> *Ibid.*

<sup>1001</sup> *El Nuevo Diario* (Nicaragua), ‘The Army would capture Costa Rican pilots if they land’, 7 April 2011 (CRM, vol. III, annex 127). *See also* p. 272, para. 6.17.

<sup>1002</sup> *Ibid.*

<sup>1003</sup> Website of the Sandinista Youth organization: <http://juventudsandinista.blogia.com/2011/051001-nos-sentimos-muy-orgullosos-del-trabajode-la-juventud-sandinista.php> (CRM, Vol. II, Annex 35).

would be insufficient to justify attribution of the conduct to the State.”<sup>1004</sup> Even this “general situation” is far from realized in the present case. In any event the activities carried out by this group in an uninhabited wetland are not internationally wrongful acts nor have they caused prejudice to the disputed area.

**3. In any event, no violation of the Court’s Order has been committed**

**(a) Costa Rica has not been prevented from exercising its rights under the second provisional measure**

7.34 The second provisional measure reads as follows:

“Notwithstanding point (1) above, Costa Rica may dispatch civilian personnel charged with the protection of the environment to the disputed territory, including the *caño*, but only in so far as it is necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated; Costa Rica shall consult with the Secretariat of the Ramsar Convention in regard to these actions, give Nicaragua prior notice of them and use its best endeavours to find common solutions with Nicaragua in this respect.”<sup>1005</sup>

7.35 Costa Rica asserts:

“By contrast Nicaraguan personnel have not only been dispatched to the territory, but their presence was directed at harassing the Mission and was intended to impede activities necessary to avoid irreparable prejudice being caused to the wetland. The presence of some 100 to 150 people in an otherwise generally uninhabited wetland represents by itself a threat to the ecosystem.”<sup>1006</sup>

---

<sup>1004</sup> ILC Commentary on the Draft articles on Responsibility of States for internationally wrongful acts *Yearbook of the International Law Commission*, 2001, vol. II, Part Two, pp. 47-48, Commentary on Article 8, para. 4.

<sup>1005</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>1006</sup> CRM, p. 289, para. 6.48.

7.36 First, as demonstrated above,<sup>1007</sup> the conduct of the Guardabarranco Environmental Movement is not attributable to Nicaragua.

7.37 Second, even if the Court were to decide that the gathering of the Guardabarranco Environmental Movement can be attributed to Nicaragua (*quod non*), it does not constitute a violation of the second provisional measure. Costa Rica has never been prevented from dispatching civilian personnel in the disputed territory. Nor have Costa Rican private citizens been prevented from entering. Indeed, on 5-7 April 2011, a joint Costa Rica/RAMSAR mission was able to visit the disputed territory (even though the presence of RAMSAR personnel is inconsistent with the Court's order of 8 March 2011.)<sup>1008</sup>

7.38 The "success" of this mission is confirmed by Costa Rica itself. The Vice Minister of the Environment of Costa Rica stated that:

"the visit fulfilled its objective, we could corroborate much of the secondary information that we have and we have procured other first-hand information", thereby contradicting what was expressed in the note DM-235-11, which referred to events that prevented the realization of the technical mission."<sup>1009</sup>

7.39 Likewise, on 30 January 2012, Costa Rica carried out a new visit in the disputed territory. Costa Rica informed the Court of this visit in the report

---

<sup>1007</sup> See paras. 7.11-7.33.

<sup>1008</sup> Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Worship of Costa Rica, Ref: MRE-DM-AJST-349-04-11, 1 April 2011, para. 6 (CRM, vol. III, Annex 78, pp. 188-189).

<sup>1009</sup> Note from the acting Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Worship of Costa Rica, Ref: MRE/DVM/AJST/121/04/11, 8 April 2011 (CRM, vol. III, Annex 84, p. 214). See also Note from the Permanent Mission of Costa Rica before the United Nations to the Permanent Missions and Permanent Observer Missions to the United Nations, Ref: ECR-258-2011, 8 April 2011 (CRM, vol. III, Annex 76, p. 179).

submitted on 3 July 2012.<sup>1010</sup> As the Court can see, nothing in this report indicates that this visit was blocked.

**(b) The dispute has not been aggravated, extended or made more difficult to resolve**

7.40 The third provisional measure reads as follows:

“Each Party shall refrain from any action which might aggravate or extend the dispute before the Court or make it more difficult to resolve”<sup>1011</sup>

7.41 According to Costa Rica:

“By sending members of the ‘Sandinista Youth’ to stay in the relevant area of the provisional measures, by accomplishing different tasks in this area and by preventing the Joint Environmental Mission to fulfill its role, Nicaragua aggravated the dispute.”<sup>1012</sup>

7.42 As demonstrated above,<sup>1013</sup> the conduct of the members of the Guardabarranco Environmental Movement cannot be attributed to Nicaragua.

7.43 However, even if the Court were to decide that acts of the members of the “Sandinista [Guardabarranco Environmental Movement] Youth” are attributable to Nicaragua (*quod non*), no action likely to “aggravate or extend the dispute before the Court or make it more difficult to resolve”<sup>1014</sup> has been committed. In this respect, it is highly significant that, in its long complaint about

---

<sup>1010</sup> Letter from H.E. Mr. Jorge Urbina-Ortega, co-Agent of Costa Rica, to the Registrar of the ICJ, Ref: ECRPB-025-12, 3 July 2012 (NCM, Vol. III, Annex 66).

<sup>1011</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>1012</sup> CRM, p. 289, para. 6.40.

<sup>1013</sup> See paras. 7.11-7.33.

<sup>1014</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

Nicaragua's behaviour dated 3 July 2012, the only allegedly harmful activity clearly identified by Costa Rica is the planting of trees and Costa Rica does not demonstrate any harm caused by this activity.<sup>1015</sup>

7.44 The absence of prejudice is confirmed by an Organization acting under contract with Costa Rica. UNITAR's report of 8 November 2011 makes crystal clear:

"A review of vegetation cover changes in the immediate vicinity of the channel between the San Juan and Laguna Los Portillos indicated no significant instances of deforestation or other measurable areas of vegetation cover removal between 7 June and 25 October 2011."<sup>1016</sup>

7.45 Besides, Costa Rica's highest authorities in charge of the protection of the environment themselves acknowledge an amelioration of the environment of the area. Thus, on 6 April 2011, for example, during the first joint Costa Rica/RAMSAR mission, the Costa Rican Vice-Minister of the Environment explained that the joint mission observed vegetation growth in the area of the caño and the presence of fish in it. He concluded that "the wetland tends to recover quickly."<sup>1017</sup> He further stated:

"[...]some measurements could be taken in terms of the water flow rate and indeed these are very fast measures obviously because we didn't have much time. For example, some photographs and water and soil samples were taken. For example, it has been noticed along the artificial channel

---

<sup>1015</sup> Letter from H.E. Mr. Jorge Urbina-Ortega, co-Agent of Costa Rica, to the Registrar of the ICJ, Ref: ECRPB-025-12, 3 July 2012 (NCM, Vol. III, Annex 66).

<sup>1016</sup> UNITAR/UNOSAT, "Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica", 8 November 2011 (CRM, vol. IV, Annex 150, para. 163).

<sup>1017</sup> Excerpt of the Statement by the Deputy Minister of Environment of Costa Rica, Ana Lorena Guevara, in the radio program "Nuestra Voz" (Our Voice) hosted by Amelia Rueda, April 6, 2011(NCM, Vol. II, Annex 25).

that, as a result of the rains, the slopes of this artificial channel have already begun to fall on the channel and vegetation has started to grow. They also mentioned interesting facts that they have already seen fish along the the channel, [...] to the extent that no intervention takes place, the wetland tends to recover quickly. This tells us that we would obviously like a strict recommendation of no interference of any kind and the possibility of a permanent monitoring in the area because changes can be seen as a result of the rains and climate change”<sup>1018</sup>.

7.46 While, as shown above, no violation of the 2011 Order can be attributed to Nicaragua, it will be shown in Chapter 9 below,<sup>1019</sup> that, on the contrary, Costa Rica has violated the Order in several respects. These breaches warrant the counter-claims requested by Nicaragua.

## **B. THE ALLEGED VIOLATION OF THE INTERNATIONAL COURT OF JUSTICE’S JUDGMENT OF 13 JULY 2009**

7.47 Apart from the Court’s order of 8 March 2011, Costa Rica also accuses Nicaragua of having violated the Court’s Judgment of 13 July 2009 rendered in the case concerning the Dispute regarding Navigational and Related Rights.<sup>1020</sup>

7.48 Costa Rica’s allegations concern three minor incidents relating to

- an interrupted trip of two Costa Rican journalists on 22 October 2010;<sup>1021</sup>
- an alleged refusal by Nicaraguan soldiers to authorize a Costa Rican teacher to navigate on the San Juan River to reach his school,<sup>1022</sup> and

---

<sup>1018</sup> *Ibid.*

<sup>1019</sup> See paras. 9.46-9.63.

<sup>1020</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 213.

<sup>1021</sup> CRM, pp. 290-291, paras. 6.55-6.57.

<sup>1022</sup> CRM, p. 292, para. 6.58.



- occasional acts prohibiting inhabitants along the San Juan from navigating the river “for the purposes of meeting basic requirements of everyday life.”<sup>1023</sup>

7.49 In all three cases, it is to be noted that the activities in question cannot be defined as being made “for the purposes of commerce”. As the Court explained in its Judgment of 13 July 2009:

“the language found in Article VI [of the 1858 Treaty of Limits] means that the right of free navigation granted to Costa Rica in that provision applies exclusively within the ambit of navigation ‘for the purposes of commerce’ and ceases to apply beyond that ambit...”<sup>1024</sup>

7.50 It is evident that neither journalistic activities, nor an access of a teacher to a school or navigation for the purpose of basic requirements of everyday life, qualify as being navigation “for the purposes of commerce”. Therefore, none of these incidents can be described as a breach of this limited right of navigation of Costa Rica on the San Juan River.

7.51 At best, they could qualify as uses of “the river for travel for the purpose of meeting the essential needs of everyday life which require expeditious transportation, such as transport to and from school or for medical care.”<sup>1025</sup> And there is no mystery why Costa Rica chose to precisely draft its third allegations by using this expression:

“There have also been reports from inhabitants of villages along the San Juan suggesting that Nicaraguan army officers have occasionally forbidden them from

---

<sup>1023</sup> CRM, p. 292, para. 6.59.

<sup>1024</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, I.C.J. Reports 2009, p. 241, para. 61.

<sup>1025</sup> *Ibid.*, p. 246, para. 78.

navigating the San Juan for the purposes of meeting basic requirements of everyday life, such as allowing children to travel to school.”<sup>1026</sup>

“[T]he Court is required *inter alia* to satisfy itself that the claims of the Applicant are well founded in fact.”<sup>1027</sup>. Clearly this Costa Rican allegation is so elusive and vague that it does not meet any standard of evidence valid before the Court (or any international or domestic tribunal).

7.52 For its part, navigation for journalistic purposes clearly does not enter into the category of navigation for the purpose of “meeting the essential needs of everyday life”. The alleged incident concerning the two journalists<sup>1028</sup> is then by no means related to any right of navigation belonging to Costa Rica. It should also be noted that on the precise day – 22 October 2010 – when these journalists were attempting to navigate towards the mouth of the San Juan River, dozens of armed personnel of Costa Rica had been dispatched by air to the area in dispute. This news was provocatively aired in the Costa Rican media and was reported around the world.<sup>1029</sup> Apart from a general lack of any right to navigate the river, these journalists were attempting to do so in a very delicate and unpredictable environment.

---

<sup>1026</sup> CRM, p. 292, para. 6.59.

<sup>1027</sup> I.C.J., Judgment, 24 May 1980, *United States Diplomatic and Consular Staff in Tehran*, I.C.J. Reports 1980, p. 9, para. 11. See also I.C.J., Judgment, 9 April 1949, *Corfu Channel case*, I.C.J. Reports 1949, p. 18; I.C.J., Judgment, 27 June 1986, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, I.C.J. Reports 1986, pp. 24-25, paras. 28-29.

<sup>1028</sup> Nicaragua only mentions in passing the contradictions and ambiguities in the affidavits concerning this incident joined as annexes 27 and 28 to the CRM (vol. II). Similarly, it is troubling that the journalists in question have not published anything about their alleged misadventure.

<sup>1029</sup> See para. 6.18 above; See also Ticotimes.net, Costa Rican police forces sent to Nicaraguan border, 22 October 2010 (NCM, Vol. III, Annex 92) (1); see also Complete Nicaraguan White Book, San Juan de Nicaragua River, The Truths That Costa Rica Hides, 26 November 2010, p.28-30 (NCM, Vol. II, Annex 26).

7.53 As for the third incident, concerning the teacher, it must be noted that:

- it is only reported in a newspaper without any indication of its sources nor any details;
- in particular, Costa Rica does not give any explanation on the need for the teacher to navigate to reach his school; therefore the requirement for “expeditious transportation” is by no means established.

7.54 In any event, in the Judgment of 13 July 2009, the Court made clear that “the power of a State to issue or refuse a visa entails discretion”<sup>1030</sup> and that, consequently, Nicaragua has a right to “impose a visa requirement on those persons who, in line with what was stated in the preceding paragraph, may [not] benefit from Costa Rica’s right of free navigation.”<sup>1031</sup>

7.55 In sum, Costa Rica alleges a litany of entirely artificial breaches allegedly committed by Nicaragua. As shown in the present Chapter, these allegations are unfounded, whether they concern the supposed breaches of the Court’s Order of 2011 or the unproven breaches of the Court’s Judgment of 2009.

7.52 Nicaragua cannot but observe, that by making these baseless and irrelevant claims of alleged breaches of “the rights of Costa Rican nationals to free navigation on the San Juan,”<sup>1032</sup> Costa Rica is again attempting to question the rights of Nicaragua to regulate the navigation in the San Juan. When Costa Rica

---

<sup>1030</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, pp. 257-258, para. 115.

<sup>1031</sup> *Ibid.*

<sup>1032</sup> CRM, Submissions, p. 303. Par. 1 (d).

previously questioned those rights in the case concerning the *Navigational and Related Rights (Costa Rica v. Nicaragua)*, the Court noted “that Costa Rica, in support of its claim of unlawful action, advances points of fact about unreasonableness by referring to the allegedly disproportionate impact of the regulations (for navigation). The Court recalls that in terms of well-established general principle it is for Costa Rica to establish those points”<sup>1033</sup>. The Court’s holding applies with equal force here, and as may be appreciated from the foregoing paragraphs, Costa Rica falls far short of establishing its unfounded claims.

---

<sup>1033</sup> I.C.J., Judgment, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 253, p. 101. See also I.C.J., Judgment, 3 February 2009, *Maritime Delimitation in the Black Sea (Romania v. Ukraine)*, *I.C.J. Reports 2009*, p. 86, para. 68, I.C.J., Judgment, 26 February 2007, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, *I.C.J. Reports 2007*, p. 128, para. 104, I.C.J., Judgment, 26 November 1984, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America Jurisdiction and Admissibility)*, *I.C.J. Reports 1984*, p. 437, para. 101.

## CHAPTER 8

### REMEDIES

8.1 Chapter VII of Costa Rica's Memorial, on Remedies, consists of a litany of claims, which gather virtually all the possible consequences for alleged internationally wrongful acts and are then repeated in Costa Rica's final Submissions.

8.2 Paragraph 7.2 of Costa Rica's Memorial summarizes its requests in the following terms:

- a declaration of the extent of Nicaragua's breaches of its obligations;
- the cessation of any internationally wrongful acts that continue to be committed by Nicaragua;
- reparation by Nicaragua for damage caused as a result of those breaches, and
- appropriate guarantees of non-repetition by Nicaragua of its wrongful conduct.<sup>1034</sup>

8.3 The short answer to these requests, which trot out the whole list of the legal consequences of an internationally wrongful act as listed in Part II of the ILC's Articles on State Responsibility on the "Content of the International Responsibility of a State," is that, since no internationally wrongful act has been committed by Nicaragua, no responsibility has been engaged under international law. This should be the end of the discussion. However, for the sake of completeness, Nicaragua will make some brief remarks on these unfounded claims.

---

<sup>1034</sup> CRM, p. 297, para. 7.2.

8.4 As a matter of principle, Nicaragua accepts that the Court is competent to make a declaratory judgment. It itself requests such a declaration by way of its counter-claims.<sup>1035</sup> It, of course, does not agree on the content of the declaration – or, more accurately, declarations – requested by Costa Rica.

8.5 Costa Rica first complains about the so-called “invasion and occupation of Costa Rican territory” by Nicaragua, which would constitute “a breach of the territorial integrity of Costa Rica and of Article 9 of the Treaty of Limits”,<sup>1036</sup> a claim reflected in paragraphs 1 (a), (b) and (c) of the Costa Rican Submissions, which add, for good measure, an allegation of breach of “the prohibition of use of force under Article 2(4) of the UN Charter and Articles 1, 19, 21 and 29 of the Charter of the Organization of American States”.<sup>1037</sup> Interestingly, these claims appear at the very end of the Memorial without any serious legal or factual justification; thus, nowhere before in the Memorial are Articles 1, 19 or 29 mentioned while Costa Rica asks the Court to declare that they have been violated.

8.6 Moreover, the Court finds itself in a situation similar to that prevailing in the case concerning the *Land and Maritime Dispute* between Cameroon and Nigeria, in which it refused “to ascertain whether and to what extent Nigeria’s responsibility to Cameroon has been engaged as a result of that

---

<sup>1035</sup> See Chapter 9 below.

<sup>1036</sup> CRM, pp. 298-299, para. 7.4.

<sup>1037</sup> CRM, p. 303.

occupation” of the Bakassi peninsula by Nigeria.<sup>1038</sup> Similarly, in the present case, where Parties differ on the course of the boundary, it is not conceivable that the Court will depart from this wise policy. Although the present case was not introduced as a delimitation case by Costa Rica, it involves a dispute on the precise location of the boundary in the area at the mouth of the San Juan River.

8.7 The other aspect of the declaration requested by Costa Rica relates to the alleged violation by Nicaragua of “the environmental protection regime” which would be constituted by the breaches of Nicaragua’s obligations:

- To consult pursuant to Article 5 (1) of the Ramsar Convention;
- “[O]f conservation arising under the Ramsar Convention as well as bilateral agreement SI-A-PAZ and the Convention for the Conservation of the Biodiversity and Protection of the Main Wild Life Sites in Central America and under general international law”; and
- Pursuant to paragraph 3 (6) of the Cleveland Award.<sup>1039</sup>

8.8 These claims are echoed in paragraphs 1(e) and 1(f) of the Submissions although they are drafted quite differently.

8.9 Notwithstanding the facts that these “obligations” do not impose a duty of result on the Parties and are mainly drafted in the conditional,<sup>1040</sup> and that Nicaragua strongly denies any breach of any of them, a declaration by the Court on those points would amount to a satisfaction, that is a form of reparation,

---

<sup>1038</sup> I.C.J., Judgment, 10 October 2002, *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria: Equatorial Guinea intervening)*, I.C.J. Reports 2002, p. 452, para. 319.

<sup>1039</sup> See CRM, p. 299, para. 7.5.

<sup>1040</sup> See Chapter 3.

which is due only if an injury has occurred.<sup>1041</sup> This is not the case: Costa Rica has not proven – nor even tried to prove – otherwise; and it is rather baffling to note that the Court has been “requested to determine, in a separate phase the reparation and satisfaction to be made by Nicaragua”: (i) again, satisfaction is but a form of reparation; (ii) by definition, satisfaction is immaterial and, contrary to compensation, does not suppose any special kind of further evidence; and (iii) there is therefore not the shadow of a justification for postponing a decision on satisfaction to “a separate phase” of the proceedings. These uncertainties in the position of Costa Rica bear witness to the artificial character of its claims.

8.10 Another curiosity of the remedies requested by Costa Rica is that it tries to benefit from the present dispute by submitting to the Court a request for the implementation of its 2009 Judgment in the case concerning *Navigational and Related Rights*.<sup>1042</sup> As established in Chapter 7, the incident concerning the journalists does not fall within the scope of that Judgment and the other cases cited are not documented.

8.11 Since the Court’s Judgment in the *LaGrand* case,<sup>1043</sup> it has become usual for States appearing before the Court to request reparation for alleged non-

---

<sup>1041</sup> See Article 34 of the ILC Articles on the Responsibility of the State for an Internationally Wrongful Act (“Forms of Reparation”).

<sup>1042</sup> See CRM, pp. 299-300, para. 7.7; see also pp. 290-294, paras. 6.54-6.60.

<sup>1043</sup> I.C.J., Judgment, 27 June 2001, *LaGrand (Germany v. United States of America)*, I.C.J. Reports 2001, p. 466; see in particular, pp. 501-506, paras. 98-109 in respect to the binding character of provisional measures; and pp. 510-513, paras. 121-124 and p. 516, para. 128(6) concerning the guarantee of non-repetition.



respect of an Order indicating provisional measures on the one hand, and for guarantees of non-repetition on the other hand. Costa Rica does not derogate from this new habit.<sup>1044</sup> These requests are questionable on several grounds.

8.12 Concerning the alleged breaches of paragraphs 86 (1), (2) and (3) of the Court's Order of 8 March 2011, they are by no means proven as Nicaragua has shown above: in reality, Nicaragua has fully complied with the Order<sup>1045</sup>, with the result that it has been prevented from entering the disputed area while Costa Rica was encouraged to send personnel into the disputed area where it had not the slightest presence beforehand.<sup>1046</sup> Moreover, as demonstrated in Chapter 9 of this Counter-Memorial, Costa Rica, for its part, has clearly violated its own obligations resulting from the Order.<sup>1047</sup>

8.13 Besides demanding guarantees of non-repetition, Costa Rica requests the Court to order Nicaragua to take a whole range of measures including: (i) putting an end to the dredging activities on the San Juan River – over which Nicaragua enjoys full sovereignty; (ii) conducting an “adequate environmental impact assessment” (which Nicaragua has already conducted with great care<sup>1048</sup>); and (iii) complying with various conditions and limitations on future dredging operations which go far beyond anything justified under the applicable law.

---

<sup>1044</sup> CRM, p. 299, para. 7.6, and pp. 300-301, paras. 7.11-7.12.

<sup>1045</sup> See para. 7.6.

<sup>1046</sup> See paras. 7.34 – 7.39.

<sup>1047</sup> See Chapter 7.

<sup>1048</sup> See Chapter 5.B.

8.14 In two recent judgments, including its 2009 judgment in the case concerning *Navigational and Related Rights*, the Court made clear that it would order a State to give guarantee of non-repetition only in very exceptional cases:

As the Court has stated in previous cases (see, in particular, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, Judgment, *I.C.J. Reports 2009*, p. 267, para. 150 [and see the jurisprudence quoted there]), as a general rule, there is no reason to suppose that a State whose act or conduct has been declared wrongful by the Court will repeat that act or conduct in the future, since its good faith must be presumed. Accordingly, while the Court may order the State responsible for an internationally wrongful act to offer assurances of non-repetition to the injured State, or to take specific measures to ensure that the wrongful act is not repeated, it may only do so when there are special circumstances which justify this, which the Court must assess on a case-by-case basis.<sup>1049</sup>

8.15 No special circumstance can be invoked by Costa Rica in the present case.

8.16 As the Court has noted in the *Northern Cameroons* case: “There are inherent limitations on the exercise of the judicial function which the Court, as a court of justice, can never ignore.”<sup>1050</sup> One of the most important of those limitations is the one which prompts the Court to refrain from issuing orders to sovereign States.<sup>1051</sup> Similarly, the European Court of Human Rights concluded very clearly that: “It is not the Court’s function to indicate which measures Ireland

---

<sup>1049</sup> I.C.J., Judgment, 3 February 2012, *Immunities of the State (Germany v. Italy: Greece intervening)*, para. 138.

<sup>1050</sup> I.C.J., Judgment, 2 December 1963, *Northern Cameroons (Cameroon v. United Kingdom)*, Preliminary Objections, *I.C.J. Reports 1963*, p. 29.

<sup>1051</sup> See, e.g., P.C.I.J., Judgment No. 5, 26 March 1925, *Mavrommatis Jerusalem Concessions*, Series A, No. 5, p. 50; or I.C.J., Judgments, 27 June 2001, *LaGrand (Germany v. United States of America)*, *I.C.J. Reports 2001*, p. 516, para. 128 (7); 14 February 2002, *Arrest Warrant of 11 April 2000 (Democratic Republic of the Congo v. Belgium)*, *I.C.J. Reports 2002*, p. 32, para. 76; 31 March 2004, *Avena and Other Mexican Nationals (Mexico v. United States of America)*, *I.C.J. Reports 2004*, p. 62, para. 31.

should take in this connection; it is for the State concerned to choose the means to be utilised in its domestic law for performance of its obligation under Article 53.<sup>1052</sup>

8.17 By way of conclusion, Nicaragua wishes to firmly reiterate that, in initiating works of improvement of the navigation on the San Juan River, including the caño, which forms part of its territory, it has done no more than exercise the rights it holds under the 1858 Treaty of Limits as interpreted by the subsequent Cleveland and Alexander Awards. In so doing it has committed no internationally wrongful act and its responsibility has not been engaged.

---

<sup>1052</sup> Case of *Johnston and Others v. Ireland*, Judgment of 18 December 1986, Application No. 9697/82, Series A, No. 112, para. 77.



## CHAPTER 9

### COUNTER-CLAIMS

9.1 If certain facts or situations relating to a case before the Court or relating to activities of the Applicant State have a close connection with the subject-matter of the Application, it remains open to the Respondent State under the Court's Statute and Rules to present its own arguments to the Court regarding those activities either by way of defence in a Counter-Memorial or by way of a counter-claim filed under Article 80 of the Rules of Court.<sup>1053</sup> Article 80 reads as follows:

1. The Court may entertain a counter-claim only if it comes within the jurisdiction of the Court and is directly connected with the subject-matter of the claim of the other party.
2. A counter-claim shall be made in the Counter-Memorial and shall appear as part of the submissions contained therein. The right of the other party to present its views in writing on the counter-claim, in an additional pleading, shall be preserved, irrespective of any decision of the Court, in accordance with Article 45, paragraph 2, of these Rules, concerning the filing of further written pleadings.
3. Where an objection is raised concerning the application of paragraph 1 or whenever the Court deems necessary, the Court shall take its decision thereon after hearing the parties.

---

<sup>1053</sup> I.C.J., Order, 15 December 1979, *United States Diplomatic and Consular Staff in Tehran, Provisional Measures*, I.C.J. Reports 1979, p. 15, para. 24. See also I.C.J., Order, 17 December 1997, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Counter-claims*, I.C.J. Reports 1997, p. 257, para. 28.

9.2 In the exercise of its right, Nicaragua submits four counter-claims in the present proceedings. All of them are directly connected with the subject-matter of the claims filed by the Applicant State.

9.3 The substance of Nicaragua's counter-claims has been dealt with in greater detail in Chapters 4, 6 and 7. This Chapter therefore focuses upon their admissibility and the competence of the Court. Section A establishes the jurisdiction of the Court to entertain Nicaragua's counter-claims. Section B demonstrates that Nicaragua's counter-claims are admissible.

#### **A. THE COURT HAS JURISDICTION TO DECIDE UPON NICARAGUA'S COUNTER-CLAIMS**

9.4 The Court's jurisdiction over Costa Rica's claims and Nicaragua's counter-claims is based on Article XXXI of the American Treaty on Pacific Settlement, signed in Bogotá on 30 April 1948 (the Pact of Bogotá). This Article reads as follows:

In conformity with Article 36, paragraph 2, of the Statute of the International Court of Justice, the High Contracting Parties declare that they recognize, in relation to any other American State, the jurisdiction of the Court as compulsory ipso facto, without the necessity of any special agreement so long as the present Treaty is in force, in all disputes of a juridical nature that arise among them concerning:

- a) The interpretation of a treaty;
- b) Any question of international law;
- c) The existence of any fact which, if established, would constitute the breach of an international obligation;
- d) The nature or extent of the reparation to be made for the breach of an international obligation.<sup>1054</sup>

---

<sup>1054</sup> American Treaty on Pacific Settlement, Bogotá, 30 April 1948, 30 *UNTS* 84.

9.5 Nicaragua's Counter Claims also find a clear jurisdictional base on the Declaration of Acceptance made by both parties pursuant to Article 36 (2) of the Statute of the Court.

9.6 Nicaragua's counter-claims concern the interpretation and application of treaties also invoked by Costa Rica in its Memorial<sup>1055</sup> as well as related questions of international law.

9.7 The Counter-Claims concern the following issues:

- 1) The impairment and possible destruction of navigation on the San Juan River caused by the construction of a road next to its right bank by Costa Rica in violation of its obligations stemming from the 1858 Treaty of Limits and various treaty or customary rules relating to the protection of the environment and good neighbourliness;
- 2) The consequences of the present day non-existent Bay of San Juan; and
- 3) The right of Nicaraguan vessels to reach the ocean via the only route presently available which is the Colorado River; to which must be added:
- 4) The non-implementation by Costa Rica of the provisional measures indicated by the Court in its Order of 8 March 2011.

## **1. The Consequences of the Construction of a Road along the San Juan de Nicaragua River**

### **(a) General Considerations**

9.8 As explained in Chapter 4, Costa Rica has undertaken the construction of a road parallel to the San Juan de Nicaragua River, very close to

---

<sup>1055</sup> See CRM, pp. 13-14, para. 1.1.

its right bank.<sup>1056</sup> The construction of this road was authorized by Emergency Decree No. 36440-MP published in the Official Daily Gazette in San José on Monday 7 March 2011. The road, which is called both the “Juan Rafael Mora Porras” highway and “Road 1856” by Costa Rica, is ultimately intended to stretch “approximately 160 km from the Delta, where the Colorado River branches off from the San Juan River, to the town of Los Chiles.”<sup>1057</sup> According to the Costa Rican Minister of Public Works and Transportation, Mr. Francisco Jimenez, “the road will be 14 meters wide and have an added 50 meters of right of way (derecho de vía) and the normal drainage system employed in all Costa Rican national roads.”<sup>1058</sup>

9.9 Costa Rica seeks to justify this road-building project in the Emergency Decree of 7 March 2011 which is presented as an answer to the alleged “Nicaraguan Army armed invasion of a portion of Costa Rican territory.”<sup>1059</sup> The purported objectives are “to expedite national defence actions, as well as facilitate movements of community members in the northern border area.”<sup>1060</sup>

---

<sup>1056</sup> *Application Instituting Proceedings*, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, para. 5.

<sup>1057</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 5 (NCM, Vol. IV, Annex 116).

<sup>1058</sup> *Application Instituting Proceedings*, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, para. 14, referring to *La Nación* article of 18 October 2011.

<sup>1059</sup> Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012, p. 5 (NCM, Vol. IV, Annex 116).

<sup>1060</sup> *Ibid.*



9.10 As explained in the Nicaraguan Application in the case concerning the Construction of a Road in Costa Rica along the San Juan River (*Nicaragua v. Costa Rica*),<sup>1061</sup> on 21 September 2011, Costa Rica published the regulations for this Emergency Decree in Decision No. 0632-2011, which states that:

“the specific nature of the event that created the emergency, which was an act of aggression on the part of the neighbour country of Nicaragua, imposes taking actions that are different from those generally carried out under the regimen of exception and under the control of the National Commission on Risk Prevention and Attention to Emergencies . . .”<sup>1062</sup>

9.11 In other words, the Emergency Decree and related regulations purported to justify special procedures for the 1856 Road project that do not comply with international law or even with the normal Costa Rican environmental laws and rules for contracting and building road works, including the prior preparation of an environmental impact assessment. This is confirmed by Costa Rican authorities in charge of environmental protection who had not been consulted about the project. In particular, Mr. Uriel Juárez, Secretary General of Costa Rica’s National Environmental Technical Secretariat (“SETENA” by its Spanish acronym), acknowledged that his agency was not consulted, nor was its guidance on the highway and its possible risks requested.<sup>1063</sup> Likewise, the Vice

---

<sup>1061</sup> See *Application Instituting Proceedings*, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, p. 9, para. 25 and pp. 11-12, para. 29.

<sup>1062</sup> 14. La Uruca, San José, Costa Rica, Official Daily Gazette No. 46, Decree No. 36440-MP, year CXXXIII, Monday, 7 March 2011. (NCM Vol. III Annex 35 (1)).

<sup>1063</sup> University Seminar, “Environmental damage feared due to construction of highway parallel to Rio San Juan”, 1 November 2011 (NCM, Vol. III, Annex 98.).

President of the Environment Court, Ms. Yamileth Mata, stated that she had never been informed of the construction of the highway.<sup>1064</sup>

9.12 The construction of this road, which Costa Rica acknowledges was undertaken with no blueprints whatsoever, let alone an environmental impact assessment,<sup>1065</sup> “caused for 160 km alongside the river, including more than 100 critical locations, silting of the San Juan River, erosion of the river banks, disturbances of its natural channels, and harm to the surrounding ecosystem of wetlands and other protected areas, in addition to the disruption of natural biological corridors.”

**(b) Lack of Blueprints and Environmental Impact Assessment**

9.13 Had Costa Rica followed the rules applicable to the protection of the environment, the harm caused by the construction of the road might have been prevented or mitigated, but Costa Rica undertook the construction with no blueprints whatsoever,<sup>1066</sup> let alone an environmental impact assessment.<sup>1067</sup> Such

---

<sup>1064</sup> *Ibid.*

<sup>1065</sup> *El Nuevo Diario*, Nicaragua, “Outrage everywhere over San Juan River parallel highway, No Studies Done for Costa Rican Highway”, 15 December 2011 (NCM, Vol. III, Annex 100.).

<sup>1066</sup> See Press release from CONAVI to the public, 25 May 2012 (NCM, Vol. III, Annex 105). See also *El Pais*, Costa Rica, “Faced with Criticism, Conavi Confirms to Have Done Work on 332 Kilometers of Roads around Route 1856”, 26 May 2012 (NCM, Vol. III, Annex 106.) and *Diario Extra*, “Government acknowledges mistakes in the construction of the trail”, 30 May 2012 (NCM, Vol. III, Annex 109), available at <http://www.diarioextra.com/2012/mayo/30/nacionales13.php>

<sup>1067</sup> *El Nuevo Diario*, Nicaragua, “Outrage everywhere over San Juan River parallel highway, No Studies Done for Costa Rican Highway”, 15 December 2011 (NCM, Vol. III, Annex 100). See also Costa Rican Decision No. 0632-2011(NCM, Vol II Annex 35 (2)); University Seminar, “Environmental damage feared due to construction of highway parallel to Río San Juan”, 1 November 2011 (NCM, Vol. III, Annex 98), *La Nación*, Costa Rica “Government avoided applying environmental control in border trail, 24 May 2012 (NCM, Vol. III, Annex 104) and *Diario Extra*, “Government acknowledges mistakes in the construction of the trail”, 30 May 2012

a failure not only exacerbated the harm caused by the road construction; it also constitutes a further violation of international law (not to mention domestic Costa Rican law) by Costa Rica, which has flagrantly ignored its own obligations.

9.14 Absent a treaty constituting a *lex specialis*, general international law applies. As discussed above,<sup>1068</sup> it requires States to conduct environmental impact assessments (“EIAs”) prior to allowing the implementation of projects that have the capacity to cause transboundary harm. As Costa Rica puts it, “a proper environmental impact assessment is a prerequisite” that stems from the fundamental obligation of States to ensure that “activities within their jurisdiction or control do not cause damage to the environment of other States.”<sup>1069</sup> The fact that domestic law may exempt a state from conducting any risk assessment does not affect the international obligation to conduct an EIA.

9.15 Furthermore, the fact that each State must “determine in its domestic legislation or in the authorization process for the project, the specific

---

(NCM, Vol. III, Annex 109), available at <http://www.diarioextra.com/2012/mayo/30/nacionales13.php>

<sup>1068</sup> See Chapter 3.

<sup>1069</sup> CRM, para. 5.22, citing the Río Declaration on Environment and Development (1992), Principle 2 (“States have...the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction”).

See also, e.g., 1992 Convention on Biological Diversity, Article 3 (same); Declaration of the United Nations Conference on the Human Environment, Stockholm (16 June 1972), Principle 21 (same); *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996* (8 July 1996), pp. 241-242, para. 29 (“The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.”).

content of the environmental impact assessment required for each case”<sup>1070</sup> is by no means a license to evade the international obligation that an adequate EIA must be conducted. In the Pulp Mills case, the Court recognized that certain minimum requirements must be met, including the prior preparation of an EIA.<sup>1071</sup> Neither is the content of the EIA entirely a matter for the State to decide in its sole discretion, as the EIA must take into account the “nature and magnitude of the proposed development and its likely adverse impact on the environment.”<sup>1072</sup>

9.16 Nevertheless, Costa Rica has publicly stated that its domestic law allowed it to dispense with an EIA for its massive road construction project due to supposedly emergency security considerations stemming from a purported “act of aggression” by Nicaragua.<sup>1073</sup> For instance, Costa Rica’s Foreign Minister, Mr. Enrique Castillo, stated in December 2011 that Costa Rica is “carrying out [the road construction project] under a decree that exempts [it] from Environmental Impact Assessment,” and that Costa Rica therefore “owe[s] no explanations”.<sup>1074</sup>

---

<sup>1070</sup> I.C.J., Judgment, 20 April 2010, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *I.C.J. Reports 2010*, p. 83-84, para. 205.

<sup>1071</sup> *Ibid.*

<sup>1072</sup> I.C.J., Judgment, 20 April 2010, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *I.C.J. Reports 2010*, p. 83-84, para. 205.

<sup>1073</sup> Official Daily Gazette No. 46, Decree No. 36440-MP, Year CXXXIII. La Uruca, San José, Costa Rica Monday, 7 March 2011 (NCM, Vol. III, Annex 35) (1); University Seminar, “*Environmental Damage Feared due to Construction of Highway Parallel to Río San Juan*”, 1 November 2011 (NCM, Vol. III, Annex 98).

<sup>1074</sup> *El Nuevo Diario*, Nicaragua, “Outrage Everywhere over San Juan River Parallel Highway: No Studies Done for Costa Rican Highway,” 15 December 2011 (NCM, Vol. III, Annex 100.). See also Diplomatic note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DVM-AM-286-11, 20 December 2011 (NCM, Vol. III, Annex 74).

9.17 From an international legal perspective, this cannot be – and is not – correct. As Costa Rica itself explains, “sovereignty does not give license to injure another State’s territory.”<sup>1075</sup> The obligation of a State to ensure that “activities within [its] jurisdiction or control do not cause [significant] damage to the environment of other States” applies equally to Costa Rica itself, and, in Costa Rica’s own words, “a proper environmental impact assessment is a prerequisite” stemming from this fundamental obligation.<sup>1076</sup> Indeed, even during an armed conflict, a State must not cause environmental harm.<sup>1077</sup>

9.18 Costa Rica has grossly violated its obligation to conduct an EIA prior to carrying out works likely to affect the environment and the territory of a neighbouring state, an obligation to which Costa Rica pays lip service in its own Memorial. This conclusion has been confirmed by the Central American Court of Justice in its recent unanimous Judgment of 3 July 2012. The Court found that Costa Rica initiated the project without the prior studies and analysis required under regional and international law, ruling that:

---

<sup>1075</sup> CRM, para. 5.55.

<sup>1076</sup> See CRM, p. 208, para. 5.22.

<sup>1077</sup> Río Declaration on Environment and Development (1992), Principle 24 (“Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.”). See also Additional Protocol I to the 1949 Geneva Convention, Article 35, para. 3 (“It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.”); or Article 55 (“1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population. 2. Attacks against the natural environment by way of reprisals are prohibited.”).

**THIRD:** It is declared that, when it built the road in question, the State of Costa Rica acted unilaterally, without consultation, inappropriately and hastily, violating the bilateral and multilateral international commitments validly entered into, which cannot be ignored claiming internal rules.

**FOURTH:** It is declared that the State of Costa Rica began the work...without the previous studies and analysis required under the obligations imposed by Regional and International Community Law, ignoring the collaboration, mutual understanding and communication that should exist among the States Parties of all those conventions in the field of environment and sustainable development.<sup>1078</sup>

9.19 Moreover, the absence of plans and environmental impact assessment resulted in “increased costs, environmental problems, and a rapid deterioration of the project.”<sup>1079</sup>

### **(c) Lack of Consultation**

9.20 As explained in Chapter 3, and as Costa Rica itself admits in its Memorial,<sup>1080</sup> a State conducting activities likely to cause significant damage to a neighbouring state has an obligation to notify and consult that state.<sup>1081</sup> In the present case, Costa Rica did not notify Nicaragua of the construction of “Road

---

<sup>1078</sup> Excerpt of the "Judgment of Central American Court of Justice", available at [http://www.fonare.org/index.php?option=com\\_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18](http://www.fonare.org/index.php?option=com_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18), 3 July 2012, paras. 3-4 (NCM, Vol.II Annex 23).

<sup>1079</sup> CFIA Report, p. 25 (NCM, Vol. IV, Annex 117).

<sup>1080</sup> See CRM, pp. 200-201, paras. 5.55-5.56.

<sup>1081</sup> See e.g. *Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN doc. A/CONF.151/26 (Vol. I), Annex I, Principle 19 and Article 8(1) of Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission*, 2001, Vol. II, Part Two, p. 159.

1856” and categorically refused to communicate any information concerning the conduct of that project.

9.21 In a note dated 29 November 2011, Nicaragua requested from Costa Rica information on these works and pointed out:

that a project of this nature should have an Environmental Impact Assessment due to their characteristics. Furthermore, this study should have been sent to the Government of Nicaragua due to the proximity to Nicaragua of this project and in conformity to International Law and the Order of the International Court of Justice on 8 March 2011 and Article 5 of the RAMSAR Convention, which stipulates that “in the case of a wetland extending over the territories of more than one contracting party or where a water system is shared by Contracting Parties. They shall at the same endeavor to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna”.<sup>1082</sup>

9.22 In response, the Costa Rican Foreign Minister simply invited “the Government of Nicaragua to present formally the reasons for which it considers that there may be environmental damage or damage to Nicaragua’s interests.”<sup>1083</sup>

No further information was provided.

9.23 In a note dated 10 December 2011, although it has no obligation to do so, Nicaragua explained its position on this question in full:

The National Reconciliation and Unity Government regrets to communicate that, in relation to your note DM-AM-601-11 dated 29<sup>th</sup> November 2011, it considers inappropriate and inadmissible to request Nicaragua to point out the damages that may result from the project

---

<sup>1082</sup> Note from the Minister of Foreign Affairs of Nicaragua, to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DVM/AJST/500/11/11, 29 November 2011 (NCM, Vol. III, Annex 71).

<sup>1083</sup> Diplomatic note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-AM-601-11, 29 November 2011. (NCM, Vol. III Annex 72). *See also* Diplomatic note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DVM-AM-286-11, 20 December 2011 (NCM, Vol. III, Annex 74).

that your government is constructing in the right bank of the San Juan of Nicaragua River.

The Government of Nicaragua considers that such expression is the result of a wrong interpretation of the obligation of your distinguished government to present to Nicaragua, prior to the commencement of the road, the Environmental Impact Assessment and the Environmental Management Plan, both of them being a fundamental requisite to carry out a project of such a magnitude.

Trying to invert the logic in regard to the obligations of Costa Rica implies not assuming the commitments with Nature, International Law and the bilateral and multilateral Conventions and Treaties that your government has subscribed in defense of the environment and biodiversity, among which we can mention the Regional Convention for the Management and Conservation of the Natural Forest Ecosystems and the Development of Forest Plantations signed in Guatemala on 29<sup>th</sup> October 1993, the Stockholm Declaration, the Rio Declaration, Agenda 21 and the February 2, 1971 Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR), whose Article 5 was highlighted in paragraph 79 of the Order of the International Court of Justice dated March 8 2011: ‘Article 5.- The contracting parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavor to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna’.

The Government of Costa Rica, far from informing its own people and Nicaragua about the project, has hidden it from them. Furthermore, high-ranking people of the government have made misleading statements in the media by affirming that the project was suspended.

Independently of the above-mentioned, it is evident that the construction of the road seriously affects the environment and the rights of Nicaragua. If the project is not ceased it would have irreversible and transcendental ecological and environmental consequences.

Among the many consequences that can be highlighted are the following:

1. Dumping of trees and soil along the route of the road into the river flow, making more difficult and risking the navigation in its waters,



over which Nicaragua has the dominion and sovereign jurisdiction based on the Treaty of 15<sup>th</sup> April 1858 and the Cleveland Award of 22<sup>nd</sup> March 1888.

2. Removal and sedimentation of fragile soils resulting in an increased and excessive sedimentation of the waters of the Nicaraguan river.
3. Impact over the hydrological resources, particularly affecting fishing in the river because of the changes in the quality of the water.
4. Destruction of the natural habitat of the bank by removing the immediate vegetation to the river flow for the construction of the road, affecting the tree diversity around it.
5. Interception of the natural flow of the waters that flow through the south basin to the San Juan River by modifying the drainage of the surrounding wetlands at the lower San Juan and its delta.
6. Erosion of the soil banks in places where a certain slope exists and resulting in the sedimentation of clay soils to the San Juan of Nicaragua River.
7. Decrease or alteration of the aquatic life due to the water cloudiness resulting from the sediments of the road construction.
8. Destruction of the inherent scenic values and eco-tourism potential of the river course.

I point out that the above list does not exhaust all the consequences and responsibilities of Costa Rica related to the execution of this project, including the incursions in Nicaraguan territory and the destruction of the border markers.

The obligation of Costa Rica to inform Nicaragua about the Environmental Impact Assessment prior to the commencement of the project cannot be fulfilled by calling upon facilitators. Nicaragua cannot accept anything less than the suspension of the project until it has had the chance to receive and analyse the Environmental Impact Assessment on the project.<sup>1084</sup>

---

<sup>1084</sup> Note from the Minister of Foreign Affairs of Nicaragua, to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DVS/VJW/0685/12/11, Managua, 10 December 2011 (NCM, Vol. III, Annex 73).

9.24 On 13 December 2011, the President of Costa Rica, Ms. Laura Chinchilla, declared that Costa Rica “issued an emergency decree due to national necessity and it is on that basis that we have developed the projects”<sup>1085</sup> and that her country, therefore, has “no reason to offer explanations to the Government of Nicaragua.”<sup>1086</sup> President Chinchilla then made clear that Costa Rica is “not taking even one step back.”<sup>1087</sup>

**(d) Damages Caused to Nicaraguan Territory and the Environment**

9.25 As explained in Chapter 3, Article VI of the 1858 Treaty establishes that Nicaragua has sovereignty over the waters of the San Juan river, the right bank of which constitutes the boundary between the two States. This fact was reaffirmed by the Court in its 2009 Judgment.<sup>1088</sup> As the Court put it, “[t]he 1858 Treaty of Limits completely defines the rules applicable to the section of the San Juan River” relevant to the present case.<sup>1089</sup> Apart from the right of navigation with commercial objects, the 1858 Treaty confers no other right over the San Juan River to Costa Rica – and certainly not the right to dump into the

---

<sup>1085</sup> *El País*, Costa Rica, “Chinchilla Defends Highway Criticized by Nicaragua, Rejects Dialogue”, 14 December 2011 (Source: EFE / 13 December 2011). (NCM, Vol. III, Annex 99).

<sup>1086</sup> *Ibid.*

<sup>1087</sup> *Ibid.*

<sup>1088</sup> I.C.J., Judgement, 13 July 2009, *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, *I.C.J. Reports 2009*, p. 234, para. 37.

<sup>1089</sup> *Ibid.*, p. 233, para. 36. *See also* para. 3.14- 3.20 above.

river substantial volumes of sediments, soil, uprooted vegetation and felled trees which resulted in the invasion of Nicaraguan territory.<sup>1090</sup>

9.26 As also explained in Chapter 3, States are under a duty of due diligence to “take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof.”<sup>1091</sup> Costa Rica has completely ignored this obligation with respect to Road 1856, the construction of which caused significant harm to the San Juan River – that is, to Nicaragua. Not only has Costa Rica failed to prevent significant transboundary harm; it did not even assess the risks its actions posed to the environment and the territory of Nicaragua, much less an attempt to minimize those risks.

9.27 As explained in Chapter 4, various entities within and affiliated with Costa Rica have criticized the road construction project and demonstrated that environmental harm and risks of future harm have been caused by Costa Rica’s unplanned and irresponsible activities.<sup>1092</sup>

9.28 Nicaraguan entities have done the same. In December 2011, Nicaraguan authorities investigated the road construction works from the Nicaraguan side of the border. These investigations revealed significant damage

---

<sup>1090</sup> FUNDENIC SOS & FONARE, Technical Report “Evaluation of the environmental impacts caused by the construction of a 120 km long road parallel to the right bank of the San Juan de Nicaragua River”, March 2012 (hereinafter “FUNDENIC SOS & FONARE Technical Report”), p. 23 (NCM, Vol. IV, Annex 115).

<sup>1091</sup> Article 3, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, annexed to Resolution 62/68 of the General Assembly, 8 January 2008. *See also, e.g. Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN doc. A/CONF.151/26 (Vol. I), Annex I, Principle 2.

<sup>1092</sup> *See* para. 4.57.

to the environment on the Nicaraguan territory<sup>1093</sup> In March 2012, two nongovernmental organisations, the Nicaraguan Foundation for Sustainable Development (FUNDENIC SOS) and National Recycling Forum (FONARE), conducted a study on environmental impacts of the construction of Road 1856.<sup>1094</sup>

9.29 Much harm has been observed, including:

- The dumping of trees, debris, and sediments into the San Juan River, making navigation more difficult and more dangerous;<sup>1095</sup>
- The destruction of the vegetation and disturbance of fragile soils along the right bank of the river, resulting in increased erosion and sedimentation in the River;<sup>1096</sup>

---

<sup>1093</sup> Note from the Minister of Foreign Affairs of Nicaragua, to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DVS/VJW/0685/12/11, Managua, 10 December, 2011 (NCM, Vol.III , Annex 73).

<sup>1094</sup> *El Nuevo Diario, Nicaragua, "Costa Rica affirms Central American Court is politicized in favor of Nicaragua" (Source: EFE | 7/1/2012) 7, January 2012.* (NCM, Vol. III, Annex 101).

<sup>1095</sup> Photographs of trees and soil along the route of the road, Source: Site visit on the 1st of December, 2011. Note: This photograph was taken from the San Juan River. (NCM, Vol.IV, Annex 138).

<sup>1096</sup> Photographs of fragile soil removal (NCM, Vol. IV, Annex 139); FUNDENIC SOS & FONARE Technical Report, p. 22 (NCM, Vol. IV, Annex 115.).

**Figure 9.1**<sup>1097</sup>



- The creation of steep and bare slopes, also resulting in the transfer of clay soils to the River and increasing sedimentation,<sup>1098</sup>

---

<sup>1097</sup> FUNDENIC SOS & FONARE Technical Report, pp. 22, 25, 28. (NCM, Vol. IV, Annex 115); *see also* Application Instituting Proceedings, 21 December 2011, Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica), p. 4, Figure 1.1.

<sup>1098</sup> *Ibid.*, p. 22.



- The decrease in or alteration of the aquatic life present in the River due to the water cloudiness resulting from the sediments originating from the road construction activities;<sup>1099</sup>



- Effects on fishing in the river because of changes in the quality of the water;<sup>1100</sup> and
- The destruction of the inherent scenic values and eco-tourism potential of the river.<sup>1101</sup>

---

<sup>1099</sup> *Ibid.*, p. 25.

<sup>1100</sup> *Ibid.*, p. 22.

<sup>1101</sup> Photographs of the destruction of the inherent scenic values and eco-tourism potential of the San Juan River (NCM, Vol. IV, Annex 142.)



9.30 The conclusions of the study conducted in March 2012 are clear:

- Costa Rica has developed activities incompatible with the ecosystems, causing environmental damage to the San Juan River, including damage to water quality and to biodiversity.<sup>1102</sup>
- “Road construction without an adequate design, planning, and observance of technical regulations has increased environmental impact severity and damages, directly affecting San Juan River navigability, as well as connectivity of ecosystems making up the Meso-American Biological Corridor and protected areas in both countries”.<sup>1103</sup>
- “The road poses hazards to river navigability and flow rate maintenance due to unstable slope cuts that will increase the amount of sediments and decrease water quality.”<sup>1104</sup>

9.31 As noted in Chapter 4, the Central American Court of Justice, whose members conducted their own visit of the site, has since confirmed these findings, holding in July 2012 that Costa Rica’s activities have already caused ecological and related harms to Nicaragua’s River, as well as the shared

---

<sup>1102</sup> FUNDENIC SOS & FONARE Technical Report, p. 40 and 41, conclusions 1 and 4. (NCM, Vol. IV, Annex 115.).

<sup>1103</sup> *Ibid.*, p. 40, conclusion 2.

<sup>1104</sup> *Ibid.*, p. 41, conclusion 5.

ecosystem,<sup>1105</sup> and that the road project poses high risk and environmental danger by exposing the shared basin and common ecosystem to serious and unpredictable risks.<sup>1106</sup> Consequently, Costa Rica has violated various bilateral treaties such as the 1858 Treaty of Limits, and multilateral international instruments in constructing the road 1856, including but not limited to the Convention for the Conservation of Biodiversity and Protection of Wilderness Areas in Central America, the RAMSAR Convention, and other treaties, conventions and agreements.<sup>1107</sup>

9.32 In sum, Costa Rica has failed to uphold its obligation to prevent significant transboundary harm or even to minimize the risks. It has warned that it will not stop the road construction works, with its President making clear that “the construction should not be halted.”<sup>1108</sup>

9.33 As a consequence of these harmful and destructive activities, Nicaragua is entitled to a declaration by the Court that Costa Rica has violated its legal obligations to Nicaragua, with all the legal consequences that result from such a declaration.

---

<sup>1105</sup> Excerpt of the "Judgment of Central American Court of Justice", available at [http://www.fonare.org/index.php?option=com\\_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18,3](http://www.fonare.org/index.php?option=com_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18,3) July 2012. (*last visited* 21 July 2012) point. 7 (NCM, Vol.II, Annex 23).

<sup>1106</sup> *Ibid.*, point 5.

<sup>1107</sup> *Ibid.*, points 3 and 6.

<sup>1108</sup> *La Nación*, Costa Rica, “Chinchilla: There may be errors, but road project should continue”, 31 May 2012 (NCM, Vol. III, Annex 110).



## **2. The Consequences of the Current Non-Existence of the Bay of San Juan del Norte**

9.34 As explained in Chapter 6,<sup>1109</sup> the former Bay of San Juan del Norte lying west of the boundary between the two Parties has disappeared and, hence, Costa Rica's claims over that area have been extinguished. This conclusion finds support in the main instrument applicable to this case, the 1858 Treaty of Limits as interpreted by the Cleveland Award and the Alexander Awards, as well as in general international law.<sup>1110</sup>

9.35 Article VI of the 1858 Treaty of Limits reads as follows:

The Bay of San Juan del Norte, as well as the Salinas Bay, shall be common to both Republics, and, therefore, both the advantages of their use and the obligation to contribute to their defence shall also be common. Costa Rica shall be bound, as far as the portion of the banks of the San Juan river which correspond to it is concerned, to contribute to its custody in the same way as the two Republics shall contribute to the defence of the river in case of external aggression; and this they shall do with all the efficiency within their reach.

9.36 Arbitrator Cleveland, who settled a number of points of doubtful interpretation in the 1858 Treaty, was asked whether Costa Rica was bound to concur in the expense to keep the Bay of San Juan free and unembarrassed and, if it wasn't, whether it could prevent Nicaragua from executing such works at its own expense.<sup>1111</sup>

---

<sup>1109</sup> See paras. 6.140 - 6.172 above.

<sup>1110</sup> See paras. 6.153 - 6.169 above.

<sup>1111</sup> Nicaragua Department of Foreign Relations, Points which, according to Nicaragua are doubtful and require interpretation, in P. Perez Zeledon, *Argument on the question of the validity*

9.37 President Cleveland made clear that Costa Rica had no such obligation nor such right vis-à-vis the Bay of San Juan del Norte.<sup>1112</sup> Had he considered Costa Rica as co-sovereign over this area, Arbitrator Cleveland would have undisputedly recognized both States' equal rights and obligations regarding the Bay of San Juan. On the contrary, according to Cleveland, Costa Rica has no right to oppose nor obligation to pay or bear a share of the costs of works undertaken in the area of the former Bay of San Juan, therefore, the bay is clearly not under its sovereignty contrary to what it keeps claiming.

9.38 The first Alexander Award further confirms this interpretation. General Alexander decided that the direction of the boundary:

shall be due northeast and southwest, across the bank of sand, from the Caribbean Sea into the waters of Harbor Head Lagoon. It shall pass, at its nearest point, 300 feet on the northwest side from the small hut now standing in that vicinity. On reaching the waters of Harbor Head Lagoon the boundary line shall turn to the left, or southeastward, and shall follow the water's edge around the harbor until it reaches the river proper by the first channel met. Up this channel, and up the river proper, the line shall continue to ascend as directed in the treaty<sup>1113</sup>.

9.39 Consequently, the layout of the boundary as established by the first Alexander Award leaves the area of the former Bay of San Juan del Norte fully within the Nicaraguan side of the boundary. It then very logically belongs to

---

*of the treaty of limits between Costa Rica and Nicaragua*, Washington D.C., 1887, paras. 4-6 (CRM, Vol. II, Annex 5, pp. 36-37).

<sup>1112</sup> Cleveland Award rendered on 22 March 1888 in Washington upon the validity of the Treaty of Limits of 1858 between Costa Rica and Nicaragua, *RIAA*, Vol. XXVIII, pp. 209-210 (CRM, Vol. II, Annex 7, pp. 52-53).

<sup>1113</sup> First Award by the Umpire E.P. Alexander rendered on 30 September 1897 in San Juan del Norte, Nicaragua, *RIAA*, Vol. XXVIII, p. 220 (CRM, Vol. II, Annex 9, p. 69).

Nicaragua. In fact, this situation was already partly accepted by Costa Rica. As shown in Chapter 6, Harbor Head Lagoon formed part of the former Bay of San Juan del Norte and Costa Rica has never challenged the fact that Harbor Head Lagoon has always been under Nicaraguan sovereignty.

9.40 Finally, as also demonstrated in Chapter 6, the practice over the past century shows that Costa Rica never acted as sovereign in this area. Until very recently Costa Rica had never objected to any activity conducted by Nicaragua in the area of the former Bay of San Juan del Norte, and its own maps evidence that it does not consider the Bay as forming part of its territory. Indeed, the former town of San Juan del Norte was destroyed in 1984<sup>1114</sup> and a new town was erected in the nearby area beginning in 1991 with the assistance and support of the United Nations Refugee Agency and British and Spanish Cooperation<sup>1115</sup>. That town has grown to over 2000 inhabitants. Costa Rica never objected to this substantial activity in the area.

9.41 For these reasons, Nicaragua requests the Court to declare that Nicaragua is the sole sovereign over the area of the former Bay of San Juan del Norte.

---

<sup>1114</sup> Nicaragua's Memorial in the case concerning Border and Trans border armed forces (*Nicaragua v. Costa Rica*), p.18 , para. 18.

<sup>1115</sup> Available at <http://www.manfut.org/cronologia/s1900a.html> (*last visited* 21 July 2012).

### **3. The Right of Nicaraguan Vessels to Reach the Ocean via the Colorado River**

9.42 As shown in Chapter 4, as a result of Costa Rica's activities, Nicaraguan boats and ships cannot navigate on the San Juan River to the sea because the outlet of the San Juan to the sea is blocked for much of the year, and is, in any case, navigable only by small craft. In spite of this, Costa Rica opposes Nicaragua's dredging the lower reach of the San Juan. Moreover, Costa Rica has put in place physical obstacles across the entrance to the Colorado to prevent Nicaraguan vessels from reaching the sea by this route or navigating on the river at all, and enforces this blockade with armed patrol boats.<sup>1116</sup>

9.43 As also shown in Chapter 4, Costa Rica's prevention of Nicaraguan vessels from reaching the sea via the Colorado is unlawful and is incompatible with the text and spirit of the 1858 Treaty of Limits, and in particular with Article V according to which:

As long as Nicaragua does not recover the full possession of all her rights in the port of San Juan del Norte, the use and possession of Punta de Castilla shall be common and equal both for Nicaragua and Costa Rica; and in the meantime, and as long as this community lasts, the boundary shall be the whole course of the Colorado river.

9.44 It is clear that the object and purpose of the 1858 Treaty was not only to determine sovereignty but also to clearly establish and regulate the rights

---

<sup>1116</sup> See para 4.24.

of the Parties to an outlet to the sea. Hence, since Nicaragua does not have “the full possession of all her rights in the port of San Juan del Norte” this provision makes clear that, provisionally, “the boundary shall be the whole course of the Colorado river.” This indeed justifies Nicaragua’s more moderate claim that it is entitled to free navigation on the Colorado River to the sea, a claim which is also supported by general international law.

9.45 Consequently, Nicaragua requests the Court to declare that Nicaragua has a right of free navigation on the Colorado River until such time as Nicaragua can navigate out to sea through the San Juan proper. Furthermore, Nicaragua requests the Court to declare that Costa Rica’s responsibility has been engaged for having unlawfully impeded Nicaragua’s exercise of the right, and that Costa Rica must cease such conduct.

#### **4. Costa Rica Violation of the Court’s Order on Provisional Measures**

9.46 In its Order of 8 March 2011, the Court indicated the following provisional measures:

(1) . . . Each Party shall refrain from sending to, or maintaining in the disputed territory, including the caño, any personnel, whether civilian, police or security . . .

(2) . . . Notwithstanding point (1) above, Costa Rica may dispatch civilian personnel charged with the protection of the environment to the disputed territory, including the caño, but only in so far as it is necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated; Costa Rica shall consult with

the Secretariat of the Ramsar Convention in regard to these actions, give Nicaragua prior notice of them and use its best endeavours to find common solutions with Nicaragua in this respect . . .

(3) . . . Each Party shall refrain from any action which might aggravate or extend the dispute before the Court or make it more difficult to resolve.<sup>1117</sup>

9.47 Notwithstanding point (2) of the dispositif, which created an imbalance between the Parties, Costa Rica has not complied with point (1). As early as 8 March 2011, the very day the Court read its Order, Costa Rica launched overflights over and around the disputed territory.<sup>1118</sup> These overflights continued to occur throughout March 2011 and “were carried out by Costa Rican Cessna 172-type airplanes, Bell 206 and H-500 MD helicopters, all of them belonging to the air surveillance service of the Ministry of Public Security of that country.”<sup>1119</sup>

9.48 Nicaragua repeatedly made formal protests to Costa Rica regarding these overflights.<sup>1120</sup> On 13 February 2012, Nicaragua sent a diplomatic note to Costa Rica in which it explained that the Government of Nicaragua

---

<sup>1117</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86.

<sup>1118</sup> Letter from Carlos José, Argüello Gómez, Agent of Nicaragua, to the Registrar of the ICJ concerning Nicaraguan compliance with the provisional measures, Ref: 05042011-01, 5 April 2011, p. 3 See also Diplomatic Note from the Ministry of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DGAJ/127/03/111, 24 March 2011 (NCM, Vol. III, Annex 67).

<sup>1119</sup> Diplomatic Note from the Ministry of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DGAJ/127/03/111, 24 March 2011. (NMC, Vol. III, Annex 67).

<sup>1120</sup> Diplomatic Note from the Ministry of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DM-AJ/116/02/12, 13 February 2012 (NCM, Vol. III, Annex 76). See also Diplomatic Note N. MRE/DGAJ/127/03/111 (NCM, Vol. III, Annex 67), (NCM, Vol. III, Annex 76).

has viewed with much surprise the statements given by Mr. Luis Alberto Rojas Bolaños, Director of the Tortuguero Conservation Area, published in the media, in which it is confirmed that, together with the Public Force of his country, they carry out overflights in the disputed area and in the whole border region. In this respect, such statements demonstrate that, by not carrying out the procedures to obtain the relevant permits for “overflights and/or landing”, they violate national sovereignty, international law, the Order of 8 March 2011 of the International Court of Justice and the requirements of Articles 3, 11 and 12 of the Chicago Convention.<sup>1121</sup>

9.49 Notwithstanding these protests, Costa Rica’s over flights have continued.

9.50 Costa Rica also acted in violation of the second provisional measure indicated by the Court in its order of 8 March 2011.

9.51 The second provisional measure does not constitute a free pass allowing Costa Rica to send its personnel to the disputed territory for any reason. Visits must be “necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated.”<sup>1122</sup> Furthermore, Costa Rica has an obligation to “use its best endeavours to find common solutions with Nicaragua.”<sup>1123</sup> Neither of these two conditions has been respected by Costa Rica.

9.52 It clearly flows from the Court’s Order that, prior to sending of civilian personnel, Costa Rica must demonstrate a threat of irreparable damage being caused to the disputed territory. Costa Rica has sent two missions (5-7 April

---

<sup>1121</sup> *Ibid.*

<sup>1122</sup> *Ibid.*

<sup>1123</sup> *Ibid.*

2011 and 30 January 2012) into the disputed territory but has never tried to justify them on the basis of a threat of irreparable prejudice to the disputed territory.<sup>1124</sup>

9.53 As for the first visit, Costa Rica explained that “the purpose of the [first] mission is to make a preliminary evaluation of the situation of the wetland”<sup>1125</sup> But this preliminary evaluation had already been made and had been filed in Court a few weeks before, during the hearings on provisional measures and the Court found that:

it cannot be concluded at this stage from the evidence adduced by the Parties that the dredging of the San Juan river is creating a risk of irreparable prejudice to Costa Rica’s environment or to the flow of the Colorado river; . . . nor has it been shown that, even if there were such a risk of prejudice to rights Costa Rica claims in the present case, the risk would be imminent.<sup>1126</sup>

9.54 Furthermore, no prejudice can be said to have been caused to the area between the issuance of the Court’s Order and Costa Rica’s first mission, as all Nicaraguan personnel had been withdrawn from the area.<sup>1127</sup>

9.55 The second visit, on 30 January 2012, “had the purpose of surveying the area”,<sup>1128</sup> “evaluat[ing] any progress on the recovery of the area”<sup>1129</sup>

---

<sup>1124</sup> See, e.g. Diplomatic Note from the Ministry of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-AM-046-12, 27 January 2012 (NCM, Vol. III, Annex 75).

<sup>1125</sup> Diplomatic Note from the Ministry of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-DVM-217-2011, 30 March 2011 (NCM, Vol. III, Annex 68).

<sup>1126</sup> I.C.J., Order, 28 March 2011, Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua), Request for the indication of provisional measures, para. 82.

<sup>1127</sup> See paras. 7.7-7.10, above.

<sup>1128</sup> Letter from H.E. Mr. Jorge Urbina-Ortega, co-Agent of Costa Rica, to the Registrar of the ICJ, Ref: ECRPB-025-12, 3 July 2012 (NCM, Vol. III, Annex 66.).

<sup>1129</sup> *Ibid.*



and determining “additional actions needing to be taken.”<sup>1130</sup> This visit too clearly lies outside the scope of the second provisional measure ordered by the Court.

9.56 These visits appear even less justified considering that in April 2011, during the first mission, the Costa Rican Vice-Minister of Environment acknowledged an amelioration of the environmental situation of the area,<sup>1131</sup> and in November 2011, UNITAR reported that “no significant instances of deforestation or other measurable areas of vegetation cover removal”<sup>1132</sup> occurred in the area in dispute.

9.57 It is thus apparent that Costa Rica has not paid the slightest attention to the careful wording of paragraph 86(2) of the Court’s Order allowing Costa Rica to enter the area for purposes of inspection, “but only in so far as it is necessary to avoid irreparable prejudice”. In reality Costa Rica led such “inspections” for the entirely different aim of trying to collect evidence with the vain hope to reinforce its case before the Court, when Nicaragua is allowed no such fact-finding missions to the disputed area.

9.58 Furthermore, in accordance with the second provisional measure, Costa Rica must “use its best endeavours to find common solutions with

---

<sup>1130</sup> *Ibid.*

<sup>1131</sup> Excerpt of the Statement by the Deputy Minister of Environment of Costa Rica, Ana Lorena Guevara, in the radio program “Nuestra Voz” (Our Voice) hosted by Amelia Rueda, April 6, 2011, (NCM, Vol. II, Annex 25.).

<sup>1132</sup> UNITAR/UNOSAT, “Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica”, 8 November 2011 (CRM, Vol. IV, Annex 150, para. 163). *See also* para. 7.44 above.

Nicaragua.”<sup>1133</sup> Although Nicaragua offered to discuss and coordinate with Costa Rica the activities necessary to avoid irreparable damages to the area in dispute,<sup>1134</sup> Costa Rica refused to communicate any information concerning alleged risks justifying the sending of Costa Rican personnel,<sup>1135</sup> carried out unilateral missions giving only last-minute notification to Nicaragua,<sup>1136</sup> and never tried to promote joint actions contrary to what it promised.<sup>1137</sup>

9.59 Costa Rica is also in serious breach of point (3) of the 2011 Order. In particular, by constructing a road along the right bank of the San Juan River, Costa Rica has seriously aggravated the situation in the San Juan area, exacerbating and extending the dispute.

9.60 Finally, it should be noted that, since early 2011, Costa Rica has been pursuing an aggressive policy toward Nicaragua. Shortly after the hearings on the request for provisional measures, it was reported that:

Today in London, UK, the Costa Rican Foreign Minister, René Castro, started a tour of several European nations to speak about what he considers a Nicaraguan military invasion, in addition to asking for

---

<sup>1133</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 86(2).

<sup>1134</sup> Diplomatic Note from the Ministry of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Ref: MRE/DM/AJST/349/04/11, 1 April 2011, point 11 (NCM, Vol. III, Annex 69).

<sup>1135</sup> See paras. 9.50 – 9.57, above.

<sup>1136</sup> Ibid. See also Diplomatic Note from the Ministry of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-AM-046-12, 27 January 2012 (NCM, Vol. III, Annex 75).

<sup>1137</sup> Diplomatic Note from the Ministry of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Ref: DM-225-11, 4 April 2011 (NCM, Vol. III, Annex 70).

suspension of aid to Nicaragua as a means of pressure, as he has previously stated.”<sup>1138</sup>

9.61 Mr. Castro’s successor as Foreign Minister, Mr. Castillo, has characterized the Nicaraguan government as “a xenophobic government against Costa Rica.”<sup>1139</sup>

9.62 This bellicose attitude is shared by the highest Costa Rican officials as can be attested by the second Vice President of Costa Rica, Alfio Piva, who indicated that since the new road being constructed made the River unnecessary for Costa Ricans, he called upon them to “eat the San Juan [River].”<sup>1140</sup>

9.63 As the Court clarified, its “orders on provisional measures under Article 41 [of the Statute] have binding effect”.<sup>1141</sup> By not complying with the measures indicated in the Court’s Order of 8 March 2011, Costa Rica has engaged its responsibility to Nicaragua, to which appropriate reparation is owed. Nicaragua also requests the Court to declare that Costa Rica must cease:

- Overflights over Nicaragua’s territory;
- Unjustified visits to the disputed territory; and
- The construction of the road 1856.

---

<sup>1138</sup> *La Prensa*, Nicaragua, “Costa Rican Foreign Minister starts tour against Nicaragua”, 17 January 2011 (NCM, Vol. III, Annex 96).

<sup>1139</sup> *Ibid.*

<sup>1140</sup> *El Nuevo Diario*, Nicaragua, “Costa Rican Vice-President suggests eating the San Juan”, 23 January 2012 (NCM, Vol. III, Annex 102).

<sup>1141</sup> I.C.J., Judgment, 27 June 2001, *LaGrand (Germany v. United States of America)*, I.C.J. Reports 2001, p. 506, para. 109, I.C.J., Judgment, 19 December 2005, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, I.C.J. Reports 2005, p. 258, para. 263 and I.C.J., Judgment, 26 February 2007, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, I.C.J. Reports 2007, p. 230, para. 452.

## **B. NICARAGUA’S COUNTER-CLAIMS ARE ADMISSIBLE**

9.64 Nicaraguan counter-claims fulfill the conditions included in Article 80 of the Rules of Court as clarified by the case-law of the Court; they are both “distinguishable from a defence” (1) and “directly connected with the subject-matter of claims” of Costa Rica (2).

### **1. Nicaragua’s Counter-Claims are “Distinguishable from a Defence”**

9.65 In the absence of a definition of a counter-claim in Article 80, the Court clarified the notion in its case law. In the *Genocide case (Bosnia and Herzegovina v. Serbia)*, the Court explained that:

Whereas it is established that a counter-claim has a dual character in relation to the claim of the other party; whereas a counter-claim is independent of the principal claim in so far as it constitutes a separate ‘claim’, that is to say an autonomous legal act the object of which is to submit a new claim to the Court and whereas at the same time it is linked to the principal claim, in so far as, formulated as a ‘counter’ claim. It reacts to it: whereas the thrust of a counter-claim is thus to widen the original subject-matter of the dispute by pursuing objectives other than the mere dismissal of the claim of the Applicant in the main proceedings – for example, that a finding be made against the Applicant; and, whereas in this respect, the counter-claim is distinguishable from a defence on the merits.<sup>1142</sup>

9.66 In the present case, Nicaragua’s counter-claims fall within the definition given by the Court, as they are clearly “distinguishable from a

---

<sup>1142</sup> I.C.J., Order, 17 December 1997, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Counter-claims*, I.C.J. Reports 1997, p. 256, para. 27. See also Order, 29 November 2001, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, I.C.J. Reports 2001, pp. 676-677, para. 29.

defence”<sup>1143</sup> and pursue “objectives other than the mere dismissal of the claim[s]”<sup>1144</sup> of Costa Rica.

9.67 As demonstrated above, with respect to the unlawful construction of a road very close to the right bank of the San Juan de Nicaragua River by Costa Rica, Nicaragua requests the Court to find that Costa Rica’s responsibility has been engaged, with all legal consequences; it therefore requests that the Court:

- Find that Costa Rica has breached several instruments in force between the Parties such as the 1858 Treaty of Limits and its successive arbitral interpretations, the Ramsar Convention on Wetlands, the Agreement over the Border Protected Areas between Nicaragua and Costa Rica (International System of Protected Areas for Peace [SI-APAZ] Agreement), the Convention on Biological Diversity and the Convention for the Conservation of the Biodiversity and Protection of the Main Wild Life Sites in Central America;<sup>1145</sup> as well as different obligations under general international law;<sup>1146</sup>
- Order the cessation of the construction of the road when it affects Nicaraguan territory and the production of an adequate environmental impact assessment by Costa Rica;<sup>1147</sup> and
- Adjudge and declare that Costa Rica must restore the situation to the status quo ante, pay for all damage caused including the costs added to the dredging of the San Juan River and not undertake any future development in the area without an appropriate transboundary environmental impact assessment and that this assessment must be presented in a timely fashion to Nicaragua for its analysis and reaction.<sup>1148</sup>

---

<sup>1143</sup> *Ibid.*

<sup>1144</sup> *Ibid.*

<sup>1145</sup> I.C.J., Application instituting proceedings, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, para. 49.

<sup>1146</sup> *Ibid.*

<sup>1147</sup> *Ibid.*, para. 51

<sup>1148</sup> *Ibid.*, para. 50.

9.68 Similarly, Costa Rica’s responsibility has been engaged as a consequence of its violations of the first, second and third provisional measures indicated by the Court in its order of 8 March 2011.

9.69 Finally, Nicaragua seeks a declaration confirming that:

- The areas west and north of the demarcation drawn by General Alexander, including what was formerly the Bay of San Juan del Norte, remains under the exclusive sovereignty of Nicaragua; and
- Nicaragua has the right to navigate the Colorado River until it can navigate in and out to sea by the San Juan River proper.

9.70 These claims clearly correspond to Costa Rica’s submissions and are based on the same instruments and rules as those invoked by the Applicant although they are not confined to a defence against Costa Rica’s claims.

## **2. Nicaragua’s Counter-Claims are “Directly Connected with the Subject-Matter of Claims” of Costa Rica**

9.71 Article 80 of the Rules of the Court provides that counter-claims must be “directly connected with the subject-matter of the claim of the [Applicant].” The Rule of the Court being silent on the meaning of the expression “directly connected”, the Court has emphasized that:

it is for [the Court], in its sole discretion, to assess whether the counter-claim is sufficiently connected to the principal claim, taking account of the particular aspects of each case; and . . . as a general rule, the degree of connection between the claims must be assessed both in fact and in law.<sup>1149</sup>

---

<sup>1149</sup> *Ibid.*, p. 258, para. 33. See also I.C.J., Order, 10 March 1998, *Oil Platforms (Islamic Republic of Iran v. United States of America)*, *Counter-Claim*, *I.C.J. Reports 1998*, pp. 204-205, para. 37; Order, 29 November 2001, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, *I.C.J. Reports 2001*, p. 678, para. 36.

9.72 In its case law, the Court further elaborated on the relevant aspects to be taken into account when assessing the connection between the principal claim and the counter-claims. In terms of fact, the Court explained that the Parties' submissions must "form part of the same factual complex."<sup>1150</sup> In the *Genocide case (Bosnia and Herzegovina v. Serbia)*, the Court found that Bosnian claims and Serbian counter-claims were part of the same factual complex since facts occurred in the same area and during the same period of time.<sup>1151</sup> In the *Cameroon v. Nigeria* case, the Court reached the same finding for the reason that all the facts "are alleged to have occurred along the frontier between the two States."<sup>1152</sup>

9.73 In terms of law, the Court's case law shows that counter-claims can be considered as directly connected to the principal claim when the Parties "pursue the same legal aim"<sup>1153</sup> such as "the establishment of legal responsibility

---

<sup>1150</sup> I.C.J., Order, 17 December 1997, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Counter-claims*, I.C.J. Reports 1997, p. 258, para. 34. See also I.C.J., Order, 10 March 1998, *Oil Platforms (Islamic Republic of Iran v. United States of America), Counter-Claim*, I.C.J. Reports 1998, p. 205, para. 38.

<sup>1151</sup> I.C.J., Order, 17 December 1997, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Counter-claims*, I.C.J. Reports 1997, p. 258, para. 34.

<sup>1152</sup> I.C.J., Order 30 June 1999, *Land and Maritime Boundary between Cameroon and Nigeria*, I.C.J. Reports 1999, pp. 985-986 (emphasis added).

<sup>1153</sup> I.C.J., Order, 10 March 1998, *Oil Platforms (Islamic Republic of Iran v. United States of America), Counter-Claim*, I.C.J. Reports 1998, p. 205, para. 38. See also I.C.J., Order, 30 June 1999, *Land and Maritime Boundary between Cameroon and Nigeria*, I.C.J. Reports 1999, pp. 985-986.

for violations of the [same] Treaty”<sup>1154</sup> and “the determination of the reparation due on this account.”<sup>1155</sup>

9.74 These conditions are clearly met in the present case.

9.75 The road building project is directly connected to the main Costa Rican claim directed against the Nicaraguan dredging programme:

*First*, like the dredging programme, the construction of the road is undertaken in the border area;

*Second*, the road construction project appears to be an answer by Costa Rican authorities to the Nicaraguan dredging programme;<sup>1156</sup> and

*Third*, as demonstrated above,<sup>1157</sup> erosion, sediment-laden runoff, and the dumping of trees, debris, and sediments into the San Juan as a result of the road construction project makes the dredging of the river even more necessary and, by the same token, aggravates the present dispute.

9.76 Moreover, as shown in Chapter 4, Costa Rica has undertaken the construction of a road very close to the right bank of the San Juan River, the land border between Nicaragua and Costa Rica, in violation of several international agreements to which both states are Parties, and which are the same invoked by the Claimant in the present case, including but not limited to:<sup>1158</sup>

---

<sup>1154</sup> I.C.J., Order, 10 March 1998, *Oil Platforms (Islamic Republic of Iran v. United States of America)*, Counter-Claim, *I.C.J. Reports 1998*, p. 205, para. 38.

<sup>1155</sup> I.C.J., Order, 30 June 1999, *Land and Maritime Boundary between Cameroon and Nigeria*, *I.C.J. Reports 1999*, pp. 985-986.

<sup>1156</sup> See paras. 4.46-4.65 and 9.9 above.

<sup>1157</sup> See paras. 4.46-4.65 above.

<sup>1158</sup> I.C.J., Application instituting proceedings, 21 December 2011, *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, paras. 47-48.



- The Nicaragua-Costa Rica Treaty of Limits (Jerez-Cañas) of 15 April 1858 and its subsequent arbitral interpretations;<sup>1159</sup>
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar (Iran) of 2 February 1971 as amended by the Paris Protocol of 3 December 1982, and Regina Amendments of 28 May 1987;<sup>1160</sup>
- The Agreement over the Border Protected Areas between Nicaragua and Costa Rica (International System of Protected Areas for Peace [SI-A-PAZ] Agreement) of 15 December 1990<sup>1161</sup>;
- The Convention on Biological Diversity of 21 May 1992<sup>1162</sup> and
- The Convention for the Conservation of the Biodiversity and Protection of the Main Wild Life Sites in Central America of 5 June 1992.<sup>1163</sup>

9.77 Each of these instruments has been invoked by Costa Rica.<sup>1164</sup> Costa Rica claims that Nicaragua's dredging programme is inconsistent with them. Nicaragua's counter-claims concerning Road 1856 are based on the same instruments.

9.78 Furthermore, as demonstrated above, the construction of the road is a continuing violation of the fourth provisional measure indicated by the Court in its order dated 8 March 2011.

---

<sup>1159</sup> Arbitral Award of President Grover Cleveland of 22 March 1888 (CRM, Vol. II, Annex 7) and Awards of the Umpire E.P. Alexander of 30 September 1897, 20 December 1897, 22 March 1898, 26 July (CRM, Vol. II, Annexes 9-12).

<sup>1160</sup> CRM, Vol. II, Annex 14.

<sup>1161</sup> CRM, Vol. II, Annex 22.

<sup>1162</sup> CRM, Vol. II, Annex 24.

<sup>1163</sup> CRM, Vol. II, Annex 23.

<sup>1164</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 1.

9.79 As shown in Chapter 6 of the present Counter-Memorial, the situation of the Bay of San Juan del Norte was regulated in the Treaty of Limits concluded in 1858 between Nicaragua and Costa Rica<sup>1165</sup> which is the main international instrument applicable in the present case.<sup>1166</sup> Costa Rica claims sovereign rights over the Bay. However, it has, in reality, lost any right over the area, as a consequence, among other causes, of the drying up of the Bay – whether it is the result of a natural evolution or of Costa Rica’s activities.

9.80 This area lies in the general vicinity of the mouth of the San Juan River and a few kilometres north and west of the caño. As the Court put it, “the rights at issue . . . derive from the sovereignty claimed by the Parties over the same territory”<sup>1167</sup> and this sovereignty is determined by the main instrument applicable in this case, the 1858 Treaty of Limits as interpreted by the first Alexander’s Award.<sup>1168</sup> Costa Rica bases itself on this Treaty, which it interprets wrongly, precisely in order to claim joint ownership over the Bay.<sup>1169</sup>

9.81 This question is part of the issues of sovereignty at the mouth of the San Juan River which lies at the heart of the present case.

---

<sup>1165</sup> See Article V of the 1858 Treaty of Limits, para. 6.138 above.

<sup>1166</sup> See paras. 3.14 - 3.21 above.

<sup>1167</sup> I.C.J., Order, 28 March 2011, *Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, para. 56.

<sup>1168</sup> See para.9.36. above.

<sup>1169</sup> See CRM, e.g. p. 41, para. 2.20, pp. 134-135, para. 4.4, pp. 140-141, para. 4.13 and pp. 142-143, para. 4.16.

9.82 The third Nicaraguan claim relates to its right of navigation on the Colorado River,<sup>1170</sup> whilst it does not have the possibility of doing so down the San Juan River proper. This question is based squarely on the 1858 Treaty. Furthermore, the issue is inherently tied to the imperative need (and exclusive right of Nicaragua) to dredge the San Juan River on the basis of the stipulations of the 1858 Treaty. Costa Rica is precisely contesting Nicaragua's rights to dredge the River and at the same time denying Nicaragua's use of the waters of the Colorado for accessing the Atlantic Ocean (Caribbean Sea).

9.83 The fourth Nicaraguan counter-claim, relating to the violation of Court's Order of 8 March 2011, is beyond any doubt directly connected to the subject matter of the principal claims. It concerns the provisional measures ordered by the Court in this very case, which Costa Rica alleges in its Memorial have been violated by Nicaragua.<sup>1171</sup>

9.84 As shown above,<sup>1172</sup> it is Costa Rica that has breached the first, second and third provisional measures. In particular, Costa Rica acted and continues to act in violation of the third provisional measure by building a large road next to the right bank of the San Juan River.

9.85 In its 1997 Order on the Yugoslav counter-claims in the *Genocide case*, the Court noted that:

---

<sup>1170</sup> See paras. 4.66 – 4.72 above.

<sup>1171</sup> See CRM, Chapter 6.

<sup>1172</sup> See paras. 9.46-9.63 above.

it is permitted for certain types of claim to be set out as incidental proceedings, that is to say, within the context of a case which is already in progress, this is merely in order to ensure better administration of justice, given the specific nature of the claims in question; whereas, as far as counter-claims are concerned, the idea is essentially to achieve a procedural economy whilst enabling the Court to have an overview of the respective claims of the parties and to decide them more consistently.<sup>1173</sup>

9.86 There is no doubt in the present case that a pronouncement by the Court on the Nicaragua's counter-claims as detailed in this Chapter would enable the Court to have a clearer and more complete overview of the case and to decide more consistently on the respective claims of the Parties as well as "ensur[ing] a better administration of justice" by achieving procedural economy.

---

<sup>1173</sup> I.C.J., Order, 17 December 1997, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Counter-claims*, I.C.J. Reports 1997, p. 257, para. 30.

## SUBMISSIONS

For the reasons given herein, the Republic of Nicaragua requests the Court to:

- (1) *dismiss and reject* the requests and submissions of Costa Rica in her pleadings;
- (2) *adjudge and declare* that:
  - (i) Nicaragua enjoys full sovereignty over the caño joining Harbour Head Lagoon with the San Juan River proper, the right bank of which constitutes the land boundary as established by the 1858 Treaty as interpreted by the Cleveland and Alexander Awards;
  - (ii) Costa Rica is under an obligation to respect the sovereignty and territorial integrity of Nicaragua, within the boundaries delimited by the 1858 Treaty of Limits as interpreted by the Cleveland and Alexander Awards;
  - (iii) Nicaragua is entitled, in accordance with the 1858 Treaty as interpreted by the subsequent arbitral awards, to execute works to improve navigation on the San Juan River as it deems suitable, and that these works include the dredging of the San Juan de Nicaragua River; and,

(iv) in so doing, Nicaragua is entitled as it deems suitable to re-establish the situation that existed at the time the 1858 Treaty was concluded;

(v) the only rights enjoyed by Costa Rica on the San Juan de Nicaragua River are those defined by said Treaty as interpreted by the Cleveland and Alexander Awards.

As to Nicaragua's counter-claims as specified in Chapter 9 of this Counter-Memorial, Nicaragua requests a declaration by the Court that:

(1) Nicaragua has become the sole sovereign over the area formerly occupied by the Bay of San Juan del Norte;

(2) Nicaragua has a right to free navigation on the Colorado Branch of the San Juan de Nicaragua River until the conditions of navigability existing at the time the 1858 Treaty was concluded are re-established;

(3) Costa Rica bears responsibility to Nicaragua

- for the construction of a road along the San Juan de Nicaragua River in violation of Costa Rica's obligations stemming from the 1858 Treaty of Limits and various treaty or customary rules relating to the protection of the environment and good neighbourliness; and

- for the non-implementation of the provisional measures indicated by the Court's Order of 8 March 2011.

Compensation in the form of damages, should be awarded by the Court in a subsequent phase of the case.

Nicaragua reserves its right to amend and modify these submissions in the light of the further pleadings in this case.

The Hague, 6 August 2012.

Carlos J. Argüello-Gómez  
Agent of the Republic of Nicaragua





## **CERTIFICATION**

I have the honour to certify that this Counter-Memorial and the documents annexed in Volume II, III and IV, as well as Appendix I and II of this volume are true copies and conform to the original documents and that the translations into English made by the Republic of Nicaragua are accurate translations.

The Hague, 6 August 2012

Carlos J. Argüello-Gómez

Agent of the Republic of Nicaragua



**APPENDIX 1**

DISTRIBUTARY CHANNELS OF THE RIO SAN JUAN,  
NICARAGUA AND COSTA RICA:  
REVIEW OF REPORTS BY THORNE, UNITAR, RAMSAR, MEET, AND  
ARAYA-MONTERO

G. MATHIAS KONDOLF, PHD  
2241 WARD STREET, BERKELY CALIFORNIA USA

PROFESSOR OF ENVIRONMENTAL PLANNING  
UNIVERSITY OF CALIFORNIA, BERKELEY

JULY 2012



Distributary Channels of the Río San Juan,  
Nicaragua and Costa Rica:  
Review of Reports by Thorne, UNITAR, Ramsar, MEET, and  
Araya-Montero

G. Mathias Kondolf, PhD  
2241 Ward Street, Berkeley California USA

Professor of Environmental Planning  
University of California, Berkeley

July 2012

## Table of Contents

1. Introduction and Summary of Conclusions
2. Review of expert report by Professor Colin Thorne of November 2011, *“Assessment of the physical impact of works carried out by Nicaragua since October 2010 on the geomorphology, hydrology and sediment dynamics of the San Juan River and the environmental impacts on Costa Rican territory.”*
3. Review of UNITAR/UNOSAT reports of January, March, and November 2011.
4. Review of Ramsar mission report of 2010, *“North-eastern Caribbean Wetland of International Importance.”*
5. Review of Report by Ministry of Environment, Energy, and Telecommunications (MEET) of 2011, *“Evaluation and assessment of the environmental situation in the North-eastern Caribbean Wetland (Humedal Caribe Noreste) pursuant to the Order of the International Court of Justice.”*
6. Review of Araya-Montero 2010, *“Appraisal of maximum average age of the trees felled in primary forest areas in the Punta Castilla, Colorado, Pococí and Limón sectors of Costa Rica, as a result of the Nicaraguan Army’s occupation or the apparent restoration of an existing canal.”*
7. Review of Araya-Montero 2011, *“Age approximation of trees cut in the Area under Costa Rica’s Environmental Management located on the causeway of the artificial channel built on a portion of territory of Calero Island to connect the San Juan River with los Portillos Lagoon.”*

## **1. Introduction and Summary**

### ***1.1 Scope and Purpose***

The purpose of this report is to review the expert report of Professor Colin Thorne “*Assessment of the physical impact of works carried out by Nicaragua since October 2010 on the geomorphology, hydrology and sediment dynamics of the San Juan River and the environmental impacts on Costa Rican territory*”, along with supporting maps, documents, and reports on which he relied. In addition to Professor Thorne’s report and supporting documents, I examined current aerial imagery, other historical maps, and photos and data regarding construction of a road along the south bank of the Río San Juan.

This report consists of separate sections presenting comments on the report of Professor Thorne and supporting documents. References to page numbers refer to page numbers as they appear in Volumes I and II of the Memorial of Costa Rica.

### ***1.2 Summary of Conclusions***

Key points from this review include the following:

The author, Professor Colin Thorne, is a well-respected academic, with expertise in fluvial geomorphology and hydrology. The first part of his report presents some of his own work, but in most of his report, Professor Thorne is apparently repeating the conclusions reached by other authors who are less qualified than he, but whose often tenuous conclusions he appears to accept uncritically.

As detailed in Sections 3-7 of this report, these other reports are technically weak, and do not meet minimum standards for scientific work. For the reports reviewed in sections 3-5, the authors are not disclosed, which severely undermines their credibility. The reports also include admissions of bias and evidently repeat conclusions provided to the authors by third parties. The reports include clumsy attempts to use technical terminology in fluvial geomorphology and hydrology, which reflect the authors’ lack of technical background.

The theory presented in the Thorne report that that the Caño is not a distributary channel of the Río San Juan is both undermined by the fact that historical maps do not support Professor Thorne’s theory that the shoreline in the area has been unchanged since the 18<sup>th</sup> century and contradicted by the fact that river deltas split their flow amongst multiple distributary channels, so such flow would be expected unless blocked by a dyke or other artificial feature.

The analysis of historical maps presented in the Thorne report was selective, with an over 60-year gap in coverage, and leaving out a 1949 map by the Costa Rican

Geographic Institute that clearly shows the Caño connecting the Río San Juan with Harbor Head Lagoon.

The impacts of clearing and excavating the Caño were minor and short-lived (as acknowledged by the Thorne report). There is no credible evidence of harm to Costa Rican territory.

The impacts of the dredging program are likewise minor. The main points of impact would be the dredge disposal sites, which in this environment can be expected to revegetate rapidly.

The Thorne report cites an unavailable study that predicts significant shifts in flow from the Colorado into the San Juan distributary resulting from the dredging program. However, this study evidently modeled scenarios that are much larger than the actual dredging program, so the results are meaningless for assessing the impacts of the actual dredging program.

Given the small scale of the dredging program, it is extremely unlikely to harm the flow of the Colorado River.

The Thorne report warns that the flow of the Lower Río San Juan is slowly declining. Based on its stated concerns about the impacts of cutting off freshwater flow to the river mouth at Greytown Harbor, the dredging program, by potentially keeping the San Juan distributary flowing, could actually produce an environmental benefit by preventing the problems that the Thorne report predicts.

The ominous predictions of environmental collapse if the dredging is continued and the Caño maintained are not justified based on scientific evidence presented, but are rather assertions that exaggerate the potential impacts.



***Biography of the Author***

G. Mathias (Matt) Kondolf is a fluvial geomorphologist and environmental planner, specializing in environmental river management and restoration. He is Professor of Environmental Planning at the University of California, Berkeley, where he teaches courses in hydrology, river restoration, environmental science, and Mediterranean-climate landscapes, and serves as Chair of the Department of Landscape Architecture and Environmental Planning. His research concerns human-river interactions broadly, with emphasis on management of flood-prone lands, sediment management in reservoirs and regulated river channels, and river restoration. He co-edited the reference work on methods in the field, *Tools in Fluvial Geomorphology* (John Wiley & Sons 2003, 2<sup>nd</sup> edition forthcoming in 2013). He is currently the Clarke Scholar at the Institute for Water Resources of the US Army Corps of Engineers in Washington, and formerly served on the Environmental Advisory Board to the Chief of the Corps and on the Science Board for the CALFED Ecosystem Restoration Program. Professor Kondolf lectures and conducts research on river geomorphology, management, and restoration in the US and abroad. He has provided expert testimony on river-related issues to the US Congress, the California Legislature and the California Water Resources Control Board. He received his AB in Geology (*cum laude*) from Princeton University, a master's degree in Earth Sciences from UC Santa Cruz, and a PhD in Geography and Environmental Engineering from the Johns Hopkins University.

**2. Review of expert report by Professor Colin Thorne, “Assessment of the physical impact of works carried out by Nicaragua since October 2010 on the geomorphology, hydrology and sediment dynamics of the San Juan River and the environmental impacts on Costa Rican territory,” October 2011 (Appendix I, Vol. I, pp. 307-470 of the Memorial of Costa Rica) (henceforth “the Thorne report”).**

### **2.1. Unclear Authorship and Source of Conclusions**

The author, Professor Colin Thorne, is a well-respected academic with expertise in fluvial geomorphology and hydrology. The first part of the Thorne report mostly presents his original work on the historical evolution of the Río San Juan delta. Although I raise a number of points regarding the Thorne report’s methods and conclusions, and disagree with some of them, this analysis is well within Professor Thorne’s area of acknowledged expertise. However, the Thorne report presents not only his own work, but also work by other authors who appear not to be as well qualified as Professor Thorne. In most cases, but not all, the Thorne report cites these other sources, such as Ramsar (2010), UNITAR (2011a, 2011b, 2011c), and Araya-Montero (2010, 2011).

The Thorne report also draws extensively from a draft report, which the Thorne report refers to as being written by “Ramsar scientists”, although it cites the draft report as being authored by Araya-Montero et al. (2011) (Vol. I, p. 389). The Thorne report mentions the “Ramsar teams” (Vol. I, p. 389) and the “Ramsar reports” (Vol. I, p. 391) in referring to both Ramsar (2010) and this subsequent draft report, evidently assuming that the latter was also to be released by Ramsar. However, when the draft report was finally released, it was by the Costa Rican Ministry of Environment, Energy, and Telecommunications, i.e., MEET (2011), and directed to Ramsar (Vol. II, p. 221).

As noted below, the Ramsar (2010), UNITAR (2011a, 2011b, 2011c), and MEET (2011) reports all lack a list of authors and statement of their qualifications, in distinct contrast to credible scientific work, in the which authors are clearly stated and accountable for their work.

In the majority of his report, Professor Thorne is apparently not presenting his own original work, but mostly repeating the conclusions reached by other authors. Professor Thorne seems to implicitly accept at face value the material presented in these other reports without any critical evaluation of their plausibility or reliability. However, as detailed in sections 3-7, all of these reports suffer from a lack of scientific rigor, and in some cases, demonstrable bias.

The manner in which the Thorne report mixes observations and conclusions from other authors is illustrated by the incorporation of points from the draft report (ultimately released by Costa Rica as MEET 2011) in Section 1.7, beginning on p. 389

of Volume I. The Thorne report lists conclusions, attributing them to the draft report with wording such as: “systems reported to have been impacted”; “[i]t was further noted that...”; “[d]irect and indirect impacts on flora were observed or inferred in terms of...”; and “[i]n terms of fauna, changes mentioned include...”.

Then the Thorne report states: “In this Report, the author has built upon the preliminary and draft reports prepared following the Ramsar Missions, drawing on the wider range of evidence provided in Sections I.2 and I.4 to assess the short-term impacts and consequences, and, in assessing the medium- and long-term outcomes of its physical and environmental impacts, taking into consideration the possibility that the Caño might be re-excavated or enlarged....” (Vol. I, p. 391). The Thorne report then warns of “collapse in the wetland and lagoonal ecosystems that would probably prove, in the long-term, to be irreversible” (Vol. I, p. 391). Table I.6 is labeled as “adapted from Aguilar-Gonzalez and Moulaert-Quiros (2011)” (Vol. I, p. 392). It lists as environmental outcomes: “changes...that will be radical and probably irreversible”; “eradication of previous ecosystems”; “progressive changes...that may be irreversible”; and “collapse of wetland ecosystem...involving loss of protected species and valuable environmental services.” The report does not make clear to the reader whose predictions these are – i.e., whether they are Professor Thorne’s predictions, or if the Thorne report is simply conveying the predictions of other authors.

In some cases, the Thorne report presents results of work that appears to have been conducted by others but which is evidently not available in reports, and the Thorne report does not clearly state who conducted the work, nor what methods were used. For example, on pp. 438-440 of Volume I, the Thorne report presents results of “investigations conducted in the Río Colorado” and presents sediment size data from sediment samples, but does not specify who conducted the investigations. As no citation to a scientific study or grey literature report is provided for these data, the implication is that either Professor Thorne collected and analyzed these samples himself, or some unknown person – presumably hired by his client, the Government of Costa Rica – did so and provided Professor Thorne with the results.

This example illustrates a problem that pervades the Thorne report. While the author is an authority in the field, his report includes observations and conclusions by others who may be less qualified. The credibility of these other observations and conclusions may be falsely inflated by their inclusion in the Thorne report, and by the tacit endorsement that inclusion implies.

## ***2.2 Lack of Distinct, Clear Statement of Methods***

Although some of the methods used and sources relied upon are stated at various points, the Thorne report lacks a distinct section, clearly and comprehensively stating the methods Professor Thorne used and the sources upon which he drew.

Such a section would be very helpful to the reader who tries to evaluate the information, statements, and conclusions presented.

In a good example of stating methods and evidence used, the Thorne report presents a list of historical maps used (Table I.1). However, the report presents no comparable list of aerial/satellite images and their sources. Moreover, the images presented and discussed in the text suffer from an enormous gap, from 1899 to 1961. A critically important map by the Costa Rican Geographical Institute dated 1949 is omitted from the Thorne report and analysis, undermining the report's credibility.

Not all of Professor Thorne's reported sources of images seem reliable. For example, the Thorne report presents an image on p. 431 of Volume I that purports to be a "satellite" image from 1952. Given that the first satellite to orbit planet Earth was launched five years later, this hardly seems plausible. What is more likely is that the image (if actually from 1952) was taken by a plane, perhaps a high-altitude aerial photograph. Similarly, it seems more likely that the 1961 image identified by the Thorne report as a satellite image was in fact an aerial photograph, as this technology was well-developed over three decades prior to this date, whereas the technology for satellite imagery was then in its infancy.

### ***2.3 The Deltaic Environment of the San Juan River***

Deltas develop at the downstream ends of river systems, where rivers debouch into the sea or another body of water such as an estuary or a lake. (There are also inland deltas that develop where a flowing river encounters a flatter-gradient, usually wider valley.) Within a delta, the river channel splits into multiple distributary channels. These behave in opposite fashion to the tributary streams that join the river upstream, adding their flow to the main river. Deltas are dynamic environments, with active deposition of sediment, and frequent shifts in the channels. Distributaries carry sediment, deposit and fill, then shift to alternate channels, which are then the loci of deposition until they are abandoned and active deposition shifts elsewhere. Thus, distributaries can grow or shrink over time in response to deposition, erosion, blockage by growth of vegetation or collection of debris, and other factors. Flow in these distributaries will normally vary during the year, from wet season to dry. The splitting of flow into multiple distributaries can be seen at the large scale, as the Upper Rio San Juan splits into the Lower San Juan and the Colorado, both of which, in turn, divide further into distributaries.

That the Lower Río San Juan has followed, and continues to follow, alternate routes to the sea is reflected in the multiple distributary channels visible on aerial imagery. For example, about 3 km southeast of the Harbor Head Lagoon, there is a prominent distributary channel that departs from the main Río San Juan and runs northeasterly, debouching directly into the sea. This distributary is very obvious on the aerial imagery, being over 500 m wide with multiple channels in a braided pattern.

Another distributary clearly visible on aerial imagery is located about 500 m north of the Caño. This was formerly one of the main distributary channels of the Río San Juan, carrying a large part of its water and sediment, and building what the Thorne report calls the micro-delta that grew out into the harbor of the Río San Juan.

Historical maps and aerial images suggest that the main channel of the Río San Juan was formerly wider in its lower stretches than it presently is. Although it is difficult to judge changes in channel widths from historical aerial imagery without knowing the flow at which the various images were taken, it appears the current channel is narrower than the channel appearing on the 1961 image presented in the Thorne report on p. 342.

More generally, deltas are inherently dynamic environments, characterized by spreading of water and sediment as the river reaches the low gradient near sea level, sedimentation of distributary channels, shifting of river course, etc. If sediment loads increase as a result of accelerated upstream erosion, as has probably occurred on the Río San Juan, it is likely that the delta may respond. This response is difficult to predict, with so many variables involved in the deltaic environment. However, it is possible that sedimentation in the Río San Juan has accelerated as a result of increased erosion and sediment delivery to the channel upstream, as discussed below.

#### ***2.4 Origin of the Caño***

The Thorne report proposes a theory of historical evolution of the Bay of San Juan del Norte, which in broad strokes is probably generally accurate: in previous centuries, the delta of the Río San Juan grew into the open water of its harbor, cutting the water body in two and displacing much of the formerly open water. However, some details of the theory are based largely on speculation, notably those pertaining to the critical questions regarding the nature of the Caño.

The Thorne report (Vol. I, p. 356) asserts that the “inlet at the southern tip of the Harbor Head Lagoon...is a remnant of the former Bay of San Juan del Norte rather than a fluvially formed channel”, and that a ‘micro-delta’ of the San Juan River (presumably the delta formed by a distributary of the river) grew toward the pre-existing shoreline of the lagoon and stopped growing just short of the shore, leaving a gap of roughly consistent width between the newly deposited delta sediments and the pre-existing lagoon shoreline. The Thorne report asserts that this gap is now what it calls the “inlet” at the south end of the lagoon. Relying on this theory of the delta growing and then stopping just short of the lagoon shoreline, the Thorne report asserts that the channel was not “fluvially formed”. In addition, the report asserts that the channel did not and does not convey flow from the Río San Juan. This theory fails to adequately explain the observed features at the site, and it is inconsistent with the well-documented behavior of deltas.

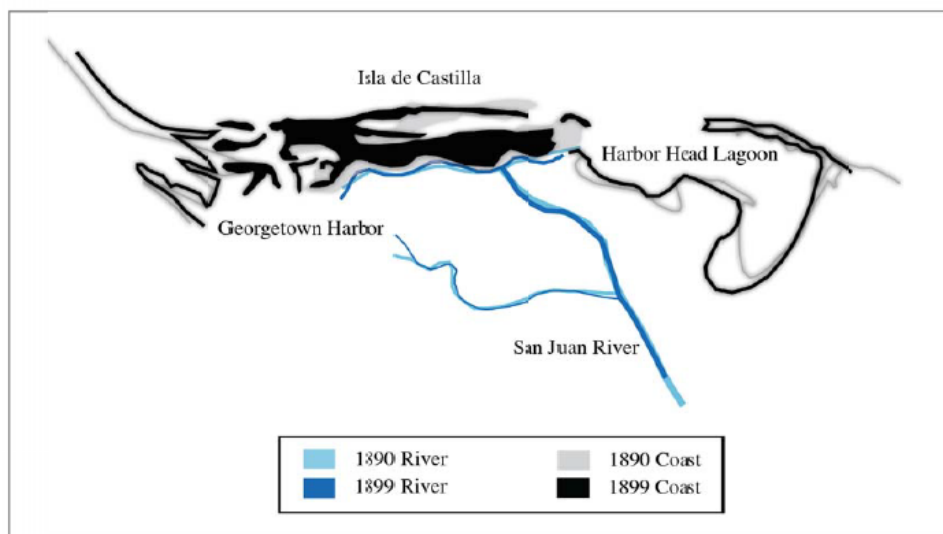
It is implausible that the 'micro-delta' would grow just so far and then stop, so that it formed what to most observers would appear to be a channel. Even if it did so, this theory does not explain how this inlet – which according to the Thorne report is a remnant body of water, not a real channel – would have avoided gradually filling in with sediment over the course of many decades, unless this channel carried flowing water to keep itself open.

The Thorne report (Vol. I, p. 356) theorizes that this channel is a “small wetland watercourse...carrying runoff generated by local rainfall.” However, it is difficult to imagine that only local runoff would keep the channel open. The Thorne report presents no quantitative analysis of how much runoff would be “generated by local rainfall”, nor of whether this would be sufficient to keep open the channel that clearly exists on the site. (This would require detailed topography, estimates of unit storm runoff amounts, and, ideally, observations of surface runoff in response to local rainfall, none of which have been presented.) A more plausible explanation is that this channel carries flow from the San Juan River, especially during periods of high water, as would be expected for distributary channels within a delta, as discussed below.

The Thorne report frequently asserts that the eastern shoreline of the Bay of San Juan del Norte has been unchanged, saying that the inlet at the south end of Harbor Head Lagoon is “a narrow pocket formed between the advancing micro-delta of the Río San Juan and the ancient, static shoreline of the Bay of San Juan del Norte. The long-term stability of the shoreline in the southern part of the Harbor Head Lagoon is demonstrated by the fact that the same feature can be discerned in the satellite image of 1961” (Vol. I, p. 331). Referring to the 1899 map, the Thorne report states, “The configuration and position of the shoreline of the southern part of the Harbor Head Lagoon are again unchanged...” (Vol. I, p. 340). The Thorne report does not present any analysis of shoreline changes, so this assertion is unsupported by evidence.

In fact, overlaying the 1890 and 1899 maps shows significant differences in the shoreline of Harbor Head Lagoon, which seem to indicate retreat of the lagoon shoreline (see Figure 1), inconsistent with the Thorne report's theory.

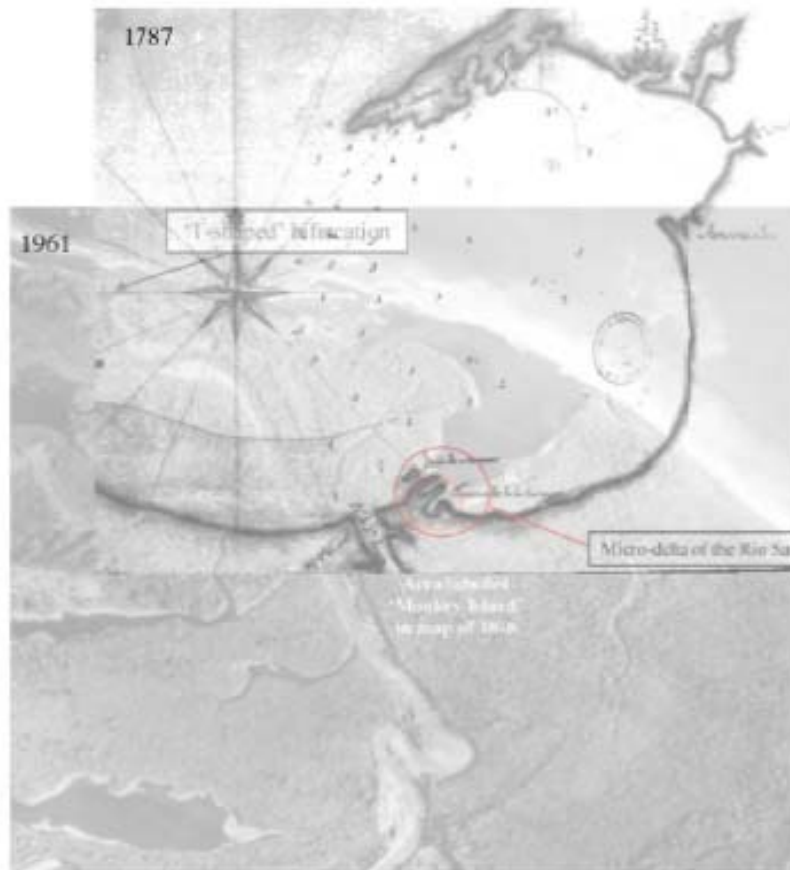
Overlay of the 1890 and 1899 maps of the San Juan River with the river and coastline traced through time.



**Figure 1. Overlay of 1890 and 1897 maps presented by the Thorne report, using river course and coastline as basis for overlay alignment. Prepared by Kristen Podolak, PhD.**

The overlay presented in Figure 1 is simply based on the uncorrected map images, lined up based primarily on the course of the river, which remained unchanged between the two maps. In conducting such overlay analysis of historical maps, it may be difficult or impossible to distinguish differences that are artifacts of map errors (especially with older, manuscript maps) from differences that result from real changes in the land. Further (and more systematic) analysis of these historical maps could provide insights into the history of landform change, and would in any case be preferable to unsupported assertions.

Referring to the 1961 aerial image, the Thorne report asserts: “The close correspondence between the contemporary shoreline of the Harbor Head Lagoon and that in the 18<sup>th</sup> century maps is both remarkable and proof that sediment laden water has not drained into the Harbor Head Lagoon in any quantity, as this would certainly have altered the shoreline through accretion” (Vol. I, p. 343). However, the assertion of a “close correspondence” is not supported by a mapping analysis. In fact, when one attempts to overlay these maps, one finds that it is essentially impossible, because the shorelines on the 1787 map and 1961 aerial image are so different (see Figure 2). Moreover, the scale of the 1787 image is unreadable, at least in the version included in the Thorne report, posing further challenges to overlaying. But no matter how one scales the 1787 map, it does not overlay on the 1961 aerial image, disproving the theory of a “close correspondence” in shorelines between the two maps.



**Figure 2. Attempted overlay of 1787 map and 1961 aerial image presented by the Thorne report. Prepared by Kristen Podolak, PhD.**

The most remarkable shortcoming of the historical analysis in the Thorne report is the huge change that it does not mention: the disappearance of the Bay of San Juan del Norte. In the late 18<sup>th</sup> and early 19<sup>th</sup> century, this Bay was a large feature, and a popular anchorage for ships. Since then, the bay has been lost to a combination of deposition and coastal erosion, with only the current remnant Harbor Head Lagoon still present as open water.

Thus, one of the main problems with this argument is that Professor Thorne has *not* demonstrated that the contemporary shoreline corresponds to the 18<sup>th</sup> century shoreline. In fact, if one brings the maps to similar scales and attempts to overlay them, it is impossible to make them line up in the “close correspondence” that Professor Thorne asserts. The shapes and locations of the shorelines do *not* line up. Thorne’s theory is not backed up by rigorous science, but only his assertions of “close correspondence” between maps, which is demonstrably not the case.



## ***2.5 Distributaries of the Río San Juan***

Despite the Thorne report's denials that the Caño has been and remains a distributary of the Lower Río San Juan, it is difficult to imagine how the Río San Juan at high water could avoid overflowing into the Caño channel, given that the San Juan River has a higher water surface than Harbor Head Lagoon. Given the short distance between the main Río San Juan channel and the Harbor Head Lagoon via the Caño, and consequently the relatively steeper slope offered by this path, it is implausible that none of the waters of the Río San Juan have followed the Caño into Harbor Head Lagoon. The Caño has evidently not been a principal distributary of the Río San Juan for some time, and as typical of such environments, it has become vegetated, which would tend to stabilize it. However, like other such distributary channels, it can be assumed to carry overflow from the Río San Juan, and these flows keep its lower reach open. To prevent such overflow would have required construction of some kind of levee or dyke to prevent this natural flow, and no evidence has been presented that such a feature was constructed or presently exists.

As typical of deltas, overflow from the main channel of the San Juan River flows outward through multiple distributary channels. The Caño is one of these. Another such channel, visible about 500 m north of the Caño, is a former principal distributary, whose sediment load built up delta lobes into the Harbor of Río San Juan, as depicted on historical maps, but which is now a less active distributary. The important point is that these channels provide a clear and important hydrologic connection between the mainstem San Juan and Harbor Head Lagoon.

These channels are not principal distributaries, and are not carrying a heavy load of sand, so they would not necessarily deposit sediment and create new land, as implied by the Thorne report when it states that "no channel has linked the river to the southern tip of the Harbor Head Lagoon since the genesis of that water body over 230 years ago" (Vol. I, p. 311). The Thorne report's repeated insistence that the eastern shore of Harbor Head has not changed position has not been demonstrated by systematic overlap of sequential maps. It has so far been only asserted. The Thorne report's theory is that any flow from the Río San Juan would have so much sediment that it would quickly fill up the Harbor Head Lagoon. However, these secondary distributaries are not carrying the main flow of the river, and they would be more likely to transport finer-grained suspended sediment, while the main load of sand would follow the main channel of the San Juan. The bed of Harbor Head Lagoon is undoubtedly shallower as a result of sediment settling out over the decades, but there is no reason to assume that any such flows would have completely filled in Harbor Head Lagoon with sediment.

By definition, distributaries carry water away from the main channel in multiple directions. This includes flowing into Harbor Head Lagoon. Without some sort of levee or dam to prevent it, water would naturally flow from the mainstem Río San Juan downhill into the Harbor Head Lagoon through the Caño, through the unnamed

distributary 500 m to the north (described above), and possibly through other such distributary channels that are less obvious on the aerial imagery.

## **2.6 Distributary Channels on Historical Maps**

In its historical analysis, the Thorne report (pp. 325-357) repeatedly asserts that historical maps and recent aerial imagery do not show a channel linking the Río San Juan with the southern part of Harbor Head Lagoon. This assertion is repeated multiple times, presumably to support the legal position of Costa Rica regarding the location of the border. As discussed below, at least two important points can be made. First, the Thorne report does not include all available maps, but rather leaves out at least one map that clearly depicts the Caño as connecting the Río San Juan with Harbor Head Lagoon. Second, the fact that a given channel is or is not depicted on a historical map may have more to do with the purpose and focus of the map than the existence of a channel. Similarly, whether a given feature shows up on aerial imagery is influenced by factors such as sun angle and the optics of the aerial camera and landscape.

The Thorne report presents an impressive collection of maps, but these maps do not include any maps or aerial images depicting conditions between 1899 and 1961, a gap of over 60 years. Perhaps most relevant to the analysis is the fact that the collections of maps presented is *selective*. For instance, the Thorne report does not present a 1949 map by the Costa Rican Geographical Institute, which clearly shows the Caño channel connecting the Río San Juan with Harbor Head Lagoon (see Figure 3). This map would have been important to fill the over 60-year gap in observations, so its omission seriously undermines the credibility of the analysis.



**Figure 3. 1949 map by the Costa Rican Geographical Institute. This map clearly shows the Caño channel connecting the Río San Juan with Harbor Head Lagoon. Map submitted to the International Court of Justice by Costa Rica as Annex 176 to its Memorial.**

It is also notable that the 1961 “satellite” image presented in the Thorne report is not very clear. An aerial image obtained from the US Government (Project 55 AM73, Roll 141, Line 64, Photo 5881, Scale 1.60000, Date 12 Jan. 1961) provides a clearer view of the situation, and shows the lower half of the Caño channel very clearly (see Figure 4).



**Figure 4. Aerial image obtained from the US Government. Project 55 AM73, Roll 141, Line 64, Photo 5881, Scale 1.60000, Date 12 Jan. 1961. Presumably the same 1961 image included by Professor Thorne in his report, this version of the image provides a clearer view of the situation, and shows the lower half of the Caño channel very clearly.**

This is a better quality image but appears to be from the same source as the image presented in the Thorne report, but the latter does not indicate the source of the image so it is not possible to confirm the images are from the same source. (As noted above in Section 2.2, it is likely that the 1961 image is an aerial photograph rather than a satellite image.) Another image (evidently also from 1961) is at a smaller (i.e., less-detailed) scale, but when enlarged appears to show two features extending the entire distance from Río San Juan to Harbor Head Lagoon: one is a linear feature to the south of the Caño, also visible on the other 1961 image; the second is the Caño, just to the north. The Caño’s less linear course is clear near Harbor Head Lagoon, but on this image can also be seen to extend westward. This image is labeled “IGN 1961” and is presented on p. 13 of Astorga Gattgens, in *“Grave riesgo de daños ambientales irreversibles por el trasvase del Río San Juan en la Isla Calero, Caribe Norte, Costa Rica”* (2010) (see Figure 5). The difference between these two images, evidently from the same year, could be due to different lighting conditions, characteristics of the aerial camera, or other factors.



**Figure 5.** Another aerial image (evidently also from 1961) shows the Caño extending the entire distance from Río San Juan to Harbor Head Lagoon. This image is labeled “IGN 1961”, and was presented on p.13 of Astorga Gattgens, in *Grave riesgo de daños ambientales irreversibles por el trasvase del Río San Juan en la Isla Calero, Caribe Norte, Costa Rica* (2010).

The Thorne report makes much of the fact that some historical maps do not depict the Caño in the south end of the Harbor Head Lagoon. However, this can often be explained by the focus or interest of the map maker being elsewhere, usually to the west, where boats would anchor or attempt to navigate up the river through the active, principal distributaries. This is well illustrated in the map of Greytown Harbor of 1850 (presented on p. 334 of the Thorne report). Since the main navigation routes were to the west, up the main channel of the San Juan, features not directly pertinent to the principal navigation route could be included or not, depending on the map-maker’s interest as well as his available time and resources. However, the fact that the Costa Rican Geographical Institute map clearly shows the Caño in 1949 demonstrates that there was a channel there at that time.

## ***2.7 Breaching the Barrier Spit***

The Thorne report theorizes that flow into Harbor Head Lagoon via the Caño would necessarily have breached the beach lagoon, and that the barrier has never breached in the past, asserting: “Had a substantial volume of water discharged from the Río San Juan into any part of the Harbor Head Lagoon...this would have led to breaching of the barrier beach. The fact that the barrier beach appears to have remained intact is further evidence that no channel linking the Río San Juan to the Harbor Head Lagoon has existed within the last 50 years” (Vol. I, p. 356).

First, it has not been established that the barrier has never breached, and thus the Thorne report’s statement that the barrier has remained “intact” is an unsupported assertion. A set of historical maps and aerial images presents conditions as recorded at the time of the mapping or remote sensing, but does not necessarily inform about the behavior of the barrier spit during intervening months and years. As discussed below, barriers would be more likely to breach during times of strong sea waves or river floods. Field mapping is unlikely to be conducted during such conditions, and aerial or satellite imagery would be obscured by clouds during severe storms. Thus, temporary lagoon breaches would be unlikely to be recorded by maps or remotely-sensed images. Rather, the inlets created by such breaches would likely have closed from longshore transport of sediment by the time the conditions were recorded.

It is normal for barrier spits that are closed most of the time to breach as a result of flooding streams or strong coastal waves. The dynamics of barrier spits are complex, involving the longshore transport of sand, energy of sea waves, geometry of the coast, and the tidal prism (the volume of water exchanged on each tidal cycle), as well as the volume of freshwater water discharged (Johnson 1973).

As the Thorne report does not define “substantial volume of water”, its statement is vague and difficult to critique. If by “substantial volume of water” the report means the main flow of the Río San Juan, then the statement is probably correct. If the main flow of the Río San Juan were to shift from its current course and flow into Harbor Head Lagoon, then it could breach the barrier spit during high flow, and would cause other changes to the delta geography. However, there is a significant difference between saying this and asserting that “no channel” has linked Río San Juan with Harbor Head Lagoon within the last 50 years. It is most likely that the delta of the Río San Juan behaves as other deltas, such that its multiple distributary channels carry overflow away from the Río San Juan, including into Harbor Head Lagoon.

The Thorne report’s assumption that water flowing into Harbor Head Lagoon would necessarily cause the barrier to breach is incorrect. For one thing, the Lagoon appears to have a hydrologic connection to Greytown Harbor to the west, via a channel behind the barrier spit, through which water flowing into the Lagoon could be offset by outflow to the sea. Although the contrast is so high that it is unclear on

some aerial imagery, this hydrologic connection appears to have persisted over time. This indicates that as Harbor Head Lagoon receives water from Río San Juan, it can discharge these inflowing waters through (and up to the capacity of) the outlet channel. The important consequence is that Harbor Head Lagoon has a ‘pressure relief valve’ so that it can receive water flowing from the Río San Juan without building up such elevation that it would breach the barrier spit.

Observations of coastal lagoons elsewhere confirm that many such lagoons that receive freshwater inflow have barrier spits that remain intact in all but very wet years or large coastal storms, and that whether an inlet closes or stays open depends in large measure on the tidal prism and wave power of the offshore waters (Johnson 1973, Goodwin & Williams 1991, Goodwin 1996, Battaglio et al. 2007).

An interesting point (noted below in Section 4) is that Ramsar (2010) predicted that flow through the cleared Caño would cause the barrier to breach and result in “partial or total loss” of Harbor Head Lagoon “within...one year” of the report (Vol. II, p. 126). This prediction was in error. The breaching predicted by Ramsar (2010) did not occur.

Finally, there is the question of the ecological consequences of breaching the barrier and thereby opening Harbor Head Lagoon to circulation of water from the Caribbean Sea. As noted below, the barrier spit enclosing Harbor Head Lagoon has been open to the sea in the past, resulting in a different ecosystem. No scientific basis has been presented to demonstrate that a closed lagoon is ecologically superior to an open lagoon; in fact the latter are highly valued in many environments (e.g., Goodwin and Williams 1991, Battaglio et al. 2007).

## **2.8 Caño and Trees**

The Thorne report’s theory (pp. 376-377) that the presence of two tree species, Yolillo (*Raphis taedigera*) and Sangrillo (*Pterocarpus officinalis*) demonstrate that this was not a channel is unconvincing. The Thorne report states: “It is unlikely that either of these species took root in the bed of a pre-existing stream because the buoyancy of their seeds greatly decreases the chances of successful sub-aqueous rooting, especially in flowing water” (Vol. I, p. 376). However, *Pterocarpus officinalis* is known to prefer wet areas, including seasonally or perennially wet areas, and often forms pure stands adjacent to mangroves (Smithsonian Tropical Research Institute website, accessed 2012).

Similarly, MEET (2011) acknowledges that *Pterocarpus* “prefers lowland areas between 0 and 300 metres above sea level, semi-flooded by running fresh water or periodically flooded, or alluvial banks...” (Vol. II, p. 280). Thus, the assertion that the buoyancy of the *Pterocarpus* seeds would prevent them from establishing in a channel such as the Caño is inconsistent with the occurrence of these trees in such wet environments.

The Thorne report quotes extensively from Araya-Montero (2010, 2011) regarding the age of the trees on the Caño site, repeating the assertion in those reports that the trees felled onsite included individuals estimated to be 248 years old. The Thorne report does not reconcile this assertion of tree ages with the historical evidence that the “micro-delta” on which these trees were established does not exist on the earliest maps, from the late 18<sup>th</sup> century, but instead first appears on maps from 1832, which would make it impossible for the trees to be 248 years in age. Within the field of fluvial geomorphology, it is standard practice to collect data on the age of trees established on a given surface as a basis to establish the minimum age of the surface (Hupp and Bornette 2003). Here we can use what we know from historical maps regarding the relatively young age of the land surface to constrain possible ages of trees established there.

More importantly, the estimates of tree ages are based on observations made elsewhere, then applied to this site. The slower the growth rate assumed, the older a tree of a given diameter is estimated to be. Growth rates for a given species of tree can vary enormously, depending on site conditions such as soil moisture, depth to water, soil characteristic, hydrologic setting, and whether the trees are establishing on fresh surfaces where they can achieve maximum growth rates or are instead growing in long-established forests, in which they must compete for light and nutrients with long-established neighbors.

The critical question is whether the growth rates taken from other sites in Costa Rica can be applied to the Caño site. Are conditions sufficiently comparable to apply these rates from elsewhere? Here the reports by Professor Thorne and Araya-Montero fail us, as they present no environmental data that would allow the reader to judge whether the sites from which the growth rates were obtained are sufficiently comparable to the Caño site to allow the growth rates to be applied.

One critical factor is whether the trees are establishing on freshly cleared or deposited surfaces or within a long-established forest. Based on information presented by Araya-Montero (2010), “unmanaged forests have a yearly growth rate of 0.64 cm/year, whereas disturbed forests have a yearly diameter growth that reached 1.17 cm/year” (Vol. II, p. 52). The trees along the Caño would be establishing on surfaces deposited in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries, and later as deposition continued. Thus these trees would likely have maximum growth rates, and as per Araya-Montero (2010), these growth rates could be twice those of long-established forests. Accordingly, the growth rate of 5 mm/year presented by Araya-Montero (2010) (presumably measured in established forests) is probably half of the real growth rate. If we assume a growth rate of 10 mm/year, that would halve the age estimates for the largest trees to about 125 years. Thus, based on the available information, the maximum tree ages presented by Araya-Montero (2010) and the Thorne report appear to be exaggerated.

While the Thorne report (Vol. I, p. 364) refers to a “scientific analysis performed” by Araya-Montero (2010), it does not address the critical question of whether the growth rates taken for different sites elsewhere are applicable at the Caño. Simply asserting that an analysis is “scientific” does not make it so. (This is especially true in the case of Araya-Montero (2010), which clearly acknowledged that it is *not* objective, stating explicitly that its aim is to “prove” that the Caño did not exist.) It would be far more convincing if the reports were to disclose the critical information about the environmental setting of tree growth rate data so that the reader could make an informed judgment.

### ***2.9 Disturbance to the Caño from Clearing***

The area cleared for the cleaning and dredging of the Caño is estimated in the Thorne report at a total of 6.94 ha (0.48 + 2 + 3.46 ha) (Vol. I, p. 360). However, to put this disturbance in perspective, Costa Rica is undertaking a project to build a road along the south bank of the Río San Juan. As discussed below, the area directly affected by the road construction exceeds 600 ha, an area roughly 100 times greater than the area disturbed by the Caño clearing. At the time when Professor Thorne was measuring the area disturbed by clearing the Caño, a far greater area had been disturbed along the Costa Rican bank of the Río San Juan upstream, yet this fact is never mentioned in the Thorne report. If the road continues downstream as is evidently the intention of the Costa Rican government, the extent of impact will be greater.

### ***2.10 Impacts of Clearing the Caño***

The Thorne report acknowledges that the impacts of clearing the Caño have been minor and short-lived: “the short-term impacts of the ‘Caño’ on the hydrology, hydraulics, water quality, and sediment dynamics were small or negligible” (Vol. I, p. 387). The report also predicts that “the longer-term impacts of the Caño on the Río San Juan will, like the sort-term impacts, be small or negligible” (Vol. I, p. 387).

However, the report (Vol. I, p. 386) warns ominously of future impacts:

The indirect impacts on the Río San Juan resulting from the river’s morphological and environmental response to diversion of some of its flow and sediment load into the ‘Caño’ are more difficult to assess because there is the potential for positive feedback loops operating in the fluvial system to magnify them locally, promulgate them both upstream and downstream, and perpetuate them through time. The existence of these complex process-response mechanisms means that the potential exists for impacts that initially appear minor to trigger non-linear process-responses that amplify rather than dampen their effects on channel forms, habitats, and ecosystem. (Sear et al. 2010)



The complexities make it necessary to assess the indirect impacts of the 'Caño' not only in the short-term (i.e., during and immediately following its construction) but also in the subsequent months and longer-term future. In the latter context, assessment of the potential for future impacts and responses must include consideration of the possibility of further actions by Nicaragua to re-excavate or enlarge the 'Caño'.

This passage includes much jargon from fluvial geomorphology, such as "positive feedback loops", "complex process-response mechanisms", and "non-linear process-responses". What does all this mean in plain English? As stated it is very vague indeed and says almost nothing concrete. But drawing on other passages in the report (e.g., Vol. I, p. 406), the reader can infer that the Thorne report means to say that if flow into the Caño increases, it could erode the channel such that it attracts more flow, in turn attracting even more flow ("positive feedback loops"), until the Caño diverts the main flow of the river from the current channel. This would, of course, trigger other changes, and we cannot predict them all (a "complex process-response"). And whatever the changes are, they might not be linear functions of whatever variable they respond to: i.e., if diversion from the mainstem San Juan results in a 10% drop in flow in the mainstem San Juan, that might result in more than a 10% increase in sedimentation in the San Juan, helping to drive still more flow into the Caño, which might 'tip' the scales such that all the flow goes down the Caño (a "non-linear process response").

The Thorne report (Vol. I, p. 406) also speaks of the 'tipping point' and the dire consequences if it is reached:

In the "worst-case" scenario, the diverted water might scour the Caño sufficiently for the balance of flow at the bifurcation to reach the tipping point, triggering an avulsion of the greater part of the flow to a new course emptying into the Caribbean Sea via a semi-permanent breach in the barrier beach at the Harbor Head Lagoon.

The rapid and unprecedented changes to hydrologic, hydraulic, sedimentary, nutrient, water quality, and salinity conditions resulting from such a radical shift in the flow would certainly cause serious and irreversible morphological and environmental degradation...

It is notable that the barrier spit enclosing Harbor Head Lagoon has been open to the sea in the past, under natural circumstances. This condition entails circulation of sea water into the lagoon and results in a different ecosystem, but the Thorne report presents no scientific argument to show that the closed lagoon is ecologically superior to an open lagoon. Indeed, in many environments, there is considerable research to see how to keep such coastal lagoons from closing (which can occur as a consequence of reducing the tidal prism, i.e., the volume of water that flows in and

out on the tidal cycle, and whose currents can keep an inlet channel scoured open)(e.g., Goodwin and Williams 1991).

If the Harbor Head Lagoon became open to the sea, there would be more changes to the west, where the main channel debouches. Here reduced (or virtually eliminated) flows would result in ecosystem changes. Whether they were “good” or “bad” is really a matter of judgment, as the changes will benefit some species and disadvantage others.

Thus, the Thorne report’s warning of “serious and irreversible environmental degradation” seems exaggerated. The Thorne report predicts that left alone, the Caño will continue to recover, but warns that any maintenance of the Caño could have dire consequences.

The non-linear complex response about which the Thorne report warns so ominously is not a serious threat. (This is also acknowledged by the report.) The flow through the Caño would be small in any event, and unless there were some blockage in the mainstem San Juan that forced most of the water to find alternate routes, there is no reason to expect that the Caño would attract the main flow of the Río San Juan. The hypothetical capture of the Río San Juan by the Caño, and the inflated language used to describe the possible effects, seem to exaggerate the real likelihood and consequences of such a channel change. The fact that one of the main consequences, breaching of the barrier spit of Harbor Head Lagoon, would simply bring the lagoon back to a former situation of being connected to the Caribbean Sea, suggests that the consequences are perhaps less dire than the ominous words suggest.

### ***2.11 Impact of Meander Cutoff***

The Thorne report is critical of the artificial meander bend cutoff in the Río San Juan just upstream of the inlet to the Caño. Arguing that, in combination with clearing and dredging the Caño, it increases the danger of inducing a shift in flow and sediment from the main channel of the Río San Juan and into the Caño, the report is replete with dire predictions of possible future impacts that could result from completing a second meander cutoff, employing the same scientific jargon to paint a picture of ominous consequences (Vol. I, p. 404):

The indirect impacts on the cutoff resulting from the river’s morphological and environmental response to artificial channel are more difficult to assess because there is the potential for positive feedback loops operating in the fluvial system to magnify them locally, promulgate them both upstream and downstream, and perpetuate them through time. The existence of these complex process-response mechanisms means that the potential exists for impacts that initially appear minor to trigger non-linear process-responses that amplify

rather than dampen their effects on channel forms, habitats, and ecosystem (Sear et al. 2010).

The complexities make it necessary to assess the indirect impacts of the cutoff not only in the short-term (i.e., during its construction), but also in the subsequent months and the longer-term future. In the latter context, assessment of the potential for future impacts and response must include consideration of the possibility of further actions to cut-off a second bend.

This passage, with its impressive jargon and boilerplate warnings of “non-linear process-responses”, is virtually identical to the earlier passage (from Vol. I, p. 386) about the clearing of the Caño. The only change is that a new ‘action’ has been inserted into the sentences, with the meander cutoff substituting for the Caño clearing. The criticisms above apply to this version of the passage as well, with the note that in this case, the Thorne report acknowledges that the meander cutoff did not induce negative changes, but warns against cutting off a meander upstream, stating that this additional change could push the Río San Juan to the tipping point.

### ***2.12 Dredging Impacts***

The dredging program is intended to improve navigation along the Río San Juan by excavating a channel “2.0 meters deep, 30 meters wide at the upper section, and 20 meters wide at the lower section” (Environmental Impact Study for Improvement of Navigation in the San Juan River in Nicaragua, translation, p. 2, sec 2.1). Originally the dredging was intended to extend over 42km, but because of budgetary constraints, has been reduced to 32.8 km or less. The Environmental Impact Study (CORASCO 2006) identifies 24 sites for disposal of dredge material, the total volume of which sums to 1.7M m<sup>3</sup>. The dredging program is notable for its small scale. Its impacts were anticipated in an Environmental Impact Study, and disposal sites for dredge material were chosen from sites already devegetated and disturbed (CORASCO 2006).

In establishing background for its critique of the dredging program, the Thorne report states that because the river follows the Hess Escarpment Fault, and because of the fault’s sense of movement, the San Juan River below the bifurcation (on the upthrown fault block) is doomed to receive less flow than the Colorado distributary (on the downdropped fault block). But if one follows the Thorne report’s logic, an interesting implication is that flow to the San Juan distributary might decrease so much that the channel silts up and becomes abandoned. If this occurs, flow to the currently active distributary mouths into Greytown Harbor would be essentially cut off, depriving habitats there of freshwater inflow upon which they now depend. The Thorne report anticipates such a loss of flow to the current distributary mouths in the event of diversion of the Río San Juan flow via the Caño into Harbor Head Lagoon. Regarding such an event, the Thorne report warns of:

serious and irreversible morphological and environmental degradation; not only in the channel and micro-delta of the Río San Juan, the area of the Greytown Lagoon currently fed by water and sediment flows in the Río San Juan, and the coastal zone that presently receives freshwater, silt, and nutrients supplied by the river on its natural alignment; but also the Harbor Head Lagoon, wetland of the Isla Portillos, and the coastal zone, including the possibility that adverse environmental impacts might extend as far south as Uvita Island and Cahuita National park in south-eastern Costa Rica...(pp. 406-407).

Given the report's prediction that flow in the San Juan distributary is declining, and given its stated concern for the "devastating" consequences that could result from abandoning the current mouth of the Río San Juan, it would follow that perhaps some steps should be taken to improve flow conditions in the San Juan distributary. It would logically follow that dredging the channel might be such a step to prevent abandonment of the San Juan distributary, but this next step in the logic is not considered in the Thorne report.

The Thorne report also discusses in great detail the appearance of the channels of the San Juan and Colorado distributaries on the maps from 1780, 1840, and 1895, drawing conclusions about relative water and sediment loads based on the mapped abundance of islands in the two forks of the river. The Thorne report presents a complicated theory that the late 18<sup>th</sup> century San Juan distributary "was, for whatever reason, receiving water that was, proportionately, less heavily laden with sediment than that in either the river upstream or the Río Colorado downstream" (Vol. I, p. 430). The Thorne report does not specify how this could occur, saying any such explanation would be "highly speculative". The report then asserts that "by 1848 the situation had reversed, with the Río San Juan clearly represented as being braided, while the Río Colorado is shown as having a single-thread, sinuous planform...It may be inferred that the proportion of the coarse fraction of the sediment load...supplied to the Río San Juan had increased, while that supplied to the Río Colorado had decreased" (Vol. I, p. 431).

While the study of the historical maps for such indications of river form can be a valuable tool, there is a danger of over-interpreting the patterns seen. It is possible that the map makers were carefully drawing each individual sandbar, as implied by the Thorne report's interpretation, but it is also possible that the map makers drew in sand bars in an 'impressionistic' way to indicate that the channel was sandy, shallow, and filled with numerous bars. We do not know whether the maps were made at low water or high (which would completely change the exposure of bars), or whether the different channels were even mapped at the same time. And it is possible that later mapmakers relied on earlier maps to 'fill in' parts of the river that they did not have time to visit. Thus, the Thorne report's theory of the evolution of the two distributaries is mostly speculation.

The Thorne report presents estimates of sand transport capacity in the Río San Juan, which it attributes to ICE (Costa Rican Institute of Electricity), but the cited report concerns 'flow behavior' in the bifurcation rather than sediment transport. The calculations of sand transport rely on grain size distributions stated to be from the Colorado River, but as noted above, the provenance of these samples is never disclosed. The Thorne report (objectively read) would imply that Professor Thorne collected the samples, but the date of sample collection precedes his visit in July 2011, so they must have been collected by an unidentified third party. In any event, the calculated annual sand transport rate is presented in the Thorne report as 150,000 m<sup>3</sup>/y (Vol. I, p. 441). The report then states: "Recognising that sediment-transport calculations are subject to considerable uncertainty, reasonable lower- and upper-bound estimates would be 140,000 and 160,000 m<sup>3</sup>/y, respectively" (Vol. I, p. 441). In fact even if the report's application of the Einstein equation is sound and the input data are reasonable, the uncertainty in the result would be much greater. The narrow range reported implies a certainty in the results that is not justified, and could easily mislead a reader not familiar with the sediment transport literature.

The Thorne report relies on a report by Avila (2010) (a report that has not been made available for independent review), for estimates of flow through the two distributaries. The Thorne report establishes that flow was modeled using the HEC-RAS program (Vol. I, p. 443), a standard one-dimensional flow model, evidently using existing cross sections of the San Juan above the bifurcations and both distributary channels (Vol. I, p. 443, Table II.1).

The principal problem with the HEC-RAS modeling is that the conditions modeled do not correspond to the actual dredging project, but are of much larger dimensions. According to the tables presented on p. 443 of the Thorne report, three scenarios were modeled, but all much larger channels than the dredging project is creating: widths of 120, 150, and 180 m, depths from 5.75 to 7.75 m. The widths appear to come completely out of the blue, with no relation to the dredging project. The depths appear to reflect dredging depths on top of the reported pre-project depth of 4.75 m in the San Juan distributary. However, if the channel of the San Juan distributary were actually 4.75 m deep, there would be no need for the dredging project. This raises questions about the source of the cross section dimensions used for the San Juan tributary in this analysis. Was it based on actual field surveys? If so, where exactly was the channel surveyed? Perhaps it was surveyed at an especially deep point that would not be representative of the river as a whole. Or was it not surveyed, and its dimensions inferred?

Here failure to disclose in sufficient detail the methods employed and the source of input data makes it impossible to judge the results. However, in any event, the lack of the basic supporting information that would be expected in a scientific study raises doubts about the validity of the exercise, and severely undermines the credibility of the results presented.

The three scenarios modeled by Avila (according to the Thorne report) are unrelated to the actual dredging program. Thus the predictions reported regarding the percentages of flow diverted into the San Juan distributary are meaningless.

By virtue of its small scale, the impacts of the dredging program are minor, and it is highly unlikely to cause a significant change in the flow split between the San Juan and Colorado.

### ***2.13 Sediment Loads from Land Use in Costa Rica***

In discussing the sediment loads of the Río San Juan, the Thorne report argues that high sediment yields from the San Carlos and Sarapiquí tributary basins to the Río San Juan are natural (Vol. I, pp. 313 & 425). The report acknowledges that “deforestation and agricultural intensification may have elevated sediment yields locally,” but asserts that “there is no evidence to suggest that sediment loads in the main river have increased significantly due to anthropogenic impacts” (Vol. I, p. 313). This statement is interesting for what it does not say. First, in the absence of long-term sediment load data or comparable data, there can be no definitive evidence of changes in sediment load one way or the other. Second, the Thorne report does not point out that massive land disturbance such as occurred in these two Costa Rican tributaries could be expected to increase sediment yields significantly, based on fluvial geomorphic principles and observations in many river basins around the world. Thus, we would expect sediment loads to respond to the increased erosion in the surrounding mountainous catchments, unless it could be shown that the sediment eroded from steep slopes is somehow stored before reaching the main Río San Juan (e.g., on valley fills or floodplains). Thus, a more defensible, more objective statement would be to say that there is no evidence that the expected increased sediment yield has *not* occurred.

Looking in more detail at the argument, the Thorne report presents Table II.6, which is labeled “Suspended sediment concentrations measured in tributaries to Río San Juan” (Vol. I, p. 425). In fact, the table does not present suspended sediment concentrations, but rather annual sediment yields, which presumably were calculated from concentrations, rating curves, and annual hydrographs. However, the source of the data in Table II.6 is not stated, nor are the details of how the annual sediment yields were calculated or the uncertainties in the results, which are likely considerable.

The Thorne report then argues that these sediment load data show greater sediment yield from steep, upper basins due to geology and more rainfall, and concludes: “These data are important because they prove the point that most of the sediment load is derived from erosion in the steep, wet but relatively natural upper and middle parts of the sub-basins, rather than the lower parts – where

development for agriculture, ranching, or plantation cropping is more extensive” (Vol. I, p. 425).

In fact, these data do not “prove” the Thorne report’s assertion at all. It is certainly plausible and expected that erosion rates would be higher in the higher mountain areas, where slopes are more vulnerable to landslides and erosion more generally. Thus, ‘geologic’ erosion would be naturally greater in these areas. However, the sensitivity of the landscape to disruption, and thus its potential for increased erosion rates, is commonly greater at high elevation than at lower elevation, in gentler parts of the basins. Thus, land disturbance could be more concentrated in the lower parts of the basins (as hypothesized in the Thorne report), but even less intensive land use in upper catchments could be producing greater increases in sediment yield by virtue of the more sensitive terrain.

The Thorne report’s argument is an unsupported assertion without substantive information on the distribution of deforestation and land disturbance, sensitivity of different parts of the landscape to disturbance, etc. Unless the upper basins were demonstrated to be completely undisturbed, higher sediment yields derived from them cannot be ascribed to natural ‘geologic’ erosion alone.

Thus, while it is probably correct that the San Carlos and Sarapiquí tributary basins have naturally high sediment yields by virtue of their underlying rock type and geologic structure, the high ‘geologic’ erosion rates do not imply that their sediment yields could not increase significantly as a result of land-use disturbance.

#### ***2.14 Sediment Loads from Road Construction in Costa Rica***

An even more significant cause for increased delivery of sediment to the Río San Juan may be the still-ongoing construction of a road running for over 160 km along the Costa Rican bank of the Río San Juan. The dimensions of the road construction project have been described by the Costa Rican Minister of Public Works and Transportation as a minimum road surface area of 14 m, with right-of way of 50 m (*La Nación*, 18 October 2011). Photographs of the road construction project taken from Nicaraguan airspace across the river show many sites of extensive disturbance, creating steep eroding slopes that deliver sediment directly to the channel of the Río San Juan (e.g., Figures 6-8). These photographs indicate that 50 m is an underestimate of the actual area impacted by the road construction project. Multiplying the road length of 160 km by 14 m (absolute minimum direct disturbance) to 50 m (the official right-of-way width, but less than actual disturbance area visible on many photos) yields between 224 and 800 ha of direct disturbance from the road. Figures 6-8 all show raw, eroding slopes. Figure 6 clearly shows tongues of coarse sediment, reflecting the transport of sediment by surface runoff from the disturbed area directly into the channel. In addition to the direct disturbance of this massive road construction, there will be the inevitable

secondary effects of intensified settlement and land use encouraged by the easy access created by the new road.



**Figure 6. Photograph taken approximately 2 km downstream of Tiricias and 2.6 km upstream of Isla Pillares on Costa Rican side of the Río San Juan, 1.1 km downstream of Lugar San Pablo, and 2.7km upstream of Isla El Glis across the river in Nicaragua. Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “Ruta de la Carretera,” 25 March 2012, photo of site 15. The photograph depicts damage and sediment impacts from the road construction.**





**Figure 7.** Photograph taken near Isla Campana, Costa Rica, about 1.6 km downstream from Lugar Machuca, Nicaragua. Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Ruta de la Carretera*,” 25 March 2012, photo of site 25. The photograph depicts damage from the road construction.



**Figure 8.** Photograph taken about 9.5 km upstream of Finca Balanca, Costa Rica, as measured along the river (8 km straight-line distance). As measured from locations on the Nicaraguan bank, the photo location was about 6.6 km upstream of Lugar Las Cruces and 9.5 km upstream from Lugar Casa Hacienda (across the river from Finca Balanca). Presented to the Central American Court of Justice by FUNDENIC-SOS/FONDO NATURA and FONARE in “*Ruta de la Carretera*,” 25 March 2012, photo of site 28. The photograph depicts damage from the road construction.

It is worth noting that because this new road runs along the river bank for most of its length, sediment eroded from the land cleared for its construction has a direct path into the river channel. In fluvial geomorphic parlance, this would be considered a sediment source that is well connected to the receiving waters. There is every reason to believe that this extensive disturbance directly adjacent to the Río San Juan has contributed substantial volumes of sediment directly into the river, and that the additional sediment delivered to the Río San Juan is likely to have consequences downstream.

By the time of Professor Thorne's site visit and overflight in July 2011, the Costa Rican road was already well under construction. While it had not reached the disputed area of lower Río San Juan delta (near the Caño, etc.), it is unlikely that Professor Thorne would not have learned of such a massive disturbance during his work in 2011. Either Professor Thorne's Costa Rican clients did not inform him of this disturbance, or he chose not to mention it in his report. In the former case, it indicates that Professor Thorne was not working with complete information, as already suggested by the fact that his report did not present all the historical maps available, leaving out the 1949 Costa Rican Geographic Institute map – a critical omission. In the latter case, leaving out such a potentially important increase in sediment supply to the river, renders the Thorne report's geomorphic analysis incomplete at best. Although the road construction itself had not reached the area of the Caño, the disturbance was upstream of the areas of concern, so the effects of the disturbance would readily propagate downstream.

Likewise, the extent of clearing and disturbance by the Costa Rican road is at least 100 times greater than the clearing of the Caño about which Professor Thorne and other authors have made dire predictions of environmental impact. Put in context of the much larger road project, the impacts from clearing of the Caño are small indeed.

### ***2.15 Ominous Predictions of Impact***

The Thorne report contains many ominous statements about the severity of impacts that have occurred, and especially impacts that may occur. As illustrated in the assertions concerning "positive feedback loops", "complex process-response mechanisms, and "non-linear process responses" made about the impacts of the Caño clearing on p. 386 of Volume I and repeated verbatim about the meander cutoff on p. 404 of the same volume, many of these ominous statements contain technical terms that could impress the non-technical reader. However, when the statements are examined closely, they are seen to be mostly unsupported assertions.

### 3. Review of UNITAR/UNOSAT reports:

***“Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica,” 4 January 2011 (Annex 148, Vol. II, pp. 137-146 of the Memorial of Costa Rica) (henceforth “UNITAR 2011a”).***

***“Update 2: Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica,” 3 March 2011 (Annex 149, Vol. II, pp. 147-155 of the Memorial of Costa Rica) (henceforth “UNITAR 2011b”).***

***“Update 4: Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica,” 8 November 2011 (Annex 150, Vol. II, pp. 157-169 of the Memorial of Costa Rica) (henceforth “UNITAR 2011c”).***

#### 3.1 Overall Comments

As these three reports are similar in format, I review them together, pointing out differences among them.

In contrast to the expectation for scientific papers and reports, the UNITAR reports do not disclose the report author(s), nor do they summarize the author’s or authors’ technical qualifications. The reports lack rigor, in that they do not clearly detail the methods used and results obtained. The reports include many statements that cannot be based on interpretation of satellite imagery, which according to the reports, was the only method used. These statements that are not founded upon the analysis of satellite imagery are either speculation or they are based on information and conclusions received from a third party. Either way, these unsubstantiated statements undermine the credibility of the reports. Many of the statements betray a lack of scientific competence in hydrology and fluvial geomorphology, which further undermines the credibility of the reports. The examples presented in this review are only illustrative, not comprehensive. Many more of the statements in the three reports could be similarly scrutinized and debunked.

#### 3.2 Methods

Unlike rigorous scientific papers or reports, the UNITAR reports do not include distinct, detailed methods sections, nor do they clearly report their methods elsewhere. The methods stated in the first two reports (UNITAR 2011a, 2011b) include only statements such as “satellite imagery was reviewed” and “[a] morphological review of the area was conducted using satellite imagery from 1979...2011” (UNITAR 2011a: Vol. II, p. 140). UNITAR (2011c) includes somewhat more detailed statements: “Assessment findings were made with a high degree of

confidence based on a detailed and exclusive assessment of satellite imagery using traditional imagery processing and photo-interpretation methods. These findings have not yet been validated in the field” (Vol. II, p. 160).

While UNITAR (2011a) claims to have reviewed satellite imagery back to 1979, the reports present and discuss only imagery from 2011. It seems implausible that UNITAR would have seen nothing worthy of mention on the earlier satellite imagery. The failure to report observations from its “review” of the earlier imagery, or at least to explain why it chose not to report on the earlier imagery, is a serious inconsistency between the stated methods and the “results” presented, which undermines the credibility of the UNITAR reports.

Of greatest concern are the facts that the reported results include assertions of information that could not be obtained from the stated methods, and that the reports include considerable speculation.

### ***3.3 The Soberania***

For example, UNITAR (2011a) refers to “an apparent dredging boat” visible on satellite imagery (Vol. II, p. 140), while UNITAR (2011c) identifies two boats, describing one dredging vessel as “either a standard suction...or cutter suction dredger”, and a second as the “dredging vessel ‘Soberania’” (Vol. II, p. 160). The report is silent on how it identified the second vessel as the “Soberania”. It seems unlikely that UNITAR could read the vessel name from the satellite imagery alone. However, if UNITAR were able to do this, it should be described clearly in the methods section, as this would go beyond ‘traditional’ image processing and photo-interpretation. Since UNITAR did not “validate” its results in the field, the reader is left to conclude that the report includes material that was not obtained by the stated methods, and that the UNITAR is actually relying on material, information, and conclusions it received from a third party.

### ***3.4 Signs of Recent Flooding***

Another example is the statement in UNITAR (2011a) that “[t]he San Juan River in fact currently remains stable with no signs of recent flooding in the area, ruling out ephemeral activity” (Vol. II, p. 140). While some evidence of recent flooding – such as large debris jams freshly deposited since before the flood, or large erosion scars that were not apparent prior to a flood – might be visible on satellite imagery, most evidence of flooding would not be visible from satellite imagery, but would require field inspection by a hydrologist. Either the authors of the UNITAR (2011a) report are unfamiliar with the standard hydrological practice for identifying and mapping high-water marks from floods and mistakenly believe that these can be deciphered easily from satellite imagery, or they are reporting information they received from a third party who visited the site. In the former case, the technical competence of the authors is undermined. In the latter case, the integrity of the report is severely

compromised. In either case, UNITAR's conclusion is directly contradicted by the Thorne report's discussion of a flood event that took place in December 2010, shortly before the first UNITAR study's publication (Thorne 2011: Vol. I, p. 370).

Likewise the final clause in the statement, "ruling out ephemeral activity" is of concern. The meaning of "ephemeral activity" is not clear. Strictly speaking, the sentence is nonsense, because there could be any number of ephemeral activities that could have occurred between satellite images that would not be recorded. However, since the first clause refers specifically to "recent flooding", the reader can infer that the authors of the UNITAR (2011a) report may have intended to say that they could rule out "ephemeral" flooding. Normally in hydrology and geomorphology, the term "ephemeral" is applied to streams that flow only in direct response to precipitation, such as dry desert washes. As used here, the reader can only speculate that the term is intended to refer to a flood that had come and gone before the satellite imagery being described. The authors are obviously out of their depth in attempting to use hydrologic terminology, which does not increase confidence in the technical soundness of the report.

### ***3.5 Facilitating Erosion, High Water Velocity***

The UNITAR report (2011a) also included these assertions: "Removal of vegetation along the channel has helped facilitate erosion processes as it develops. This high rate of erosion is additionally facilitated with the high velocity of water flowing in from the San Juan River" (Vol. II, p. 140). Neither of these two statements can be based on interpretation of satellite imagery.

Regarding the first sentence, satellite imagery, no matter how detailed, cannot tell us whether vegetation removal has or has not "facilitate[d] erosion". Either the statement is speculation, or it is based on field interpretation by a third party who shared the conclusion with the UNITAR (2011a) report authors, who then incorporated the third party's conclusion into the report without attribution or acknowledgement in the methods.

Regarding the second sentence, satellite images alone cannot indicate the velocity of flowing water. Either the UNITAR (2011a) report authors are speculating about the velocity of water "flowing in from the San Juan River", or the statement is based on field observation by a third party and incorporated without attribution or acknowledgement in the methods section. Moreover, the vague reference to "the high velocity of water" raises questions, such as what velocities would be considered "high". If a third party has, in fact, measured water velocities in this site, why has this fact not been disclosed, and the information shared?

### ***3.6 Speculation on intentions and consequences of dredging***

All three reports include statements speculating about the intentions behind the dredging and its geomorphic consequences. These include the last paragraph of UNITAR (2011a), which speculates on “an apparent active attempt to redirect the San Juan River,” and asserts: “If completed this cut in the meander will redirect the San Juan River approximately 175 m to the west, and will likely significantly increase the water velocity downstream. Such a velocity increase will also increase the amount of water entering the new channel, thus likely widening the channel due to an acceleration of the erosion process resulting from the increased water velocity and inflow” (Vol. II, p. 140).

These statements do not report results from satellite image analysis. Rather they constitute speculation regarding the intentions of observed dredging and the river’s response. As shown from other passages in these reports, it appears that the anonymous authors of the UNITAR reports do not possess technical qualifications in fluvial geomorphology and hydrology. Such speculation by unqualified authors should have been clearly identified as such in these reports. As it has not been so identified, it undermines the credibility of the reports as a whole. It is notable that the dire predictions stated above did not come to pass. The meander was completed, but the predicted consequences did not occur. It did not “redirect the San Juan River”. We do not know if the meander cut increased water velocity, as that would require measurements on site, but the prediction that the expected velocity increase “will also increase the amount of water entering the new channel, thus likely widening the channel” did not come to pass. In contrast, as reported in UNITAR (2011c), by fall 2011 the cleared Caño channel had narrowed and less water flowed through it (Vol. II, pp. 160-163). However, in UNITAR (2011c), the authors do not acknowledge that the prediction in their earlier report had been in error.

### ***3.7 A New Meander Cut Within the Next Few Weeks***

UNITAR (2011b) speculated about another meander bend, stating “it is probable that this will be the location for a new meander cut along the San Juan River within the next few weeks” (Vol. II, p. 150). The specificity of this prediction is remarkable, not only predicting where, but when: within a “few weeks” of the report, dated 3 March 2011. Upon what information are the UNITAR (2011b) authors basing this prediction? Intentions of a dredging program cannot possibly be gleaned from analysis of satellite imagery. It is notable that once again, the events predicted did not come to pass. UNITAR (2011c) reported that as of 25 October 2011, there had been “no further activity in either river dredging or vegetation cover removal...” (Vol. II, pp. 163 & 168). However, in UNITAR (2011c), the authors do not acknowledge that the prediction in their earlier report had been in error.

### ***3.8 Conclusion***

The examples of statements that cannot be based on interpretation of satellite imagery presented here are only illustrative examples of statements that occur throughout these reports. These statements are unsubstantiated, in that they are not based upon the satellite imagery analysis, which ostensibly should be the only basis for results and conclusions in these reports. In one case, the identification of a dredging boat by name, the clear implication is that the authors of the UNITAR (2011c) report are using information and conclusions received from a third party. In other cases, the statements are speculations, many of which betray a lack of scientific competence in hydrology and fluvial geomorphology. These unsubstantiated statements seriously undermine the credibility of the UNITAR reports. Likewise, the lack of scientific rigor, failure to disclose authorship, failure to report methods and sources, and failure to acknowledge prior predictions that are demonstrably in error all reflect badly on the UNITAR reports. By the standards of science, the UNITAR reports can be dismissed as unreliable and unscientific.

**4. Review of Ramsar Secretariat, “Ramsar Advisory Mission Report No. 69: North-eastern Caribbean Wetland of International Importance (Humedal Caribe Noreste), Costa Rica,” 17 December 2010 (Annex 147, Vol. II, pp. 83-136 of the Memorial of Costa Rica) (henceforth “the Mission Report”).**

**4.1 Overall Comments**

There seems to be little point in a detailed review of the 2010 Ramsar Mission Report. By its own admission, the report is based on no independent field work, and no independent data collection or analysis, but relies exclusively on information and conclusions supplied to the Mission by the Costa Rican government. While there are numerous specific points that could be made about inappropriate use of technical terminology or misunderstandings of science, the report can be dismissed based on its lack of independent objective data collection, analysis and assessment.

In contrast to the expectation for a scientific paper or report, the Mission Report does not disclose the report authors, nor does it summarize the author’s or authors’ technical qualifications.

**4.2 Lack of Independent Data Collection and Analysis**

The first 20 pages of the report consist mostly of introductory material. The actual methods used by members of the Mission are described on pp. 100-101 of Volume II:

RAM members reviewed and analysed the supplementary information provided by the Government of Costa Rica and various participating bodies. During the visit, other relevant reports and documents were also consulted and these are listed in the bibliography. Technical meetings with various interested parties were also held, including with local and regional authorities...The Mission intended to conduct an overflight in the Humedal Caribe Noreste area, but due to weather conditions and safety reasons, it was not possible to do so.

What is remarkable about this ‘mission’ is what the members did *not* do. They did not visit the field site; they did not independently collect data; they did not even view the site from the air; they conducted no independent analysis; and they did not expose themselves to any viewpoints other than those of the Government of Costa Rica. According to the section entitled “Work Programme”, the entire ‘mission’ was only three days (including the cancelled overflight), evidently all spent in the capital in meetings with Costa Rican government officials and staff (Vol. II, pp. 133-134).

The Mission Report asserts twice that “the report...is not to pass judgment on activities being taken in the area...but...to carry out an impartial and objective technical analysis of the situation without alluding to any political considerations”



(Vol. II, pp. 87-88 & 100). This position would be much more convincing if the Mission had undertaken independent data collection and analysis. Instead, the Mission relied exclusively on second-hand information presented by the Costa Rican government, which undermines the claims of objectivity and impartiality.

The Mission Report described the basis of its findings thusly: “The background information provided by the Ministry of Environment, Electricity, and Telecommunications of Costa Rica [MEET]...on the events that took place in the area of Isla Portillos...highlights the following...” (Vol. II, p. 117). The Mission Report then lists dredging, deposit of sediment, removal of vegetation, and flooding, finally acknowledging at p. 117 of Volume II that it received its conclusion directly from the Costa Rican government:

The Ministry of Environment, Electricity, and Telecommunications stated in its communication that the purpose of the changes was to prepare the area for the construction of an artificial canal to unite a body of fresh water with a body of salt water...thus changing the role of the sandbanks to control the sediment flux that is currently carried by the river, and causing a rupture in the balance of the wetland.

Thus, in its report, the Mission acknowledged that: (1) it conducted no independent data collection and analysis; (2) that it relied exclusively on material obtained from the Costa Rican government and meetings with Costa Rican government officials; and (3) that the Costa Rican government provided the Mission with its conclusion, namely that the activities they were to investigate had caused “a rupture in the balance of the wetland.”

### ***4.3 Lack of Sound Scientific Understanding***

In many passages, the Mission Report reflects a lack of sound scientific understanding. A comprehensive critique seems pointless, because the entire report is of dubious value given its lack of objectivity and independence. Nonetheless, it may be useful to critique one passage of the Mission Report as illustrative of its scientific weaknesses.

On p. 120 of Volume II, the Mission Report attempts to describe the formation of the San Juan Delta thusly:

The formation of the delta in the area assessed was a slow process that had been developing since the beginning of the Quaternary period, aided by the particularly powerful dynamics of the San Juan River. The San Juan river flow and the transportation of sediments along it, has formed a micro system, creating both the Laguna los Portillos and the island wetland. The formation of local aquifers in highly-permeable porous media with a very shallow groundwater

level (centimetres to a metre maximum) has given this area very particular geomorphologic and hydrogeologic characteristics. It is estimated that thousand[s] of [years] ago the site experienced a hydrodynamic balance with possible extreme hydrological events due to hurricanes. However, over the medium and long term, the system reached a steady state.

This passage includes a number of technical terms, but what does it mean? Taken as a whole, the paragraph is confusing. Thus, it may be most clarifying to review individual assertions as follows:

### *Landscape Evolution*

The first sentence states that the delta formation was a “slow process” that began in the “beginning of the Quaternary period”. The Quaternary period began about 2 million years ago (it includes the Pleistocene and Holocene periods). According to the geologic history presented on p. 115 of Volume II, the landmass that is now Costa Rica formed from discrete volcanic islands only 3 million years ago. The Mission Report does not explain how the landforms evolved so dramatically from 3 to 2 million years before present. The Mission Report indicates that 2 million years ago the situation was similar to the present situation, with a “slow process” of formation “aided by the particularly powerful dynamics of the San Juan River.” Yet over the past 2 million years, the planet experienced repeated ice ages, which drove changes in sea level exceeding 100 m. When sea level was 100 m lower than present, would not the landscape have been very different indeed? If the San Juan River existed in anywhere near its current configuration during ice ages 1-2 million years ago (a doubtful proposition), its “powerful dynamics” would be interacting with a coastline 100 m lower and probably many kilometres to the east. The authors of the Mission Report were evidently not trained in geology or geomorphology.

The report of Professor Thorne (2011) paints a very different picture of landform evolution here. That report presents historical maps dating back to the late 18<sup>th</sup> century that show rapid deposition of the delta lobes, and indicates that most of the land in question did not even exist 220 years ago.

Thus, the Mission Report assumes a long-term stability to the landscape that is not justified based on historical evidence, nor on an understanding of geological and geomorphological history.

The statement in the second sentence that flow and sediment load of the San Juan River have formed a “micro system” is meaningless. “Micro system” is not a standard term in fluvial geomorphology, and if the Mission Report authors intended it to have some specific meaning, they have not explained what that is. Clearly, sediment deposited by the San Juan River (with some reworking by coastal waves and currents) has created the entire delta landform, which would include the lands

referred to in the Mission Report as “Laguna los Portillos and the island wetland”. The point of this sentence is not clear.

#### *Shallow aquifer*

The third sentence states that “formation” of “local aquifers...with a very shallow groundwater level...has given this area very particular geomorphologic and hydrogeologic characteristics.” Again, the point of this sentence is lost on the professional trained in fluvial geomorphology and hydrology. The sentence seems to be a string of grand words that says essentially nothing except that groundwater is shallow, as would be expected in such a deltaic environment. To have any meaning, the sentence would need to state what is so particular about the site’s geomorphology and hydrogeology. The non-specialist reader might be impressed with terminology such as “highly-permeable porous media”, but this is simply jargon. In this case, the term “sand” could be substituted without loss of meaning, and in fact with greater clarity.

#### *Hurricanes and ‘hydrodynamic balance’*

The fourth sentence states: “It is estimated that thousand[s] of year[s] ago the site experienced a hydrodynamic balance with possible extreme hydrological events due to hurricanes.” This sentence is challenging for a professional geomorphologist and hydrologist to decipher. As typical of passive-voice constructions, it does not say *who* is doing the estimating, nor on what basis; rather, the assertion (whatever it actually means) comes out of the blue.

What is meant by a “hydrodynamic balance”? Again, these are grand words, but without some supporting explanation, they are meaningless. Does the Mission Report purport that there was some kind of balance of forces between coastal waves and river-supplied sediment? If so, the report should say this. Perhaps it refers to some other hypothesized balance. However, none of this is convincing when we recall that the 2011 Thorne report’s historical analysis would indicate this site was part of the Caribbean Sea “thousands of years ago”.

Finally, what is the relation between any of the foregoing and “possible extreme hydrological events due to hurricanes”? Are the hurricanes believed to have affected the submarine environment that probably existed at this site thousands of years ago, and if so, how would that affect the current landforms and geomorphic processes? We presume that the Mission Report authors had something in mind, but without some clue as to what they intended to say, it is impossible to critique the content, as the report reads more as an incoherent string of words and phrases, rather than a logical exposition.

As shown by critical examination of the statements in the Mission Report, it appears that the report’s authors have attempted to make pronouncements far out of their depth.

#### ***4.4 Exaggerated, Erroneous Predictions of Damage***

The Mission Report offers ominous predictions of future consequences of clearing the Caño, predictions of events that have not come to pass: “It is estimated that within an approximate period of one hydrological cycle (one year) there will be partial or total loss of the Laguna los Portillos” as a result of the breaching of the sandbank between the Lagoon and the Caribbean Sea, and that there will be flooding in the disputed area, “giving rise to a growing halo of dead vegetation, with a loss of habitat for terrestrial fauna” (Vol. II, pp. 126-127). These impacts were predicted to have occurred within one year of the report date of 17 December 2010. In fact, none of these predicted impacts have occurred as of July 2012.

**5. Review of Report by Ministry of Environment, Electricity, and Telecommunications of Costa Rica, “*Technical report to Ramsar: Assessment and evaluation of the environmental situation in the Humedal Caribe Noreste within the framework of the Order of the International Court of Justice,*” 28 October 2011 (Annex 155, Vol. II, pp. 221-320 of Memorial of Costa Rica) (henceforth, “MEET 2011”).**

**5.1 Overall Comments**

No doubt the authors of the MEET report are well-meaning, but their report is not based on scientific analysis, and its clumsy attempts to use technical terminology suggest the authors do not possess a firm understanding of the scientific fields involved. Much of the report is written in a grandiose style, perhaps to give the impression of importance, but its ominous conclusions about “permanent, irreversible” impacts are not supported by evidence or sound scientific reasoning.

This is apparently the same report a draft of which the Thorne report (2011) drew upon for listing environmental impacts, although Professor Thorne’s report implies that the report was prepared by “Ramsar scientists”, although he cites it as having been authored by Araya-Montero et al.

**5.2 Lack of Real Scientific Analysis**

To its credit, the MEET report includes a detailed methods section (unlike the UNITAR and Ramsar reports). However, a careful reading of the reported methods reveals a lack of rigor and specificity. Normally, in scientific work, the methods section would specify precisely what measurements were done, what samples were taken, and what analyses were conducted. In contrast, the methods section of the MEET report uses vague terms almost exclusively. Of the 30 discrete tasks conducted by MEET, most are described with only vague words such as “assessment” (9 of the 30), “analysis” (3), “establishment” (of the work team and of corrections) (2), “work protocol drawn up”, “data examined”, “synthesis”, etc. The only tasks whose methods are clearly stated are “measurement” of the area where sediments were deposited (Section 5.4b), “georectification” (Section 5.5h) and “digitization” (Section 5.5j) of images, which curiously was reportedly done *after* the drafting of the report (Section 5.5g).

Thus, review of the MEET report’s stated methods suggests that the report is based largely on subjective judgment rather than scientific measurement and analysis, which is consistent with report’s lack of strong, coherent scientific arguments.

As an illustration of the lack of objective, replicable measurement, the report includes many reports of flow directions (including diagrams), but presents no measurements of flow (or even systematic estimates using simple techniques such

as floats and estimates of cross sectional area), as would be expected in a scientific report.

### ***5.3 Technical Terms Used***

The MEET (2011) report is not short on technical terminology. What is missing is coherence in the use of this terminology. The reader is left with the impression that the report authors have attempted to use as many technical terms as possible, even when they do not understand those terms.

Examples of the MEET report using many big words to say little of substance include the following: “The hydrometeorological situation during the visit was the dry season...” (Vol. II, p. 244); and “[i]t is important to mention that, given that the measurements were taken during the month of April, from the hydrometeorological point of view it corresponds to a period of low water levels, i.e., low water flows in the San Juan River, suggesting that the condition observed could be different during the rainy season” (Vol. II, p. 249). In plain English, these sentences seem to be saying only that observations were at low water, and that conditions could differ in the wet season.

The MEET report refers to a “statistical confidence level of 95%,” but does not support this with any analysis; it is simply asserted (Vol. II, pp. 285-286). With terms such as “statistical confidence level of 95%” prominently featured, a superficial reading of the MEET report could give the impression that it is based on scientific analysis. However, upon closer inspection, the report is most notable for its internal contradictions, clumsy attempts to use scientific terminology beyond the understanding of the authors, and lack of scientific rigor.

### ***5.4 Misunderstandings of Hydrologic Processes***

The MEET report includes much discussion of hydrologic processes, but many of the statements are not supported by evidence, logic, or a sound understanding of the relevant scientific fields. For example, the report quotes the Ramsar 2010 Mission Report’s assertion that “the existing hydrodynamic balance in this area, from the Pleistocene-Holocene era (see the section on geology) will be altered, with a consequent change in water quality of the halocline” (Vol. II, p. 252). The assertion of a “balance” from Pleistocene-Holocene time is curious and unsupported. The landform here did not exist during Pleistocene time, as it was formed by deposition of the San Juan River only within the last few centuries.

The report includes many paragraphs of text attempting to describe the movement of surface water, followed by assumptions that the “regional groundwater directions...follow a similar path”. In fact, regional groundwater patterns can be quite different from shallow surface drainage patterns. The report’s treatment of this topic could have been informed (and the text greatly simplified) by reference to

the principles that surface water flows downhill and that groundwater flows from higher head to lower head. By surveying surface topography, the report's authors could have determined that the land surface slopes from the former edge of the river channel down to Harbor Head Lagoon along the axis of the Caño. This topographic gradient can easily explain the surface flow patterns that the report so laboriously describes. Were the report authors to have installed shallow observation wells or piezometers, they could easily have determined shallow groundwater flow directions. To determine regional groundwater flow directions (about which the report speculates) would require deeper wells and observations over a much larger area than the report covers.

The report's Figures 8 (Vol. II, p. 250), Figure 11 (Vol. II, p. 254), and Figure 14b (Vol. II, p. 260) purport to show the direction of groundwater flow in cross section. A second figure also labeled Figure 11 on p. 259 of Volume II purports to depict "main sedimentary sub-environments and flow directions of superficial and underground waters". However, the sedimentary environments are not identified, at least not using any accepted scientific terms. The diagram also purports to show regional groundwater flow directions. While the general flow direction – from the Río San Juan channel towards the Caribbean Sea – would be expected for shallow groundwater, the basis of this diagram is not presented, nor any explanation given for the exact meaning of the arrows and other notations.

Many of the report's statements are not clear in what they are intended to mean, so it is not possible to evaluate their accuracy. An example is the following statement: "Surface water runoffs within the delta and the fluvial plains making up the Isla Portillos are minimal" (Vol. II, p. 293). The delta of the San Juan carries significant surface runoff, so the statement would appear to be incorrect. The assertion that it is "minimal" is vague, as the runoff is not compared to anything else (perhaps "minimal" compared to larger rivers in the hemisphere). What are the "fluvial plains" referred to as distinct from the "delta" of the San Juan River? The meaning of this statement is not obvious to a fluvial geomorphologist.

### ***5.5 Sediment Deposition Assumed to be Negative***

It is curious that the report seems to assume that transport of sediment from the San Juan River seaward is an environmental problem (e.g., Vol. II, p. 251). This attitude may derive from the authors' lack of geomorphic understanding (as reflected elsewhere in the document). With an understanding of the geomorphic history of the region, it is obvious that the entire delta landform was created by deposition of sediment from the San Juan River. As demonstrated by the historical maps presented in the Thorne report (2011), most of this land is less than about two centuries old. There is nothing necessarily pathological about sediment transport and deposition during periods of high flow, when sediment is naturally transported.

The report also refers to deposition of dredged sediments as resulting in the “permanent loss of the ecological conditions existing before the deposit, reason for which it constitutes an irreversible damage” (Vol. II, p. 260). Given that most of the landform was developed by deposition only since the late 18<sup>th</sup> century, and given the rapid rate of revegetation observed, the use of the terms “permanent loss” and “irreversible damage” are not justified by evidence or scientific analysis.

The report includes statements that imply a lack of understanding about sediment transport: “[U]nder conditions of low water flow in the San Juan River, as at the time of the visit, there is no hydraulic connection between the river and lagoon, and thus no resultant deposits of sediments from the river to the lagoon” (Vol. II, p. 250). Presumably the sediment deposits that the authors were looking for and did not see would be sand deposits. Low water flows through the Caño would not carry such sediment. Sediment transport occurs mostly at higher flows.

### **5.6 *Pterocarpus***

MEET acknowledges that *Pterocarpus* “prefers lowland areas between 0 and 300 metres above sea level, semi-flooded by running fresh water or periodically flooded, or alluvial banks...” (Vol. II, p. 280). Thus, the assertion presented by the Thorne report (2011) that the buoyancy of the *Pterocarpus* seeds would prevent it from establishing in a channel such as the Caño is contradicted.

### **5.7 *Assumptions of ‘Pristine’ Forest and Lack of Recovery of Cleared Forest***

In places, the MEET report asserts the area impacted has been previously undisturbed. For instance, p. 276 of Volume II states, “the recently deforested areas...form part of forest areas well established by 1961...and that until October 2010 [have] suffered little or no change to their landscape due to human activity...” However, the landscape has been used for agriculture, and prior clearing for agriculture is ignored by the MEET report.

The frequent use of terms such as “irreversible” (e.g., Vol. II, p. 297), “totally destroyed...[and] impossible to return to its former status” (e.g., Vol. II, p. 255) imply that recovery of disturbed sites in this area is slow or nonexistent. This is directly contradicted by the report’s acknowledgement that vegetation recovery has occurred since 1961: “it can be seen that many of the areas described as sparsely covered by native vegetation in 1961 had recovered by 1997...” (Vol. II, p. 278). In this dynamic environment, with rapid rates of vegetation growth, small areas cleared of vegetation can be expected to rapidly recover, so the dire language used to describe the effects of the clearing of the Caño appears to be an exaggeration.



### **5.8 Permanent Damage, Ecosystem Recovery**

In Section 7.2 (Estimated Ecosystem Recovery Period), MEET theorizes based on growth rates reported elsewhere in the region by Quesada (2003) and hypothesized “invasion of pastures” that it “might require at least 50 years to become a forest with a similar structure to the eliminated forest with a high canopy dominated by *Pterocarpus officinalis*, with a diameter of around 30 cm, and a medium canopy dominated by *Raphia taedigera*” (Vol. II, p. 287). This statement is immediately followed by a more gloomy statement: “The information on growth indicates that to obtain trees with diameters of over a metre would mean waiting at least between 200 and 250 years, during which time there would be no environmental services provided by the deforested trees” (Vol. II, p. 288, emphasis mine).

These statements are problematic in several important respects. The assertion that during a period of 200 to 250 years of forest growth, “there would be no environmental services provided” can most charitably be termed an exaggeration. It is directly contradicted by the preceding statement that “a forest with a similar structure” would develop in 50 years. Why would this similar forest not provide some “environmental services”?

### **5.9 Lack of Objectivity**

That the MEET report selectively criticizes the 2010 Caño clearing, while ignoring much larger impacts along the river and the prior clearing of the forest near the Caño, demonstrates a lack of objectivity in the report.

It is notable that this report makes dramatic statements about “significant” impact to species from a disturbance of 6.72 ha, but it is completely silent regarding the clearing of an area of land more 100 times greater to build a road along the Costa Rican bank of the San Juan River, which cuts habitat connectivity between the river and floodplain for over 160 km, and which will induce many times that amount of land disturbance because of land clearance by settlers attracted by the road. Thus, by ignoring the far larger impact of the ongoing road construction, the MEET report does not present a true and unbalanced assessment of impacts on the environment.

The report’s evident bias is further illustrated in a passage acknowledging that the forest around the Caño was already being cleared for agriculture: “[F]rom 1997 to 2011...there has been an expansion of the agricultural frontier to make way for sparsely-forested pastures...[T]his aspect is not a direct consequence of the 2010 activities in the wetland...” (Vol. II, p. 278). Two comments on this passage are in order.

First, MEET acknowledges that the clearing of an unmeasured but undoubtedly larger area has occurred since 1997 for agriculture, but the report is silent regarding the impacts of this other, larger clearing, saving all its criticisms and

ominous statements of environmental impact for the 2010 Caño clearing. Thus, the MEET report is not balanced or objective.

Second, by saying the agricultural clearing is not a “direct consequence” of the 2010 Caño clearing, MEET implicitly leaves open the possibility that the agricultural clearance might be an *indirect* effect, which is clearly impossible since the agricultural clearing preceded the clearing of the Caño. These points reflect the biased tone of the report, which seemed to have the *a priori* objective of exaggerating the possible effects of the Caño clearing, while ignoring other impacts, such as the much larger agricultural clearing projects.

### **5.10 Ominous Statements**

The MEET report includes many ominous statements that the wetland has been destroyed, that sensitive species have been impacted, etc. These statements are not supported by credible evidence, are mere assertions, and are not balanced.

For example, the report states: “This section of the wetland has been left totally destroyed, as it is impossible to restore it to its former status, even if the extracted material could be put back in the artificially-excavated canal” (Vol. II, p. 255). This statement is not supported by evidence, and does not reflect the dynamic nature of the environment, nor the fact that the entire feature was only recently constructed by deposition of alluvial sediment. The dramatic terms “totally destroyed” and “impossible to restore” are not based on science.

The MEET report asserts that the clearing of the Caño would have “repercussions” and “significant impact” on species such as tapir, jaguar, ocelot, and capuchin and howler monkeys (Vol. II, p. 263). It seems implausible that such a minor clearing could impact the species listed, especially those with large ranges. In any event, the report presents no evidence of any kind that these species have been affected by the clearing of the Caño.

Many statements apparently reflect significant confusion on the part of the authors. For example, they warn that “[n]ot carrying out constant monitoring and surveillance would have the consequence of failing to take actions that would prevent permanent, irreparable damage to the wetland” (Vol. II, pp. 298-299). First, the report authors evidently misunderstand the role of monitoring, which (even if “constant”) is only data gathering, not taking “action”. Second, the statement that “constant monitoring and surveillance” could prevent “permanent, irreplaceable damage” contradicts earlier statements in the report that assert there has already been “permanent” environmental damage (Vol II, p. 295), “significant’ impacts” (Vol II, p. 263), “permanent loss of the ecological conditions...which...constitutes an irreversible damage” (Vol. II, p. 260), and a “wetland totally...destroyed...[and] impossible to restore to its former status” (Vol. II, p. 255). The report thus contradicts its earlier statement that permanent, irreversible damage has occurred.

Third, as demonstrated in my comments above, the MEET statements about permanent, irreversible damage are assertions, unsupported by sound scientific evidence or reasoning, but presented using big words and an ominous tone.

The section of the MEET report entitled General Conclusions includes many alarming words, such as: “Some of these changes are irreversible. Moreover, the changes brought about to forest resources are major and more significant than initially thought. An example of this is the age and quantity of felled trees of between 136 and almost 400 years old” (Vol. II, p. 292). Given that the historical maps presented in the Thorne report (2011) show these lands to have been actively accreting in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries, the land itself is considerably younger than 400 years old. MEET 2011 does not explain how these trees could have established so long ago on land that did not then exist.

Other assertions of ‘irreversible’ impacts are made, such as, “[t]he life history of the species of felled trees enables the alteration to be categorized as negative and irreversible on a level at which the environmental impacts can be gauged with certainty” (Vol. II, p. 297). However, such statements are not supported by evidence or coherent logic.

**6. Comments on “Appraisal of maximum average of the trees felled in primary forest areas in the Punta Castilla, Colorado, Pococi and Limon sectors of Costa Rica, as a result of the Nicaraguan Army’s occupation for the apparent restoration of an existing canal,” by Miguel Araya Montero, December 2010 (Annex 49, Vol. II, pp. 47-64 of Memorial of Costa Rica) (henceforth “Araya-Montero 2010”).**

### **6.1 Lack of Objectivity**

By its own admission, this document is not an objective appraisal of the ages of the felled trees, but rather has the goal of ‘proving’ a pre-determined conclusion. It states: “[T]his document is aimed at proving, through an appraisal of the maximum average age of the trees felled, that specifically in the forest area where the trees were cut, there has been no canal during the last few decades” (Vol. II, p. 50).

### **6.2 Lack of Environmental Data to Justify Application of Data From Other Sites**

The study appears to rely on growth rates documented elsewhere in Costa Rica, assuming they apply in the study area. Tree growth rates vary widely, and are highly dependent on local environmental conditions. Before confidently applying growth rates from one locality to another, the environmental conditions for the two areas must be quantified and objectively compared. Araya-Montero (2010) presents no such information, including only the vague statement that the Boca Tapado area is “close to the San Juan River” (Vol. II, p. 53).

Thus, the author of Araya-Montero (2010) took estimates of tree growth rates from observations elsewhere, then applied them to the Caño site. The slower the growth rate assumed, the older a tree of a given diameter is estimated to be. Growth rates for a given species of tree can vary enormously, depending on site conditions such as soil moisture, depth to water, soil characteristic, hydrologic setting, and whether the trees are establishing on fresh surfaces where they can achieve maximum growth rates, or whether they are growing in long-established forests in which they must compete for light and nutrients with long-established neighbors.

The critical question is whether the growth rates taken from other sites in Costa Rica can be applied to the Caño site. Are conditions sufficiently comparable to apply these rates from elsewhere? Here the reports by Professor Thorne (2011) and Araya-Montero (2010) fail us, in that they present no environmental data that would allow the reader to judge whether the sites from which the growth rates were obtained are sufficiently comparable to the Caño site to allow the growth rates to be applied.

One critical factor would be whether the trees are establishing on freshly cleared or deposited surfaces or within a long-established forest. Based on information presented by Araya-Montero (2010) quoting an undated report by Meza et al.,

“unmanaged forests have a yearly growth rate of 0.64 cm/year, whereas disturbed forests have a yearly diameter growth that reached 1.17 cm/year” (Vol. II, p. 52).

A key point is that Meza et al. found that trees growing on open surfaces, such as disturbed ground, can grow twice as fast as trees growing in established forests.

By mixing units (reporting growth rates in mm/year in some places, cm/year in others), Araya-Montero (2010) adds confusion to his report. Rigorous scientific reports normally use consistent units to convey information with the greatest clarity. However, when these growth rates are expressed in mm/year, they are 6.4 mm/year up to 11.7 mm/year. First, even the lower value is higher than the 5 mm/year used by Araya-Montero (2010). More importantly, the second value, for growth rates on disturbed sites, is arguably the more applicable here, since the site of establishment was not a long-established forest, but land made from deposits of the San Juan River probably sometime in the early 19<sup>th</sup> century or later.

Based on historical maps, the surface on which the trees along the Caño would be establishing was deposited sometime in or after the late 18<sup>th</sup> century, probably in the early 19<sup>th</sup> century, and later as deposition continued. Thus these trees were establishing on a ‘fresh’ surface and would likely have maximum growth rates. As per Araya-Montero (2010), these growth rates could be twice those of the long-established forests. Accordingly, the growth rate of 5 mm/year presented by Araya-Montero (2010) (presumably measured in established forests) is probably half of the real growth rate. If we assume a growth rate of 10 mm/year, that would halve the age estimates for the largest trees to about 125 years. Thus, based on the available information, the maximum tree ages presented by Araya-Montero (2010) and Professor Thorne (2011) appear to be exaggerated.

In any event, the credibility and relevance of Araya-Montero (2010) is undermined by its failure to disclose the critical information about the environmental setting of tree growth rate data that could allow the reader to make an informed judgment about whether growth rates from another site would apply to the Caño site.

### **6.3 Data Presentation**

Table 2 on p. 54 of Volume II presents the number of trees per hectare counted in the study area by interval of diameter (e.g., <10 cm, 10-19 cm, etc.). Figure 1 on the following page of Volume II presents these data, but leaves out the first size category. The text explains that it was difficult to count trees of <5 cm, but there is no such problem reported for trees in the 5-9 cm range, so the first size category could have been included with some adjustment to account for the poor counting of trees of <5 cm. By leaving out the smallest size category, the report presents a misleading impression of the pattern of size data.

Moreover, Araya-Montero (2010) seems to argue that Figure 1 demonstrates that the data agree with the regression relationship being used. However, this is not terribly persuasive, since the regression is based on the data presented – thus, it is not an independent test in any way, rather agreement between the two would be expected. By entirely leaving out the smallest size category, Araya-Montero (2010) gives the impression in Figure 1 that the tree density per hectare follows a more consistent pattern than indicated by the actual data.

Regarding Table 1, Araya-Montero (2010) states: “Based on the above table, a general current yearly increase average for the Study at hand was obtained, considering that the current yearly increase in average diameter is 0.50 cm/year, which for a level of statistical reliability of 95%, would fluctuate between 0.40 cm/yearly and 0/61 cm/yearly” (Vol. II, p. 53). The author does not report on the how the 95% confidence intervals were obtained.

The report then goes on to conclude as follows: “[T]rees with diameters in the 120-130 centimetres class were observed in the appraised area, and these trees could be on average 247.6 years old, an age which could fluctuate between 206.3 and 309.8 years...[T]he presence of trees on site that are over 200 years old can be proven, which implies that the forest has existed for at least as long as that” (Vol. II, p. 58). The range of ages around the average is stated with false precision. There is no justification presented for reporting the results to four significant figures, but by doing so, Araya-Montero (2010) gives the false impression that the numbers are precise.

#### **6.4 Conflict with Historical Analysis**

The application of tree growth data from another site with different conditions does not “prove” that there are trees over 200 years old on the site. Moreover, the historical maps presented by the Thorne report (2011) indicate that much of the land under the site did not exist until it was deposited in the early 19<sup>th</sup> century, which implies that trees of 247 years in age would not be possible, as they would have had to establish in the waters of the former San Juan harbor.

**7. Comments on “Age approximation of trees cut in the Area under Costa Rica’s Environmental Management located on the causeway of the artificial channel built on a portion of territory of Calero Island to connect the San Juan River with los Portillos Lagoon,” by Miguel Araya Montero, August 2011 (Annex 154, Vol. II, pp. 205-220 of Memorial of Costa Rica) (henceforth “Araya-Montero 2011)..**

This report largely reiterates the content of Araya-Montero’s December 2010 report (discussed immediately above), but adds photographs from a site visit in spring 2011.

The range of ages of trees hypothesized differs somewhat from the range reported in Araya-Montero (2010), with one estimate up to 353 years of age (Vol. II, p. 213). The author of Araya-Montero (2011) was evidently unaware that late 18<sup>th</sup> century maps show much of the disputed area as being in open coastal waters of the harbor of the San Juan River. Thus, the asserted tree age of 353 years is not plausible.

Because of buoyancy of seeds, Araya-Montero concludes: “The regeneration of species such as *Pterocarpus officinalis* and *Raphia taedigera* is very unlikely to have occurred on an existing natural or artificial channel...” (Vol. II, p. 216). This argument is inconsistent with the fact that *P officinalis* occupies wetlands, even sites that are perennially wet (Smithsonian Tropical Research Institute 2012).

## 8. References Cited

Araya-Montero, M. 2010. Appraisal of maximum average age of the trees felled in primary forest areas in the Punta Castilla, Colorado, Pococi and Limon sectors of Costa Rica, as a result of the Nicaraguan Army's occupation for apparent restoration of an existing canal. December 2010. *Sistema Nacional de Areas de Conservación* (SINAC) or the Ministry of Environment, Energy and Telecommunications of Costa Rica, report submitted to the International Court of Justice. Annex 145 to the Memorial of Costa Rica.

Araya-Montero, M. 2011. Age approximation of trees cut in the Area under Costa Rica's Environmental Management located on the causeway of the artificial channel built on a portion of territory of Calero Island to connect the San Juan River with los Portillos Lagoon. *Sistema Nacional de Areas de Conservación* (SINAC) or the Ministry of Environment, Energy and Telecommunications of Costa Rica, report submitted to the International Court of Justice. Annex 154 to the Memorial of Costa Rica.

Battalio, R. T., Danmeier, D. and Williams, P., 2007. Predicting Closure and Breaching Frequencies of Small Tidal Inlets –A Quantified Conceptual Model. Proceedings of the 30th International Conference of Coastal Engineering, 2006, ASCE 2007, Vol. 4, 3937-3949.

Goodwin, P. 1996. Predicting the stability of tidal inlets for wetland and estuary management. *Journal of Coastal Research*, Special Issue No. 23, pp. 83-101.

Goodwin, P., and P.B. Williams, 1991. Short-term characteristics of coastal lagoon entrances in California. Proceedings: Coastal Sediments 91, Symposium on Quantitative Approaches to Coastal Sediment, ASCE, Seattle, WA, June 25–27.

Hupp, C., and G. Bornette. 2003. Vegetation as a tool in the interpretation of fluvial geomorphic processes and landforms in humid temperate areas. In Kondolf, G.M., and H. Piégay, eds. 2003. *Tools in fluvial geomorphology*. John Wiley & Sons, Chichester, pp. 269-288.

Johnson, J.W. 1973. Characteristics and behavior of pacific coast tidal inlets. *Journal of the Waterways, Harbors and Coastal Engineering Division, Proceedings of the American Society of Civil Engineers*, Vol. 99, No. WW3, August 1973, pp. 325-339.

*La Nación*, Costa Rica "Project moves ahead a year after the Harbor Head conflict, Costa Rica constructs a highway parallel to the Río San Juan," 18 October 2011.

Ministry of Environment, Energy and Telecommunications (MEET) of Costa Rica. 2011. Evaluation and assessment of the environmental situation in the North-eastern Caribbean Wetland (*Humedal Caribe Noreste*) pursuant to the Order of the



International Court of Justice. October 2011, report submitted to the International Court of Justice. Annex 155 of the Memorial of Costa Rica.

Ramsar Secretariat. 2010. Ramsar Advisory Mission Report N° 69: North-eastern Caribbean Wetland of International Importance (Humedal Caribe Noreste), Costa Rica. December 2010, report submitted to the International Court of Justice. Annex 147 of the Memorial of Costa Rica.

Smithsonian Tropical Research Institute website,  
<http://biogeodb.stri.si.edu/bioinformatics/> accessed 05 July 2012.

Thorne, C. 2011. Assessment of the physical impact of works carried out by Nicaragua since October 2010 on the geomorphology, hydrology and sediment dynamics of the San Juan River and the environmental impacts on Costa Rican territory. Report to the Government of Costa Rica, October 2011. Appendix 1 to the Memorial of Costa Rica, submitted to the International Court of Justice.

UNITAR (United Nations Institute for Training and Research). 2011a. Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica. Prepared by UNITAR/UNOSAT 4 January 2011. (UNITAR 2011a), submitted to the International Court of Justice. Annex 148 of the Memorial of Costa Rica.

UNITAR (United Nations Institute for Training and Research). 2011b. Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica. Prepared by UNITAR/UNOSAT 3 March 2011. (UNITAR 2011b), submitted to the International Court of Justice. Annex 149 of the Memorial of Costa Rica.

UNITAR (United Nations Institute for Training and Research). 2011c. Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica. Prepared by UNITAR/UNOSAT 8 November 2011. (UNITAR 2011c), submitted to the International Court of Justice. Annex 150 of the Memorial of Costa Rica.



Curriculum Vitae

CV2012-8pp.doc

**G. MATHIAS KONDOLF**

Professor of Environmental Planning and Geography  
 Chair, Dept Landscape Architecture and Environmental Planning  
 202 Wurster Hall, University of California, Berkeley CA 94720 USA  
*kondolf@berkeley.edu*

**EDUCATION**

The Johns Hopkins University. PhD, Geography and Environmental Engineering 1988. Dissertation: *Salmonid spawning gravels: A geomorphic perspective on their distribution, size modification by spawning fish, and application of criteria for gravel quality.*

University of California at Santa Cruz. MS, Earth Sciences 1982. Thesis: *Recent channel instability and historic channel changes of the Carmel River, Monterey County, California.*

Princeton University. AB cum laude, Geology 1978. Thesis: *Genesis and development of Sandy Hook, New Jersey*

**PROFESSIONAL EXPERIENCE*****University of California at Berkeley***

Chair, Department of Landscape Architecture and Environmental Planning: 2011-present

Professor of Environmental Planning and Geography: 2007 to present (appointed Asst Prof 1988)

Chair, Portuguese Studies Program: 2001-present

***Regular university courses:***

Mediterranean-Climate Landscapes, Environmental Sciences for Sustainable Development, River Restoration, Hydrology for Planners.

***Professional shortcourses:***

Week-long shortcourse *Geomorphic and ecological fundamentals for river and stream restoration* offered annually since 1995 at Sagehen Creek Field Station, Truckee, California, and components taught also at Beaumont du Ventoux and Lyon, France, University of Lisbon, and National Cheng Kung University, Taiwan.

**SERVICE ON EDITORIAL BOARDS**

Associate Editor, Water Resources Research (2011 to present)

Associate Editor, Environmental Management (1999 to present)

**SERVICE ON GOVERNMENT ADVISORY BOARDS**

Technical Review Committee for the Greater Mississippi Basin Post-Flood Assessment, US Army Corps of Engineers: 2012-2013

National Research Council Committee on Hydrology, Ecology, Fishes of the Klamath River Basin Member: 2006-2007

Federal Interagency Flood Risk Management Committee Member: 2005-2007

Environmental Advisory Board to the Chief of the US Army Corps of Engineers: Member: 2002-2007

CALFED Bay-Delta Program Ecosystem Restoration Program Science Board: Member: 1999-2005

**RECENT PEER-REVIEWED PUBLICATIONS**

Ludy, J. and G.M. Kondolf. 2012. Flood risk perception in lands 'protected' by 100-year levees. *Natural Hazards* 61(2):829-842. DOI: 10.1007/s11069-011-0072-6

Kondolf, G.M. 2011. Setting Goals in River Restoration: When and Where Can the River 'Heal Itself'? in Simon, A. et al (eds) *Stream Restoration in Dynamic Fluvial Systems: Scientific Approaches, Analyses, and Tools*. Geophysical Monograph Series Vol.194 pp.29-43. American Geophysical Union, Washington DC. DOI: 10.1029/2010GM001020.

Kondolf, G.M., S. Anderson, R. Storesund, M. Tompkins, and P. Atwood. 2011. Post-project appraisals of river restoration in advanced university instruction. *Restoration Ecology* doi: 10.1111/j.1526-100X.2011.00803.x

Michalková, M., H. Piégay, G.M. Kondolf, and S.E. Greco. Longitudinal and temporal evolution of the Sacramento River between Red Bluff and Colusa, California, USA (1942-1999). *Earth Surface Processes and Landforms* 36:257-272. DOI:10.1002/esp.2106.

Lassetre, N.S. and G.M. Kondolf. 2011. Large wood in urban stream channels: re-defining the problem. *River Research and Applications*. DOI: 10.1002/rra.1538

Kilber, K. D. Tullos, and G.M. Kondolf. 2011. Learning from dam removal monitoring: challenges to selecting experimental design and establishing significance of outcomes. *River Research and Applications* 27:967-975. DOI: 10.1002/rra.1415

MacWilliams, M.L., M.R. Tompkins, R.L. Street, G.M. Kondolf, and P.K. Kitanidis. 2010. An assessment of the effectiveness of a constructed compound channel river restoration project on an incised stream. *Journal of Hydraulic Engineering* 136(12): 1042-1052. DOI: 10.1061/(ASCE)HY.1943-7900.0000196

Minear, T. and G.M. Kondolf. 2009. Estimating reservoir sedimentation rates at large spatial- and temporal-scales: a case study of California. *Water Resources Research* 45. W12502 doi:10.1029/2007WR006703

Bosselmann, P.C., G.M. Kondolf, J. Feng, G. Bao, Z. Zhang, and M. Liu. 2009. The future of a Chinese water village: alternative design practices aimed to provide new life for traditional water villages in the Pearl River Delta. *Journal of Urban Design* 15(2):243-267.

Constantine, J.A., T. Dunne, H. Piégay, and G.M. Kondolf. 2010. Controls on the alluviation of oxbow lakes by bed-material load as observed along the Sacramento River of California. *Sedimentology* 57:389-407.

Chin, A., S. Anderson, A. Collison, B. Ellis-Sugai, J.P. Haltiner, J. Hogervorst, G.M. Kondolf, L.S. O'Hirok, A.H. Purcell, and E. Wohl. 2009 Linking theory and practice for restoration of step-pool streams. *Environmental Management* 43:645-661.

Deitch, M.,J., G.M. Kondolf, and A.M. Merenlender. 2009. Hydrologic impacts of small-scale instream diversions for frost and heat protection in the California wine country. *River Research and Applications* 25: 118-134.

Deitch, M.J., G.M. Kondolf, and A.M. Merenlender. 2009. Surface water balance to evaluate the hydrological impacts of small instream diversions and application to the Russian River basin, California, USA. *Aquatic Sciences: Marine and Freshwater Ecosystems* 19: 274-284.

Kondolf, G.M., P. Angermeier, K. Cummins, T. Dunne, M. Healey, W. Kimmerer, P.B. Moyle, D. Murphy, D. Patten, S. Railsback, D. Reed, R. Spies, and R. Twiss. 2008. Prioritizing river restoration: Projecting cumulative benefits of multiple projects: an example from the Sacramento-San Joaquin River system in California. *Environmental Management* 42:933-945 (DOI: 10.1007/s00267-008-9162-y)

Rovira, A., and G.M. Kondolf. 2008. Bed mobility on the Deschutes River, Oregon: tracer gravel results. *Geodinamica Acta* 21:11-22.

Tompkins, M.R., and G.M. Kondolf. 2007. Systematic post-project appraisals to maximize lessons learned from river restoration projects: Case study of compound channel construction projects in Northern California. *Restoration Ecology* 15(3):524-537.

Kondolf, G.M., S. Anderson, R. Lave, L. Pagano, A. Merelender, and E. Bernhardt. 2007. Two decades of river restoration in California: What can we learn? *Restoration Ecology* 15(3):516-523.

Kondolf, G.M., H. Piégay, and N. Landon. 2007. Changes since 1830 in the riparian zone of the lower Eygues River, France. *Landscape Ecology* 22:367-384.

Simon, A., M. Doyle, G.M. Kondolf, F.D. Shields, Jr., B. Rhoads, and M. McPhillips. 2007. Critical evaluation of how the Rosgen classification and associated "natural channel design" methods fail to integrate and quantify fluvial processes and channel response. *Journal of the American Water Resources Association* 43(5):1117-1131.

Kondolf, G.M. River restoration and meanders. 2006. *Ecology and Society*. [online] URL: <http://www.ecologyandsociety.org/vol11/iss2/art42/>

Kondolf, G.M., A. Boulton, S. O'Daniel, G. Poole, F. Rahel, E. Stanley, E. Wohl, A. Bang, J. Carlstrom, C. Cristoni, H. Huber, S. Koljonen, P. Louhi, and K. Nakamura. 2006. Process-based ecological river restoration: Visualising three-dimensional connectivity and dynamic vectors to recover lost linkages. *Ecology and Society* 11 (2): 5. [online] URL: <http://www.ecologyandsociety.org/vol11/iss2/art5/>

Kondolf, G.M., and R.J. Batalla. 2005. Hydrological effects of dams and water diversions on rivers of Mediterranean-climate regions: Examples from California. In C. Garcia and R.J. Batalla (eds.) *Catchment dynamics and river processes: Mediterranean and other climate regions*. Elsevier, London. pp.197-211.

## BOOKS

Kondolf, G.M., and H. Piégay, eds. 2003. *Tools in fluvial geomorphology*. John Wiley & Sons, Chichester, 696 pp.  
(Reviewed in *Annals of the Association of American Geographers* 95(3):713-715, 2005.)

**RECENT PAPERS PUBLISHED IN SYMPOSIA PROCEEDINGS AND BOOK CHAPTERS**

Kondolf, G.M., and Podolak K. 2011. Urban rivers: Landscapes of leisure and consumption. In PM Santos and PC Seixas, eds. *Globalization and Metropolization – theory and practice from Europe's west coast*. Institute of Governmental Studies, Berkeley (in press)

Kondolf, G.M. The espace de liberté and restoration of fluvial process: When can the river restore itself and when must we intervene? *River Conservation and Restoration*, P. Boon & Paul Raven, editors. John Wiley & Sons, Chichester. (in press)

Bouleau, G. and G.M. Kondolf. 2011. Rivers of diversity: evolving water regulation in California and the European Union. in *Transatlantic Regulatory Cooperation: The Shifting Roles of the EU, the US and California*. D. Vogel and J. Swinnen, eds. Edward Elgar, Cheltenham, UK. pp. 83-101.

Kondolf, G.M. and Piégay, H. 2010. Geomorphology and society. Chapter 6 in *Handbook of Geomorphology*, K. Gregory, ed., SAGE Publications, London, pp.105-117.

Wohl, E., A. Chin, J. Haltiner, and G.M. Kondolf. 2010. Managing stream morphology with check dams. In C.C. Garcia and M.A. Lenzi (eds), *Check Dams, Morphological Adjustments*. Nova Science Publishers, Inc. pp.135-149.

Kondolf, G.M. 2009. An environmental perspective in city-river relationships. in *Cities and rivers, perspectives towards a sustainable partnership*, Livro nº 8 da Coleção Expoentes, edições da PARQUE EXPO, através do Núcleo de Comunicação da Parque EXPO, Lisbon.

Kondolf, M. 2009. Rivers, meanders, and memory. pp. 106-119 in M. Treib, ed., *Spatial Recall*, Taylor & Francis (Routledge)

Church, M., T.P. Burt, V.J. Galay, and G.M. Kondolf. 2009. Rivers. Chapter 4 in O. Slaymaker T. Spencer, and C. Embleton-Hamann, editors, *Landscape change in the 21st century*, Cambridge University Press.

Kondolf, G.M., L. A. Mazingo, S. Anderson, and J.R. McBride. 2009. Teaching ecological restoration of rivers and streams. *The Berkeley Chronicle* Spring 2009: 171-188.

Kondolf, G.M., and G. Zolezzi. 2008. Reference river ecosystems: historical states, best ecological potential, and management challenges. pp.1047-1050 in *River Restoration 2008*, Proceedings of the IVth European Center for River Restoration Conference, Venice, June 2008. B. Guimiero, M. Rinadi, and B. Fokkens, eds.

Eisenstein, W., and G.M. Kondolf. 2008. Planning water use in California. *Access* 33 (Fall 2008):8-17. Available online: <http://www.ucte.net/access/33/Access%2033%20-%2003%20-%20Water%20Use%20in%20California.pdf>

Kondolf, G.M., J.G. Williams, T. Horner, and D. Milan. 2008. Assessing physical quality of spawning habitat. pp.249-274 in D. Sear, P. DeVries, and S. Greig (eds.) *Salmon spawning habitat in rivers*:

*Physical controls, biological responses, and approaches to remediation.* American Fisheries Society Symposium 65. American Fisheries Society, Bethesda, MD.

Wohl, E., M. Palmer, and G.M. Kondolf. 2008. River management in the United States. pp. 174-200 in G.J. Brierly and K.A. Fryirs (eds.) *River Futures: An integrative scientific approach to river repair.* Island Press, Washington.

Kondolf, G.M., and C-N. Yang. 2008. Planning river restoration projects: Social and cultural dimensions. pp.43-60 in D. Sear and S. Darby (eds.) *River Restoration: Managing the Uncertainty in Restoring Physical Habitat.* Wiley, Chichester.

Kondolf, G.M. 2006. When dams get old: Dam removal in western North America pp. 373-376 in Lanz, K., Mueller, L., Rentsch, C., and Schwarzenbach, R. P. eds.: *Who owns the water? (Wem gehoert das Wasser?)*, Baden, Switzerland, Lars Müller Publishers. 536 pages.

Kondolf, G.M. 2006. River and stream restoration. In American Planning Association *Planning and urban design standards* (pp. 122-124). John Wiley & Sons, Hoboken, N.J.

Kondolf, G.M. 2006. Floodplains and riparian corridors. In American Planning Association *Planning and urban design standards* (pp. 118-121). John Wiley & Sons, Hoboken, N.J.

Kondolf, G.M. 2006. Rivers and streams. In American Planning Association *Planning and urban design standards* (pp. 115-117). John Wiley & Sons, Hoboken, N.J.

## **RECENT TECHNICAL REPORTS**

Serra-Llobet, A., G.M. Kondolf, and S. Nicholson. 2012. *Wise Use of Floodplains: Adaptation in America and Europe.* Proceedings from March 2012 workshop (in preparation)

Simons, C.W., and G.M. Kondolf, editors. 2012. Crossings: Natural and Cultural Values for Sustainable Development of the Naturtejo Geopark. *Institute of Urban and Regional Development Working Paper* No. 2012-01. University of California, Berkeley. Available online at: <http://www.iurd.berkeley.edu/publications/wp/wp-2012-01.pdf>

Kondolf GM, et al. 2011. Connecting Cairo to the Nile: Renewing life and heritage on the river. *Institute of Urban and Regional Development Working Paper* No. 2011-007. University of California, Berkeley. Available online: <http://laep.ced.berkeley.edu/research/cairo/publication/>

Stein, ED, K Vyverberg, G M Kondolf, and K Janes. 2011. Episodic stream channels: imperatives for assessment and environmental planning in California. Proceedings of a special technical workshop, November 2010, Costa Mesa, California. *Southern California Coastal Water Research Project Report* No. 0645.

Kondolf, G.M., K. Podolak, and A. Gaffney (editors). 2010. From High Rise to Coast: Revitalizing Ribeira da Barcarena. Water Resources Center Report No.210, and Report WP 2010-01, Institute of Urban and Regional Development, and Institute of European Studies Publication 1102, University of California, Berkeley. Available online at

[http://iurd.berkeley.edu/catalog/Working\\_Paper\\_Titles/High\\_Rise\\_Coast\\_Revitalizing\\_Ribeira\\_da\\_Barcarena](http://iurd.berkeley.edu/catalog/Working_Paper_Titles/High_Rise_Coast_Revitalizing_Ribeira_da_Barcarena) and at <http://escholarship.org/uc/item/3q77s4ss#page-2>

Kondolf, G.M., P. Carling, F. Fruchart, & C. Alford. 2010. Potential Post-Dam Changes in Sediment Supply and Channel Form in the Lower Mekong River: A Preliminary Assessment. Prepared for the Mekong River Commission Secretariat, Vientiane, February 2010

Mekong River Commission. 2009. *Design guidelines for Mekong Mainstem Dams*. (contributed approximately half of this document, specifying approaches for managing sediment in reservoirs) March 2009.

Kondolf, G.M. 2009. Restoration prospects for the Apalachicola River. Report to American Rivers, Washington, DC.

Kondolf, G.M. 2009. Guidelines for sand and gravel mining in Korean Rivers. Report submitted to K-Water (Korean Water Agency), May 2009.

Natali, J., G.M. Kondolf, C. Landeiro, J. Christian-Smith, S. Scheuer, and T. Grantham. 2009. A Living Mediterranean River: Restoration and Management of the Rio Real in Portugal to Achieve Good Ecological Condition. Available online at <http://repositories.cdlib.org/wrc/contributions/209>

Skabelund, L., G.M. Kondolf, C. Johnson, and A. Bukojemsky. 2009. Successful ecological restoration: A framework for planning/design professionals. American Association of Landscape Architects, Washington DC.

H. T. Harvey & Associates, G. M. Kondolf, Geomorph, Blankinship & Associates. 2008. Final Colusa Basin Watershed Assessment. Prepared for the Colusa County Resource Conservation District.

Kondolf, G.M., Tompkins, M.R, and McBain & Trush, Inc. 2008. Lower Deer Creek Ecosystem Restoration and Flood Management: Feasibility Study and Conceptual Design Project: Geomorphic and Biological Monitoring Report. Report to Deer Creek Watershed Conservancy, Vina, California.

Grantham, T., J. Christian-Smith, G.M. Kondolf, and S. Scheuer. 2008. A Fresh Perspective for Managing Water in California: Insights from Applying the European Water Framework Directive to the Russian River. Water Resources Center Report 208. Available on line: [http://www.lib.berkeley.edu/WRC/WRC/pubs\\_contri.html#208](http://www.lib.berkeley.edu/WRC/WRC/pubs_contri.html#208)

Kondolf, G. M. and Stillwater Sciences. 2007. Sacramento River Ecological Flows Study: Off-Channel Habitat Study Results. Technical Report prepared for The Nature Conservancy, Chico, California by G. Mathias Kondolf and Stillwater Sciences, Berkeley, California. Available online at: <http://www.delta.dfg.ca.gov/erp/sacriverecflows.asp>

Gohar, A., and G.M. Kondolf. 2007. Flooding risks in El-Sheikh el-Shazli. Report to US Agency for International Development, Cairo, September 2007. Available online at: <http://landscape.ced.berkeley.edu/~kondolf/LivingCoast/>

Anderson, S., R. Jencks, G.M. Kondolf, J. Natali, and G. Saraiva. 2007. New life for urban streams: strategies for revitalizing waterways in the Lisbon metropolitan region. Report published by the



Department of Landscape Architecture, University of California, Berkeley, and the Luso-American Fund for Development, Lisbon, May 2007. Online at <http://ies.berkeley.edu/psp/portuguesestudies/research.html#streams>

Eisenstein, W., G.M. Kondolf, and J.R. Cain. 2007. *ReEnvisioning the delta: alternative futures for the heart of California*. Institute for Urban and Regional Development, University of California, Berkeley. Available online at: <http://landscape.ced.berkeley.edu/~delta/>

National Research Council. 2007. *Hydrology, Ecology, and Fishes of the Klamath River Basin*. (member of committee, contributed to sections on models, Klamath River, and evaluation of water balance model and instream flow model) available online at: <http://dels.nas.edu/dels/viewreport.cgi?id=4794>

H.T. Harvey and Associates and G. M. Kondolf. 2006. Stony Creek Watershed Assessment, Volumes I (Lower Stony Creek Watershed Analysis) and II (Existing Conditions). Report to Glenn County Resource Conservation District, Willows, California.

National Park Service. 2006. Point Reyes National Seashore Water and Aquatic Resources Stewardship Plan, Draft. (co-authored with L. Pagano, B.Ketcham, D. Vana-Miller). Point Reyes National Seashore, Point Reyes, California.

Kondolf, G.M. 2005. Expert report of Professor G. Mathias Kondolf, PhD. Submitted in NRDC et al. vs. US Bureau of Reclamation. (Assessment of restoration potential of San Joaquin River below Friant Dam, August 2005)

## **RECENT AWARDS AND FELLOWSHIPS**

Appointed Clarke Scholar at the Institute for Water Resources, US Army Corps of Engineers, Washington DC, 2011 and 2012.

Council of Educators in Landscape Architecture. Award of Distinction, 2007.

Fulbright Commission, senior scholar research award to conduct research on environmental river management in Portugal, University of Lisbon, Mar-May 2001.

Fulbright Commission, senior scholar research award to conduct research on the Eygues River, France, 1997-1998.

## **RECENT PROFESSIONAL SYMPOSIA ORGANIZED**

### ***Wise Use of Floodplains: Adaptation in America and Europe***

March 2012. UC Berkeley. (Organized with Anna-Serra Llobet and Scott Nicholson) This workshop explored the range of tools available for managing floodplains, from geomorphic risk-informed land-use policies and setting aside flood bypasses, to structural approaches such as construction of dams and levees, advancing a framework for 'wise use' of floodplains. Focusing on resilient communities and sustainable floodplains, the speakers drew examples from large river floodplains (mostly Sacramento and Mississippi River valleys) and from constrained urban river floodplains. Speakers included Melissa Samet, National Wildlife Federation; Chuck Shadie, USACE Mississippi Valley Division; John Andrew

and Rod Mayer, California Department of Water Resources; Tim Washburn, Sacramento Area Flood Control Agency; John Cain, American Rivers; Graça Saraiva, Technical University of Lisbon; Anna Serra Llobet, UC Berkeley and formerly EU Commission Brussels; Dale Morris, Embassy of Netherlands, Washington; Ken Leep, Association of State Floodplain Managers; Mark Tompkins, Newfields River Basin Services; Jeff Romm, UC Berkeley; Todd Strole, The Nature Conservancy; Shana Udvardy, American Rivers; Rachael Marzion, Zan Rubin and Raymond Wong, UC Berkeley; Jim Fielder, Executive Director Santa Clara Valley Water District; Jack Curley, Marin County Flood Control and Water Conservation District; Ralph Johnson, Alameda County Flood Control and Water Conservation District; Mitch Avalon, Contra Costa County Flood Control and Water Conservation District; Bill DeGroot and David Mallory, Denver Urban Drainage and Flood Control District; Shana Udvardy, American Rivers; Len Materman, San Francisquito Creek Joint Powers Authority; Liang Xu, Santa Clara Valley Water District.

***Episodic Stream Channels: Imperatives for Assessment and Environmental Planning in California.***

November 2010. Costa Mesa, California. (organized with Kris Vyverberg of the California Department of Fish and Game and Eric Stein of the Southern California Water Resources Research Program). The purpose of this symposium was to educate the public and decision makers about the nature and importance of episodic streams, including ephemeral dryland streams and Mediterranean-climate intermittent streams. Speakers: Eric Stein, SCCWRP; Matt Kondolf; Kris Vyverberg, California Dept of Fish & Game (CDFG); Jonathan Friedman, US Geological Survey; Derek Booth, Stillwater Sciences; Brian Bledsoe, Colorado State Univ; Jeremy Lancaster, California Geological Survey; Lainie Levick, USDA; Sophie Parker, The Nature Conservancy (TNC); Barry Hecht, Balance Hydrologics; Laurel Marcus, California Land Stewardship Institute; Bill Christian, TNC; Tom Spittler, California Geological Survey; Andy Collison, Philip Williams and Associates; Katherine Curtis, US Army Corps of Engineers (USACE); Todd Keeler-Wolf, CDFG; Aaron Allen, USACE; Eric Berntsen, California State Water Resources Control Board; Deborah Hillyard, CDFG.

***Re-Envisioning the Delta***, March 16-17, 2006, University of California, Berkeley. Speakers: Margit Aramburu, former chair Delta Protection Commission; Ronald Baldwin, San Joaquin County Emergency Operations; Joseph Bodovitz, Bay Conservation and Development Commission, Coastal Commission; Peter Bosselmann, University of California, Berkeley (UCB); Jennifer Brooke, UCB; John Cain, Natural Heritage Institute; Marci Coglianesi, former mayor of Rio Vista, former member Delta Protection Commission; Joseph T. Edmiston, Santa Monica Mountains Conservancy; Phyllis Faber, University of California Press; Dan Farber, UCB Boalt School of Law; Harrison Fraker, UCB; Joseph Grindstaff, California Bay Delta Authority; Hans Johnson, Public Policy Institute of California; Patrick Johnston, Bay Delta Authority, former state senator; John King, San Francisco Chronicle; Matt Kondolf, UCB; Keith H. Lichten, P.E., San Francisco Bay Regional Water Board; Louise Mozingo, UCB; Eric Parfrey, Yolo County Planning Department; Tom Philp, Sacramento Bee; Pete Rhoads, South Florida Water Management District; Christine Rosen, UCB Haas School of Business; Raymond Seed, UCB; J. William Thompson, FASLA, Landscape Architecture magazine; Robert Twiss, UCB; Kathleen Van Velsor, Association of Bay Area Governments; Thomas W. Waters, PE, SES, US Army Corps of Engineers; Michael Webb, California Building Industry Association; Carol Whiteside, Great Valley Center; Jane Wolff, Washington University; Tom Zuckerman, University Pacific, former counsel Central Delta Water District. Program and publications online at <http://landscape.ced.berkeley.edu/~delta/>

**APPENDIX 2**

THE INFLUENCE OF DREDGING ON THE  
DISCHARGE AND ENVIROMENT OF THE  
SAN JUAN RIVER

DELFT UNIVERSITY OF TECHNOLOGY

AUTHORS:

Prof. dr. ir C. VAN RHEE

Prof. dr. ir. H.J. DE VRIEND



---

# **The influence of dredging on the discharge and environment of the San Juan River**

---

DELFT UNIVERSITY OF TECHNOLOGY

*Authors:*

Prof. dr. ir. C. VAN RHEE

Prof. dr. ir. H.J. DE VRIEND

July 19, 2012

# Contents

Executive Summary .....	1
<b>1:Introduction .....</b>	<b>2</b>
<b>2: The Small Scale of Nicaragua’s DredgingProject .....</b>	<b>3</b>
2.1: The effect of the dredging on the flow distribution between the Colorado and San Juan rivers .....	3
2.2: The effect of the number of dredges working on the project.....	8
<b>3:Impact of Nicaragua’s modest dredging project .....</b>	<b>11</b>
3.1: The lack of appreciable environmental harm.....	11
3.2: The environmental benefits of the project .....	12
3.3: The importance of dredging.....	13
<b>Conclusion .....</b>	<b>15</b>

## Executive Summary

The report of Van Rhee and De Vriend (2011) (“VRDV 2011”) concluded that Nicaragua’s dredging of the San Juan River would only marginally increase the flow in the Lower San Juan (i.e., by 3 %), that this small increase in flow would cause no meaningful difference in the flow of the Colorado River, and that Nicaragua’s modest dredging program would cause no permanent environmental effects. These conclusions still stand today.

Thorne (2012) (“Thorne”) reviewed VRDV 2011 and performed hydraulic computations using the HEC-RAS model, obtaining significantly higher values for the extra discharge into the Lower San Juan River likely to be caused by Nicaragua’s dredging efforts. According to Thorne, the different outcomes were due to a different friction factor used and the fact that the HEC-RAS model is based on gradually varied flow while the model utilized in VRDV 2011 was based on uniform flow.

However, the present report shows that the choice of the friction factor does not have much influence. The large difference between the results of the models employed by VRDV 2011 and Thorne is caused by an incorrect dredging profile used by Thorne, which is much deeper and wider than the dredging project actually planned by Nicaragua. The present report demonstrates that, had the correct dredging profile been used, Thorne's model would have predicted an even smaller increase in discharge in the Lower San Juan River than estimated in VRDV 2011 using a uniform flow approach. In reality, the increased discharge in the Lower San Juan River is likely to be even less still, due to the fact that Nicaragua’s dredging program has been further reduced in scope since the preparation of VRDV 2011.

Another issue raised by Costa Rica is that three dredges have been used by Nicaragua instead of only one, as originally contemplated in the project’s Environmental Impact Study. This report explains it is not the number, but rather the type, capacity and efficiency, of dredges that determines the magnitude of a dredging project. The Environmental Impact Study discussed a range of dredges with varying capacities. Nicaragua’s current planned production is less than the amount that could have been dredged by one of the models mentioned in the Environmental Impact Study acting alone. Nicaragua’s actual production is even smaller still, due to the efficiency and mechanical problems of the three dredges currently in use. Even if Nicaragua were to procure the additional dredges being considered by EPN, the total production capacity would still be less than that of the larger dredges contemplated in the Environmental Impact Study.

Finally, this report explains that dredging in the San Juan River is not harmful but necessary to protect the environment in the Lower San Juan wetlands because the geological trend in the area leads to decreasing flows in the San Juan River.

# **Chapter 1:**

## **Introduction**

The central conclusion of VRDV 2011 was that the dredging project undertaken by Nicaragua to deepen the lower stretches of the San Juan River to a depth of 2 m over a bottom width of 20 m is a very limited intervention that will have a minimal to negligible effect on the flow of the Colorado River and similarly minimal environmental impacts, given the high natural sediment load of the San Juan River.

The actual performance of the dredging project to date has confirmed these conclusions. The output of the dredges has been lower than could have been expected, and extra dredging was needed at in the Delta stretch of the River – at the bifurcation with the Colorado River – as a result of rapid sedimentation.

Nothing in Costa Rica's Memorial or Thorne meaningfully challenges the conclusions reached in VRDV 2011. In fact, the available information, including the flow calculations prepared by Thorne, as well as the further reduced scope of the dredging project, indicates that the actual impacts of the project are going to be even less than concluded in VRDV 2011.



## Chapter 2:

# The Small Scale of Nicaragua's Dredging Project

In its Request for the Indication of Provisional Measures, Costa Rica claimed that Nicaragua's dredging of the San Juan River will cause a diversion of 1,700 m<sup>3</sup>/s, or the entire flow of the Colorado River, to the lower stretches of the San Juan River. VRDV 2011 predicted that the actual extra discharge in the Lower San Juan downstream from the bifurcation with the Colorado River as a result of Nicaragua's dredging activities would be between 20 - 50 m<sup>3</sup>/s, which would decrease the flow of the Colorado River by 3 % or less (VRDV, 2011). The conduct of the dredging program to date, including its further reduced scope, establishes that the calculation in VRDV 2011 – which predicted even less of a change in flow distribution than the 5 % or less calculated in Nicaragua's Environmental Impact Study – is actually too high. The flow increase in the Lower San Juan River, and the corresponding decrease in flow in the Colorado River, is likely to be less than 1.5 %.

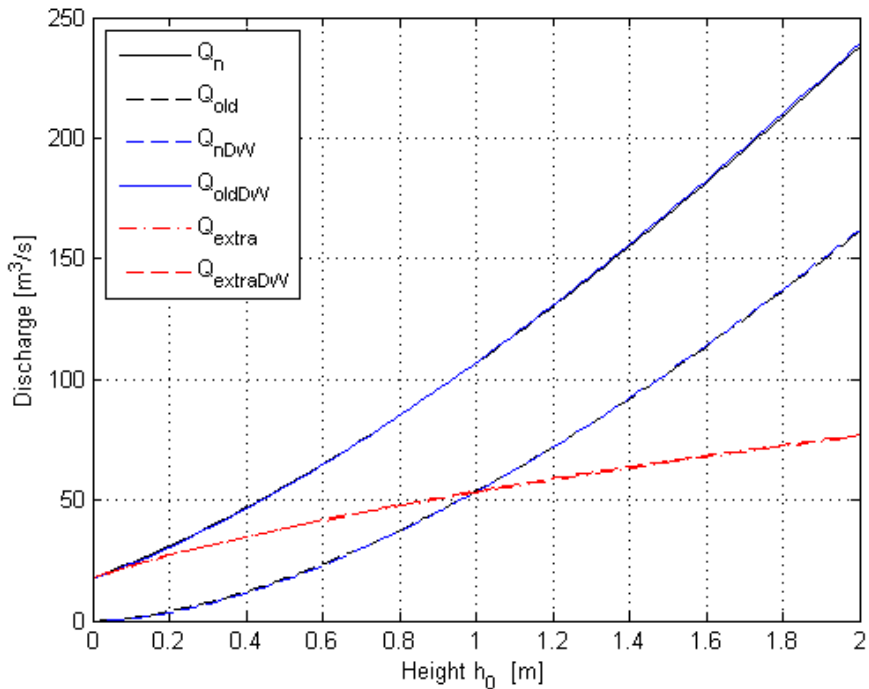
This chapter discusses the differences between the method applied in VRDV 2011 to estimate the extra flow into the Lower San Juan, and the method applied by Thorne to estimate this quantity. The chapter then investigates the effect of the actual number of dredges employed in the project. The conclusion to be drawn from both analyses is that Nicaragua's dredging program is extremely modest in scope.

### 2.1: The effect of the dredging on the flow distribution between the Colorado and San Juan rivers

VRDV 2011 estimated the effect that Nicaragua's project to dredge a navigation channel in the San Juan River – which at that point had been authorized but not yet undertaken in earnest – would have on the discharge of the San Juan River. Using Chezy and Manning's equations for steady uniform flow, the report estimated that the extra flow towards the Lower San Juan River would be only 20 - 50 m<sup>3</sup>/s, which is only around 3% of the discharge of the Colorado River (1400-1700 m<sup>3</sup>/s). Such a small change would not constitute a significant impact on the flow of the Colorado River (VRDV, 2011).

Thorne states that "a more sophisticated" model should be used to deal with the unsteady, non-uniform flow conditions in the Delta (Thorne, p. II-29). He also argues that the Darcy-Weisbach friction factor should be used instead of Manning's (Thorne, p. II-28). These criticisms are without foundation, and the conclusions Thorne draws from his analysis are incorrect. A change of friction formula cannot explain the large difference in results between the models.

VRDV 2011 applied the value of Manning's friction factor, and fit the value with the measured flow in the observed river profile. VRDV 2011 could also have used the Darcy-Weisbach friction factor and fit the value of that coefficient with the measured flow. The resulting influence of the dredged profile on the discharge would have been the same. This is clear from Figure 1, below, which shows the discharge calculated with the VRDV 2011 method (using Manning's friction factor in the Chezy equation, black lines) and using the Darcy-Weisbach friction factor in the Chezy equation (blue lines). It is clear that both methods produce the same result, as the black lines are under the blue lines due to the perfect alignment.



**Figure 1:** Influence of Manning's and Darcy-Weisbach friction factor on discharge.  $Q_{\text{extra}}$  is the extra flow in the Lower San Juan River using Manning's friction factor  $Q_{\text{extraDw}}$  is the extra flow calculated with the Darcy-Weisbach friction factor.

As to the model utilized in VRDV 2011, a uniform flow approach was applied in order to obtain a *conservative* estimate of the extra flow likely to continue from the San Juan into the Lower San Juan due to the dredging (i.e., a value of extra flow to the Lower San Juan that overestimates the actual change likely to result from Nicaragua's dredging activities). The equations utilized in VRDV 2011 are well founded, are commonly used, and can be found in every textbook on basic fluid mechanics or open channel flow (e.g., Fox and McDonald, 1994; Chow, 1959). In a situation with a bifurcation, it can easily be shown to always overestimate the extra discharge into the enlarged branch.

Thorne applies the USACE's HEC-RAS model to estimate the effect of river deepening on the flow distribution between the Colorado and San Juan rivers. This model is based on the assumption of gradually varied flow (Thorne, p. vii). With such a model, the flow in rivers with gradually varying width and depth and branches can be computed. Water depth and channel bed level are assumed to change slowly in space. The velocity is assumed to be distributed over the water column as in uniform flow, and the pressure distribution is assumed to be hydrostatic. These assumptions are the same as those underlying the model used in VRDV 2011. Table II.13 of Thorne's report shows the results for three different hypothetical "dredging scenarios". The table shows that the flow in the San Juan would increase to up to 30% (for Scenario 3) of the total flow in the San Juan River upstream from the Delta, where the Colorado River splits off to the south.

Thorne then concludes that his values are in contrast with the results "based on a uniform flow assumption by Van Rhee and de Vriend" (Thorne, p. II-36) – that is, the 3% flow increase in the Lower San Juan, on top of the 10-11% of the Upper San Juan's flow that currently continues into the lower stretches of the River, for a total of less than 15%. This suggests the difference in values to be due to the different models used. In fact, however, the difference between the values obtained in VRDV 2011 and the values obtained by Thorne is due to the latter's incorrect assumption of how and to what extent Nicaragua's dredging activities will alter the cross-sectional profile in the San Juan River.

First of all, it is not clear whether Thorne's model was built using the correct data. As the underlying information has not been provided, it is impossible for us to reproduce the model and test Thorne's conclusions. Even if the model was built using the right data, however, Thorne's conclusions are incorrect because he used the model to calculate the results of incorrect dredging scenarios.

VRDV 2011 assumed that – consistent with its environmental authorization – EPN would restore a navigation channel of 20-30 m wide (20 m on the lower section, and 30 m on the upper section) in the existing river by deepening the riverbed to only 2 m across such widths (MARENA Resolution No. 038-2008). In contrast, Thorne has assumed that Nicaragua's dredging efforts will involve the dredging of much wider navigation channels, even wider than the existing river (Thorne, p. II-36). His assumed scenarios, as well as the baseline scenario used in his analysis, are summarized in the table below:

**Table 1:** Depth and Width of Thorne's Dredging Scenarios

<b>Dredging Scenario</b>	<b>Depth [m]</b>	<b>Width [m]</b>	<b>Discharge [m<sup>3</sup>/s]</b>
Original Situation	4.75	90	287.4
Thorne Scenario 1	5.75	120	368.26
Thorne Scenario 2	6.75	150	440.12
Thorne Scenario 3	7.75	180	502.99

Table 1 shows that Thorne's results depend on the assumption that the river will be deepened over its total width, which will be substantially enlarged itself. For a deepening of 1 m (Thorne Scenario 1), he assumes that the total width of the river will be increased by 30 m (i.e., from 90 m to 120 m), whereas for the 3 m deepening (Thorne Scenario 3)

the total width of the river will be doubled, from the original 90 m to 180 m, with the entire width being dredged to a depth of 3 m.

The increases in flow area for the different scenarios, including the scenario used in VRDV 2011, are summarized in Table 2. Clearly, it is the large difference between the cross-sectional geometries put into the flow calculations that is responsible for the different outcomes, and not the difference in model concept or friction formula.

**Table 2:** Increase in Flow Area and Discharge

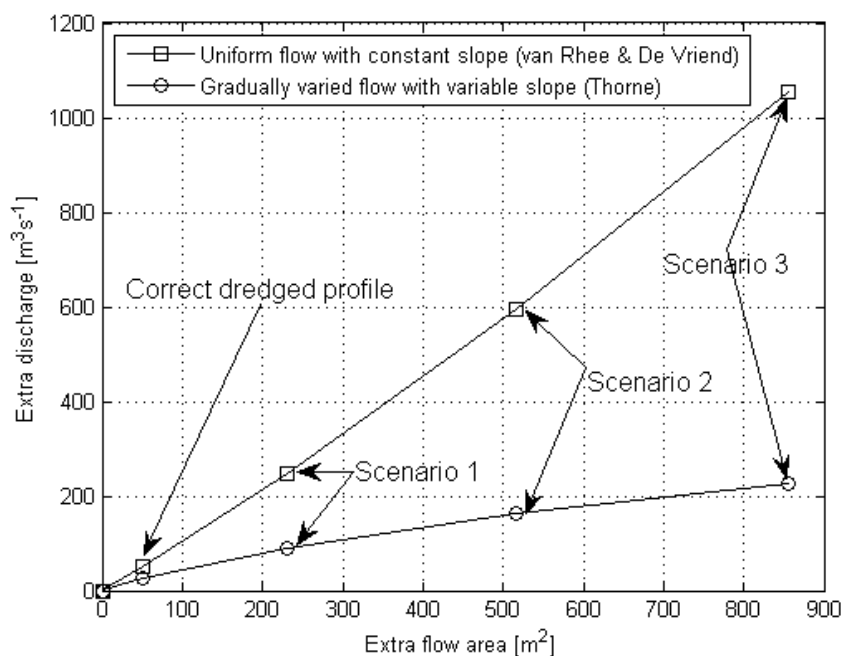
Dredging Scenario	Increase in flow area [m <sup>2</sup> ]	Increase in Discharge [m <sup>3</sup> /s]
Van Rhee & De Vriend (2011)	50	50
Thorne's Scenario 1	231	80.6
Thorne's Scenario 2	516	152.72
Thorne's Scenario 3	855	215.59

It is not clear why, in running his model, Thorne has so drastically deviated from the authorized dredging profiles. Neither is it clear over which length of the river these enlarged sections are applied. The length of the dredged section in the Delta stretch of the river (from Reyes up to 1.3 km upstream of Delta) is 6,650 m (EPN, 2012). If it is assumed that this section was widened in Thorne's HEC-RAS model, the dredging volume to achieve the modeled river profile would vary between 231 m<sup>2</sup> x 6,650 m = 1,536,150 m<sup>3</sup> (Thorne's Scenario 1) and 855 m<sup>2</sup> x 6,650 m = 5,685,750 m<sup>3</sup> (Thorne's Scenario 3). These volumes are much larger than the volume currently planned to be extracted along the *total* length of the dredging works – 395,395 m<sup>3</sup> over a length of 32.8 km (EPN, 2012) – and they are therefore unrealistic.

Indeed, EPN reports that it plans to extract only 99,300 m<sup>3</sup> from the Delta stretch (EPN, 2012). If this planned dredging volume is divided by the length of the stretch, the extra cross-sectional area is 14.9 m<sup>2</sup>, which is less than the 50 m<sup>2</sup> used for the calculations in VRDV 2011. The difference between these two values is consistent with the reduced scope of the dredging project (EPN, 2012; Quintero, 2011).

It is striking that the increase in flow calculated with Thorne's HEC-RAS model is actually moderate relative to the results of the less complicated but more conservative approach applied in VRDV 2011. The ratio between the increase in flow area between Thorne's Scenario 3 and the dredged profile analyzed in VRDV 2011 is 855 m<sup>2</sup>/50 m<sup>2</sup> = 17.1, while the ratio of extra discharge is only 216 m<sup>3</sup>s<sup>-1</sup> / 50 m<sup>3</sup>s<sup>-1</sup> = 4.32. This is due to the fact that the local slope and water level of the river is also influenced by enlarging the profile in the gradually varying depth approach of HEC-RAS. This slope will decrease with the enlargement, which will tend to reduce the discharge increase. In the uniform flow approach applied in VRDV 2011, the effect of the reduced surface slope was not taken into account, making the approach more conservative. That is, for both the original and the dredged river profiles the same slope was used in the VRDV 2011 analysis. This means that, if the HEC-RAS model were run based on inputs stemming from the planned dredging profile as applied in VRDV 2011, the extra discharge to the San Juan would be even less than 50 m<sup>3</sup>/s, because the river slope for the dredged profile would be less than in the VRDV 2011 calculations.

The uniform flow approach applied in VRDV 2011 consistently over-estimates the effect of dredging on the discharge in the Lower San Juan River. This becomes clear when the effects of Thorne's Scenarios 1, 2 and 3 are analyzed using the VRDV 2011 uniform flow approach (see Figure 2). Figure 2 shows the influence of the extra flow area due to dredging on the extra discharge in the Lower San Juan computed with the two different methods. The figure clearly demonstrates that the uniform flow approach is conservative in comparison to Thorne's HEC-RAS model. For the area of interest (the planned 50 m<sup>2</sup> profile enlargement near the origin of the graph), the VRDV 2011 approach produces the value of 50 m<sup>3</sup>/s, whereas Thorne's gradually varied flow approach would yield a lower value of approximately 20 m<sup>3</sup>/s.



**Figure 2:** Extra discharge in the Lower San Juan River as function of the extra flow area.

Clearly, if the revised and further reduced dredging scope were to be used in the calculations, the extra discharge would be even less.

The proper conclusion is therefore that the application of a "more sophisticated model developed during the 20<sup>th</sup> and 21<sup>st</sup> centuries" (Thorne, p. II-29) – which Thorne insists is a more appropriate approach (although the gradually varied flow approach was, in fact, also developed before the 20<sup>th</sup> century) – would lead to an even lower computed extra discharge into the San Juan River than was estimated in VRDV 2011.

## 2.2: The effect of the number of dredges working on the project

In paragraphs 3.82 and 5.108 of Costa Rica's Memorial, an issue is made of the fact that, although the Environmental Impact Study for Nicaragua's dredging program contemplated the use of one dredge, Nicaragua has in reality been using three dredges. The argument appears to be that Nicaragua's program is not actually a modest dredging effort. This argument is both misleading and incorrect.

The use of more dredges does not necessarily result in a project that is larger in scope. One larger and more efficient dredge may be able to complete more dredging per unit time than three smaller, less efficient dredges. The amount actually extracted by each dredge will depend on its capacity and efficiency.

Average production capacity is calculated by multiplying the production of the dredge when it is actually working by an efficiency factor. The efficiency factor can be expressed in the number of hours dredging per week ("operational hours" or "OH") divided by the total number of hours per week ("service hours"). For a cutter suction dredge in a good technical condition, working in a sheltered environment (no wave influence), a typical efficiency factor is 68 %.

In the Environmental Impact Study, it was contemplated that the dredging would be conducted by cutter suction dredges. The following table of possible models was included at pages 18-19 of that Study:

TYPE OF DREDGER	Pump Capacity Kw (hp)	Diameter of Suction and Discharge Pipes (m)	Cutter Capacity Kw (hp)	Dredging Depth (m)
IHC Beaver 300	175 (238)	0.26 / 0.26	30 (40)	6
IHC Beaver 600	390 (530)	0.40 / 0.40	52 (70)	8
IHC Beaver 1200	610 (830)	0.45 / 0.45	110 (150)	10
IHC Beaver 1600	835 (1140)	0.55 / 0.50	170 (230)	14 (16)
IHC Beaver 2400	1275 (1735)	0.60 / 0.55	294 (400)	14 (16)
IHC Beaver 3800	1846 (2510)	0.70 / 0.65	552 (750)	16 (18) (20)
IHC Beaver 4600 MP	2x1275 (2x1735)	0.75 / 0.70	552 (750)	16 (18) (20)
IHC Beaver 8000 MP	2x1680 (2x2285) 1x919 (1x1250)*	0.80 / 0.75	883 (1200)	22

Dredges of this nature are known in the dredging industry to have production capacities ranging from 200 m<sup>3</sup>/h (IHC Beaver 300) up to 2,000 m<sup>3</sup>/h (IHC Beaver 8000). Specifically, the approximate maximum production capacities of the 8 dredges listed in the Environmental Impact Study are provided in Table 3, below.

**Table 3:** Production Capacity of Dredge Models Listed in EIS

Dredge	Approximate Max. Production Capacity [m <sup>3</sup> /h]
IHC Beaver 300	200
IHC Beaver 600	400
IHC Beaver 1200	500
IHC Beaver 1600	700
IHC Beaver 2400	850
IHC Beaver 3800	1,200
IHC Beaver 4600	1,600
IHC Beaver 8000	2,000

The total production per week of such dredges depends, apart from the efficiency, on the number of service hours per week. The following table provides an idea of weekly output for different numbers of service hours, taking the IHC Beaver 1200 dredge with a capacity of 500 m<sup>3</sup>/h as an example.

**Table 4:** Estimated Weekly Production of IHC Beaver 1200 Dredge

	Service Hours	Weekly Output (eff = 68%) [m <sup>3</sup> ]
7 days per week, 24 hrs per day	168	57,120
7 days per week, day-time shift (8 hrs)	56	19,040
5 days per week, day time shift (8 hrs)	40	13,600

In contrast, the three dredges actually utilized by Nicaragua to date are two cutter suction dredges (Soberanía 1 and Soberanía 3) and an auger dredge (Soberanía 2)<sup>1</sup>. The Soberanía 3 is smaller than the IHC Beaver 300, the smallest dredge contemplated in the EIS. The Soberanía 1 can be compared with a IHC Beaver 1200. The Soberanía 2 is a very small dredge, smaller than all the dredges listed in the Environmental Impact Study and not very effective for this project. The maximum production capacities demonstrated by these three Nicaraguan dredges are provided in Table 5, below:

---

<sup>1</sup> Dredges of this type and capacity are very small compared with the Trailing Suction Hopper Dredger 'Lelystad' (total installed power 15,976 kW) employed in 2011 in Costa Rica at port Moin where 1,200,000 m<sup>3</sup> was dredged to deepen the access channel. See Van Oord equipment info sheet; <http://costarica.nlabassade.org/nieuws/2011/01/baggerbedrijf-van-oord-dredging-begonnen-met-werkzaamheden-in-haven-moin.html>; <http://the-7-seas.blogspot.nl/>.

**Table 5:** Production Capacity of Nicaraguan Dredges Used to Date (EPN, 2012)

Nicaraguan Dredge	Production Capacity [m <sup>3</sup> /h]
Soberanía 1	300
Soberanía 2	10
Soberanía 3	120
<b>TOTAL</b>	<b>430</b>

Thus, it is not true that Nicaragua's use of these three dredges renders its project larger than the one-dredge project contemplated in the Environmental Impact Study, in which dredges with a capacity of 500 to 2000 m<sup>3</sup>/h were mentioned. Even if Nicaragua's three dredges would have worked perfectly at all times, the combined production of these dredges would be not more than 500 m<sup>3</sup>/h.

Moreover, Nicaragua's three dredges have not actually worked as well as they might have. During all of 2011 (12 months) the total production of the three dredges together was 180,595 m<sup>3</sup> (EPN, 2012), which equals an average weekly production of only 3,762 m<sup>3</sup>. Thus, the three dredges together produced less than 28 % of the expected output of only one dredge of the IHC Beaver 1200 type (which was in the lower range of the dredges contemplated in the EIS), even if such a dredger were only working only 5 days per week (i.e., 13,600 m<sup>3</sup>) (see Table 4, above). The reason for this very low performance is:

- One of Nicaragua's dredges (Soberanía 2) is a small kind of auger dredge, unsuitable for these soil conditions. Only 500 m<sup>3</sup> were dredged by this dredge in one year.
- Low efficiency of Soberanía 1 (only 22%).
- Low efficiency of Soberanía 3 (only 15%).

Due to their very low output, the total production of the three dredges Nicaragua has utilized to date was much less than one dredge normally can achieve, and certainly less than would have been achieved by one of the larger dredges originally contemplated in the Environmental Impact Study.

EPN is aware that its existing dredges are not optimal, and both the refurbishment of the dredges and the procurement of new dredges are being contemplated. If the latter option is pursued, EPN suggests the purchase of 2 additional cutter suction dredges similar to the Soberanía 3 (EPN, 2012), which, as noted, has demonstrated a maximum production capacity of 120 m<sup>3</sup>/h. Even if such dredges are in fact procured, they could – at optimum efficiency – only dredge approximately 150 m<sup>3</sup> per hour each. Thus, if two such dredges are added to the existing three dredges already being used on the project, the total production capacity would be less than 800 m<sup>3</sup>/h, which is still less than half of what could have been accomplished by *one* of the larger dredges contemplated in the Environmental Impact Study.



## Chapter 3:

# Impact of Nicaragua's modest dredging project

### 3.1: The lack of appreciable environmental harm

In VRDV 2011 it was concluded that, although the sediments in the bed of the San Juan River are sandy, some fine sediment will be suspended during the dredging activities. The plume formed as a result will extend down river until it settles down to such an extent that the suspended sediment concentration is back at the background level. Since the background suspended sediment concentration in the San Juan River is significant (a fact confirmed by Thorne, who reports values up to 1,000 ppm in December 2010 – Thorne, p. II-32), and the increase in concentration will be only temporary, the effect on water quality and local species was expected to be minimal. The latest information confirms these conclusions.

Apart from the deposition of dredged sediment, which in this case is taking place exclusively on the Nicaraguan side of the river, the primary environmental impacts of dredging activity are the suspension of sediments into the water column and alterations in the hydrodynamic patterns of the waterway, which can affect species.

However, as explained in VRDV 2011, the San Juan River is both naturally turbid and relatively stable, such that both its water quality and hydrodynamics are likely to suffer little impact as a result of Nicaragua's modest dredging efforts. Thorne actually confirms this conclusion, stating "Natural high sediment and nutrient concentrations in the river are likely to limit impacts on turbidity and water quality that are customary associated with dredging" (Thorne, p. vii).

Another important fact is that the San Juan and Colorado Rivers experience seasonal flow variations that are much greater than the change in discharge that is likely to result from Nicaragua's dredging activities. In other words, the rivers themselves as well as all of the species who live in or rely upon them are accustomed to more fluctuation than the dredging will cause. This is another indicator that any negative environmental effect of Nicaragua's modest activities will be insignificant.

### 3.2: The environmental benefits of the project

Nicaragua's dredging program actually contributes to preserving the environment. As Thorne correctly notes, river discharges to the Lower San Juan River will gradually decrease without dredging due to the geological trends in the area (Thorne, p. II-10). Apart from the navigation problems that already exist and will only be exacerbated if the flow decreases, such a process will have a very adverse environmental effect on the wetlands that are fed and sustained by the lower reaches of the San Juan River (Ramsar, 2011). Thus, Nicaragua's dredging program is not only necessary to ensure the navigability of the waterway, but also helps to ensure the survival of the wetlands of international importance that rely upon the River and its continued flow, including Nicaragua's *Refugio de Vida Silvestre Rio San Juan* and Costa Rica's *Humedal Caribe Noreste*.

Moreover, with the reduced river flows, sediment transport to the mouth of the San Juan will also decrease, which will have a detrimental effect on the morphology of the coastal area. Erosion of the coast line that is no longer receiving sediment deposits from river flow will be the inevitable result, together with the associated loss of natural habitat and other environmental consequences. This process is already underway as a result in the reduction in the San Juan's flow since the nineteenth century, which – as is clear from Thorne's analysis of the geomorphology of the delta region – has, along with other factors, already led to the disappearance of much land at the coast (Thorne, Part I). Thus, Nicaragua's efforts to dredge the Lower San Juan and maintain flow to the Sea contribute to preventing future geomorphological change that would result in environmental harm.

The main origin of the suspended sediments is surface erosion in the catchment area of the river. In this respect, the road construction project over a long distance on Costa Rican territory parallel and very close to the River should be mentioned. Over a large area, substantial vegetation has been removed and no measures have been taken to keep sediment-laden surface runoff during heavy rainfall from flowing into the river (Costa Rican Environmental Management Plan, 2012; CFIA Report, 2012). This influx will have a notable effect on the total sediment concentration in the river and will increase sedimentation. It is not unlikely that the decrease in river flows measured in 2011 and 2012 are related to this influence of the road construction (INETER, 2012).

### 3.3: The importance of dredging

All around the world, dredging has played and continues to play a very important role in the achievement and maintenance of economic growth and prosperity that is vital to social and economic development. In particular, dredging is vital to the construction and maintenance of much of the infrastructure upon which economic prosperity and social well-being depend. It is also an important tool for restoring and enhancing the natural environment. The enormous increase in global trade and transport, together with key demographic developments like a large population growth in coastal areas, have created demands that could not possibly be met without dredging (Call for papers WODCON XX Conference).

Indeed, almost all major rivers and ports in the world require capital and maintenance dredging in order to stay navigable, although in many cases hydraulic structures such as groynes are also in place to concentrate flow at low river discharge (*see* Figure 3).



**Figure 3:** Typical lowland river (Waal) with groynes.

Despite the fact that dredging is indispensable to keep most rivers navigable, Thorne apparently objects to such dredging of the San Juan River on the basis that "dredging intended to attract flow away from the Rio Colorado and into the Rio San Juan represents an attempt to artificially alter the natural condition and fight the long term, geological trend at the Delta" (Thorne, p. II-10). This is not a convincing argument against Nicaragua's dredging works. Indeed, if such an argument were a sound basis for rejecting dredging works in general, many important rivers would be unnavigable and much of the land upon which humans and other species rely would be under water.

As an example, the "natural condition" and "long term, geological trend" observed in The Netherlands is the subsidence of the west part of this country at 10 mm per year (Rijkswaterstaat, The Netherlands). At the same time, sea level has been rising for hundreds of years by around 1.5 mm per year (Rijkswaterstaat, The Netherlands). If there had been no dredging for river maintenance and the building of dikes in The Netherlands during the past hundreds of years to "fight [this] long term, geological trend", as Thorne puts it, the current map of this country would look like Figure 4.



**Figure 4:** Map of The Netherlands without dredging<sup>2</sup>.

Certainly, it cannot be argued that Dutch efforts to save national territory are improper because they involve fighting the natural inclinations of the waterbodies at issue, which are driven by long term, geological trends. The same must be said of Nicaragua's efforts to save the flow of its river.

---

<sup>2</sup>See <http://www.kennislink.nl/publicaties/nederland-zeespiegel-bodemdaling-en-watermanagement>.

## Conclusion

The new information provided in Costa Rica's Memorial, including the report of Thorne, together with EPN's information regarding the actual conduct of the dredging project throughout 2011, confirms the conclusions of VRDV 2011.

Nicaragua's dredging program is of extremely small scale. The effect on the river discharge will be negligible and orders of magnitude less than natural variations in river flow.

The dredging works will only have a very limited effect of the extra flow discharged into the Lower San Juan River. VRDV 2011 calculated the extra flow at around 3%. Both the results of Thorne's HEC-RAS model and the further reduced scope of the project indicate that the actual amount of extra flow in the Lower San Juan will be even less (most likely less than 1.5 %).

The dredges used by Nicaragua have not increased the scope of the project compared to what was contemplated in the Environmental Impact Study. Even if EPN procures the additional dredges discussed in its 2011 Annual Report, the project – which only involves sufficient dredging to realise a navigation channel that is 2 m deep across a bottom width of 20 m – will still be of extremely small scale. Moreover, even if all such additional dredges are procured and used alongside Nicaragua's three existing dredges, their maximum capacity would still be lower than that of some of the dredges contemplated in the Environmental Impact Study.

Negative environmental impacts of Nicaragua's dredging activities, if any, are likely to be insignificant, whereas the environmental benefits of the project are clear even from Thorne's own report.

It is entirely consistent with international practice for Nicaragua to utilize dredging as a means not only to protect the environment that depends on the flow of the Lower San Juan, but also to ensure its navigability, even if natural "long term, geological trends" would eliminate that flow.

## References

Chow, V.T., 1959, *Open Channel Hydraulics*, McGraw-Hill.

Costa Rican Ministries, 2012, "Environmental Management Plan for the Camino Juan Rafael Mora Porras".

CORASCO, 2006, "Final Report: Environmental Impact Study for the Project 'Improvement of Navigation in the San Juan de Nicaragua River' (Delta-San Juan de Nicaragua)".

EPN, 2012, "DREDGING PROJECT TECHNICAL EVALUATION ANALYSIS: Improving Navigation on the San Juan River".

Federated Association of Engineers and Architects of Costa Rica (CFIA), 2012, "Report on Inspection of the on the Border Road, Northern Area Parallel to the San Juan River".

Fox, R.W., McDonald, A.T., 1994, *Introduction to Fluid Mechanics*, John Wiley & Sons.

INETER, 2012, "Summary of Flow Measurements".

MARENA, 2008, "Administrative Resolution No. 038-2008".

Quintero, 2011, Letter addressed to MARENA to announce the reduced scope of the dredging works.

Ramsar Secretariat, 2011, "Ramsar Advisory Mission Report No. 69, North-eastern Caribbean Wetland of International Importance (*Humedal Caribe Noreste*), Costa Rica".

Thorne, C., 2012, "Certain activities carried out by Nicaragua in the border area (Costa Rica v. Nicaragua)", Nottingham University Consultants.

Van Rhee, C., De Vriend, H.J., 2011, "Morphological Stability of the San Juan River delta, Nicaragua / Costa Rica", Delft University of Technology.

**Curriculum Vitae & Bibliography**  
**of**  
**Prof. Dr. ir. Cees van Rhee**

Bennekom, The Netherlands, July 19, 2012

**Contents**

**1 PERSONAL ..... 3**

**2 ADDRESS ..... 3**

**3 QUALIFICATIONS AND EXPERIENCE ..... 4**

**4 ACADEMIC EXPERIENCE..... 6**

**BIBLIOGRAPHY..... 7**



**1 Personal**

Name : Cornelis van Rhee  
Date of birth : January 23, 1959  
Place of birth : Leiden, The Netherlands  
Citizenship : Dutch  
Languages : Dutch (fluent), English (fluent) and German

**2 Address***Work addresses*

Delft University of Technology  
Faculty of 3me and CITG  
Mekelweg 2  
2628 CD Delft  
The Netherlands  
Tel. : +31 15 2783973  
Fax. : +31 15 2781836  
E-mail : c.vanrhee@tudelft.nl

### 3 Qualifications and Experience

#### Employment record:

1984 – 1990	Employed at WL Delft Hydraulics, Delft, The Netherlands
1990 – present	Employed at Van Oord Dredging and Marine Contractors b.v.
1997 – 2003	Detached on Delft University of Technology, Faculty of 3ME for a PhD Research
2003 – 2007	Detached on Delft University of Technology, Faculty of 3ME for a research program financed by SSB (Stichting Speurwerk Baggertechniek)
2007 – 2011	Senior Researcher at Van Oord Dredging and Marine Contractors b.v.
2007 – present	Full Professor Dredging Engineering at the faculty of Mechanical, Maritime and Materials Engineering and the faculty of Civil Engineering and Geosciences of TU Delft.

#### Special assignments:

1984 - 1990	<p>WL Delft Hydraulics, Section Industrial Hydrodynamics Project manager various experimental investigations in relation to Dredging Technology Development,</p> <ul style="list-style-type: none"> <li>• The failure of steep under water slopes in front of dredging equipment (breaching process).</li> <li>• The cutting of saturated sediments under water</li> <li>• The erosion of granular sediments with water jets (Experimental investigation and instrumentation / data processing development)</li> <li>• erosion of sediments at high flow velocity (experimental investigation and physical modelling)</li> </ul>
1990 – 1993	<p>HAM dredging and Marine Contractors, Research engineer, Research Department. During this period Applied Research and Development was carried out for the following subjects:</p> <ul style="list-style-type: none"> <li>• Draghead development. Investigations on the effect of draghead geometry, jet configuration and process control on draghead production</li> <li>• Offshore equipment. Modelling of the flow of stone / water mixtures through vertical pipes. Modelling of the horizontal and vertical discharge of sand / stone / water mixtures under water to estimate impact velocities and resulting dump profiles</li> </ul>

- Development of numerical models to simulate the sedimentation process in a trailing suction hopper dredge.
  - Computer modelling of groundwater flow for vertical drain installation and temporary under water slope stabilisation.
- 1993 – 1995      Head Production and Planning Department at West Kowloon II Reclamation Project, Hong Kong.  
Responsible for the planning of the reclamation works and production of dredging equipment on a large and complicated dredging project.
- 1995 - 1998      Senior estimator, Estimating, Planning and Production Department for the area's Middle East, South America and Offshore.  
During this period involved in numerous tenders and responsible for the estimation of the cost price of a project. Some examples:
- The Martin Garcia Channel (Argentina). Capital and maintenance dredging and involved in the arbitration procedure after tender award
  - Solid ballasting of the Hibernia gravity based platform, Canada
  - NORFRA project. Pre- and post trenching of a gas pipeline on the North Sea
- 1997 – 2004      Senior Research Engineer at the Engineering & Research Department.
- Research and development related to dredging processes. Closely involved with the new building activities of the Technical Department, for instance advising and design of dredging installation (underwater pump and jet power, draghead, loading and overflow installation of the Trailing Suction Hopper Dredger HAM 318)
  - Geotechnical specialist on the field of soil improvement, settlement and consolidation of soft soil.
- 2004 – 2007      Manager Dredging Research Van Oord Dredging and Marine Contractors  
Managing a research group of 8 people. The main tasks of the dredging research department are:
- Applied and basic research on the field of dredging processes. The products of these research activities are models which are used to optimize and design the dredging installation of the dredging equipment.
  - Trouble shooting and production optimizing on projects.
  - Development of new dredging technology or adaptation of existing equipment for special projects.
- 2007 – 2011      Senior Researcher at Van Oord Dredging and Marine Contractors.
- Applied and basic research on the field of dredging processes. The products of these research activities are models which are used to optimize and design the dredging installation of the dredging equipment

Academic Experience

*Education*

- 1977 – 1984 Study Civil Engineering, Delft University of Technology. The Netherlands. Master thesis on the flow induced vibrations of a weir.
- 1997 - 2002 Part time (two days per week) Graduate (Ph.D.) student at the Section of Transport Technology, Faculty of Mechanical, Maritime and Materials Engineering Delft, The Netherlands. Doctorate degree obtained in December 2002 (Cum Laude). Doctorate thesis “On the sedimentation process in a trailing suction hopper dredger”.
- 2002 – 2007 Part time Researcher, section of Dredging Engineering.
- 2007 – present Full Professor of Dredging Engineering.

*Committees*

Member of MARITIME ENGINEERING JOURNAL advisory panel of the Institution of Civil Engineers (UK)

Member of the technical committee of the SSB (Stichting Speurwerk Baggertechniek)

Member of the International Technical Committee of the Hydro Transport Conference

Board member of CEDA (Central Dredging Association)

Chairman of paper committee of CEDA Dredging Days (bi-annual Conference on Dredging topics)

Chairman of paper committee of the WODCON Conference

Member of the Technical Advisory Committee of the Maritime Innovation Program

### **Bibliography**

- Rhee, C. van; Steeghs, M.J.G.M., 1991, "Multi blade ploughs in saturated sand; model cutting tests", *Dredging + Port Construction*, 1991.
- Rhee, C. van; Bezuyen, A.; 'Influence of seepage on stability of a sandy slope', *Journal of Geotechnical. Eng. of the ASCE*, 1992.
- Rhee, C. van; Bezuyen, A., 1998, "The breaching of sand investigated in large scale model tests", *Proceedings 26th International Conference on Coastal Engineering*, Copenhagen.
- Rhee, C. van, Talmon, A.M., 2000, "Entrainment of sediment (or reduction of sedimentation) at high concentration", *10th International Symposium on Transport and Sedimentation of Solid Particles*, Wroclaw, Poland.
- Rhee, C. van, 2001, "Numerical Simulation of the Sedimentation Process in a Trailing Suction Hopper Dredge", *16th World Dredging Congress and Exhibition (WODCON)*, Kuala Lumpur.
- Rhee, C. van, 2001, "Modelling the sedimentation process in a trailing suction hopper dredge", *4th International Conference on Multiphase Flows*, New Orleans.
- Rhee, C. van, d' Angremond, C., Spengen, J. van, Lubking, P., 2002, "The influence of entrained air on sedimentation in salt and fresh water", *International Conference on Coastal Eng*, Wales.
- Rhee, C. van, 2002, "Modelling the sedimentation process in a trailing suction hopper dredger", *Terra et aqua*, 86, 18-27.
- Rhee, C. van, 2002, "Numerical modeling of the flow and settling in a Trailing Suction Hopper Dredge", *15th International Conference on Hydrotransport*, Banff, Canada.
- Rhee, C. van, 2002, "The influence of the bed shear stress on the sedimentation of sand", *11th International Symposium on Transport and Sedimentation of Solid Particles*, Gent, Belgium.
- Rhee, C. van, 2002, "On the sedimentation process in a trailing suction hopper dredger", *PhD Thesis*, Delft University of Technology.
- Rhee, C. van, Verhagen, S.A., 2004, "The flow of buoyant plumes in a hopper, *12th International Symposium on Transport and Sedimentation of Solid Particles*", Prague.
- Stienen, F., Matousek, V., Rhee, C. van," *Simulation of solids behavior at wall of circular slurry pipe using DEM*", *12th International Symposium on Transport and Sedimentation of Solid Particles*", Prague.
- Rhee, C. van, 2004, "Sediment settling and Pick-up at a flow velocity below the deposition limit", *16th International Conference on Hydrotransport*, Santiago, Chile.

Vlasblom W.J., Hoff J. van 't, and Rhee C. van, 2005, "Quality improvement of dredged sand on board a trailing suction hopper dredger", CEDA Dredging Days November 2005, Rotterdam, The Netherlands.

Rhee, C. van, 2007, "Erosion of granular sediments at high flow velocity", 17th International Conference on Hydrotransport, Cape Town, South Africa.

Miedema, S.A., Rhee, C. van, "A SENSITIVITY ANALYSIS ON THE EFFECTS OF DIMENSIONS AND GEOMETRY OF TRAILING SUCTION HOPPER DREDGES". WODCON XIIX, ORLANDO, USA, 2007.

Aarninkhof, SGJ, Rosenbrand, WF, Rhee, C van & Burt, TN, 2007, "The day after we stop dredging: A world without sediment plumes?" In CEDA (Ed.), Ceda Dredging Days 2007 - The day after we stop dredging Dredging for infrastructure and public welfare (pp. 1-14). Delft: CEDA.

Rhee, C. van, 2008, "Transport and Sedimentation in the industry of dredging", Keynote paper, 14<sup>th</sup> International Symposium on Transport and Sedimentation of Solid Particles, St. Petersburg. Russia.

Hofstra, C.F., Rhee, C van, Miedema, SA & Talmon, A.M., 2008, "On the particle trajectories in dredge pump impellers". In J. Sobota, S. Ivanov & V. Alexandrov (Eds.), Proceeding of the 14th International Conference on Transport & Sedimentation of Solid Particles (pp. 157-163). Saint Petersburg: Saint Petersburg State Mining Institute.

Bisschop, F, Visser, PJ, Van Rhee, C, 2009. "Hindered erosion of granular sediments", In s.n. (Ed.), Ceda dredging days 2009-dredging tools for the future (pp. 1-12). Delft: Central Dredging Association.

Rhee, C. van, 2010, "Sediment entrainment at high flow velocity", *Journal of Hydraulic Engineering*, Vol. 136, No. 9, ASCE, 2010.

Rhee, C. van, 2010, "Numerical simulation of the bottom discharge process of a Trailing Suction Hopper Dredge", WODCON XIX, Beijing, China.

Hofstra, C.F., Miedema, S.A., Rhee, C. van, 2010, "Particle trajectories near impeller blades in centrifugal dredge pumps", WODCON XIX, Beijing, China.

Schrieck, G.L.M. van der, Rhee, C. van, 2010, "Physical scale modeling of dredging processes in sand and gravel", WODCON XIX, Beijing, China.

Abdeli, M., Miedema, S.A., Van Rhee, C., Schott, D.L., Alvarez Grima, M., 2010, "Discrete Element Method Modelling of Sand Cutting", WODCON XIX, Beijing, China.

Nobel, A.J., Cornelisse, J.M., Rhee, C. van, 2010, "High speed recordings of a moving submerged water jet in cohesive soil", 20<sup>th</sup> International Conference on Water Jetting, Graz, Austria.

Rhee, C. van, Talmon, A.M., 2010, "Sedimentation and erosion of sediments at high solids concentration", 18th International Conference on Hydrotransport, Rio de Janeiro, Brazil.

Talmon, A.M., Rhee, C. van, 2011, "Test Set-up for irregular vertical hydraulic transport in deep ocean mining", OMAE 2011, June 2011.

Rhee, C. van, 2011, "Numerical simulation of the backfilling process of a trench using a trailing suction hopper dredge", OMAE 2011, June 2011.

Rhee, C. van, 2011, "One dimensional sedimentation of multi-sized particles", 15th Transport and Sedimentation Conference, Sept. 2011, Wroclaw, Poland.

Wit, L. de, Rhee, C. van, "Large eddy simulation of pulsed plumes in cross flow", 13th European Turbulence Conference, Sept 2011, Poland.

Wijk, J.M. van, Talmon, A.M., Rhee, C. van, "Flow Assurance of Vertical Solid-Liquid Two Phase Riser Flow During Deepsea Mining", OTC Conference, 2012.





## LIST OF ANNEXES

### VOLUME II

<b>Annex No.</b>	<b>DOCUMENT</b>
1	Rives Second Report, 2 March 1888.
2	Despatches from United States Consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 3), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C.
3	Despatches from United States Consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 5), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C.
4	Despatches from United States Consuls in San Juan del Norte 1851-1906 (National Archives Microfilm Publication T-348, roll 7), General Records of the Department of State, Record Group 59, National Archives Building, Washington D.C.
5	Whether Costa Rica is bound to co-operate in the preservation and improvement of the San Juan River and the Bay of San Juan, and in what manner; and whether Nicaragua can undertake any work without considering the injury which may result to Costa Rica. Argument on the Question of the validity of the Treaty of Limits between Costa Rica and Nicaragua and other supplementary points connected with it, (Washington, Gibson Bros., 1887) pp. 162-168
6	Cleto González Víquez, Temblores, Terremotos, Inundaciones y Erupciones Volcánicas en Costa Rica (1608-1910), Tipografía de Avelino Alsina, San José, Costa Rica, 1910.
7	Environmental Impact Study for Improving Navigation on the San Juan de Nicaragua River (Excerpts), September 2006.

- 8 Project Design Study (Excerpts) September 2006.
- 9 Specific Terms of Reference for the Preparation of the Environmental Impact Study for the Project "Dredging of the San Juan River", Ministry of the Environment and Natural Resources (MARENA).
- 10 Executive Summary; Environmental Impact Document "Improvement for Navigation on the Nicaragua San Juan River" (Delta- Nicaragua San Juan River Stretch).
- 11 C.S. Diseño, "Study of flow behavior in the bifurcation San Juan River – Colorado River."
- 12 Technical Opinion, Environmental Impact Study Project Improvement of Navigation on the San Juan de Nicaragua River, 28 November 2008.
- 13 EPN, "Environmental Management Plan for Additions to the Project Improvement of Navigation in the San Juan de Nicaragua River", September 2009.
- 14 MARENA Technical Monitoring Report from Inspection Conducted 24-26 November 2010.
- 15 Annex 4, Declaration of Lester Antonio Quintero Gomez, Technical Manager of EPN, 16 December 2010.
- 16 INETER, Summary of Measurement of liquid and suspended solids content during the years 2006, 2011 and 2012
- 17 Dredging Project Technical Evaluation Analysis, National Port Authority 2011 (Annual Report), 23 January 2012.
- 18 Ministry of the Environment and Natural Resources (MARENA), Report on site visit to the San Juan River Dredging Project, from 21- 25 March 2006.
- 19 Report of Inspection Visit, Project "Improvement of Navigability of the San Juan River", from 17 to 20 September 2006.
- 20 Report of Site Inspection Conducted 11-16 October 2006.

- 21 EPN “Report on the Visit Conducted to the San Juan River and Considerations regarding its Cleaning and Dredging to Guarantee its Permanent Navigation”, based on 6-7 February 2008 visit to the site.
- 22 Report of Site Inspection for Proposed Project Additions Conducted 7-8 September 2009, Technical Report on the Inspection regarding the Expansion of the Project "Improvement of the Navigability of the San Juan River".
- 23 Excerpt of the "Judgment of Central American Court of Justice", available at [http://www.fonare.org/index.php?option=com\\_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18](http://www.fonare.org/index.php?option=com_content&view=article&id=59:fallo-de-la-ccj-ira-al-juicio-de-la-haya&catid=3:newsflash&Itemid=18), 3 July 2012.
- 24 Speech of Mr. Rene Castro Salazar, Former Minister of Foreign Affairs and Worship, before the Environmental Commission of the Legislative Assembly, September 8, 2010.
- 25 Excerpt of the Statement by the Deputy Minister of Environment of Costa Rica, Ana Lorena Guevara, in the radio program "Nuestra Voz" (Our Voice) hosted by Amelia Rueda, April 6, 2011.
- 26 Complete Nicaraguan White Book, San Juan de Nicaragua River, The Truths That Costa Rica Hides, 26 November 2010.

### VOLUME III

#### **Annex**

#### **No. LAWS, DECREES, ADMINISTRATIVE RESOLUTIONS AND REGULATIONS**

- 27 Excerpts of the Political Constitution of the Republic of Nicaragua.
- 28 Nicaraguan Decree No. 45-94, 28 October 1994.
- 29 Nicaraguan Law No. 217, 6 June 1996.

- 30 Excerpt of “Dictamen Juridico 351, (C-351-2006), Mauricio Castro Lizano, Deputy Attorney General (Procurador Adjunto)”, 31 August 2006 (1).  
Excerpt of “Northern Channels (Tortuguero)” (2).
- 31 Nicaraguan Decree No. 01-2007, Regulation of Protected Areas in Nicaragua, 8 January 2007.
- 32 Nicaraguan Law No. 647, 3 April 2008.
- 33 MARENA Administrative Resolution No. 038-2008, 22 December 2008.
- 34 Ministry for the Environment and Natural Resources (MARENA) Administrative Resolution No. 038-2008-A1, 30 October 2009.
- 35 Official Daily Gazette No. 46, Decree No. 36440-MP, Year CXXXIII. La Uruca, San José, Costa Rica, 7 March 2011 (1).  
By-laws and regulations, Presidency of the Republic, National Commission on Risk Prevention and Attention to Emergencies, Decision No. 0362-2011, Specific By-Laws regarding purchasing and contracts procedures under exception mechanisms regime by virtue of the Declaration of a State of Emergency by virtue of Decree No. 36440, 21 September 2011 (2).

### **MILITARY DOCUMENTS**

- 36 Order n° 005 from the Chief of the South Military Detachment for compliance of order from the Chief of staff regarding the implementation of special measures based on provisional measures of protection ordered by the International Court of Justice and maintenance of the anti-drug trafficking plan, rural, security plan and presidential Decree 79/2009 at the San Juan de Nicaragua directorate, 9 March 2011.

## CORRESPONDENCE

- 37 Letter from Ricardo Echandi Z., Minister of Transport to the Manager of the Institute of Lands and Colonies, 11 February 1965.
- 38 Work Report of Official Pedro José Minas Núñez, National Police to the Assistant Commissioner, Chief of the National Police, Rio San Juan, 2 August 2000.
- 39 Letter from Mr. Norman Caldera Cardenal, Former Minister of Foreign Affairs of Nicaragua to Mr. Alejandro Fiallos, Executive President of the National Ports Company, Reference MRE/DM/037/01/06, 10 January 2006.
- 40 Letter from Mr. Alejandro Fiallos Navarro, Executive President of National Ports Company to Mr C. Arturo Harding Lacayo, Ministry for the Environment and Natural Resources, 18 January 2006.
- 41 Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Ports Company, 3 February 2006.
- 42 Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Bayardo Quintero, Director General for Protected Areas, Reference CSG-091-02-06, 28 February 2006 (1).
- Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Dr. Iván Ortega Director, Secretariat of the Southeast Nicaragua Biosphere Reserve, Reference CSG-091-02-06, 28 February 2006 (2).
- Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Dr. Juan José Romero Coordinator, PROCUENCA Río San Juan, Reference CSG-091-02-06, 28 February 2006 (3).
- Memorandum from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Engineer Arcadio Choza Head of the General Directorate for Natural Resources and Biodiversity, Reference CSG-091-02-06, 28 February 2006 (4).

- 43 Letter from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Claudio Gutierrez, Executive Director, INETER, Reference DM-CSG-101-02-06, 28 February 2006 (1).
- Letter from Mr. Engineer Cristóbal (Tito) Sequeira Minister, Ministry for the Environment and Natural Resources to Mr. Ricardo Vega Jackson, Minister MTI, Reference DM-CSG-101-02-06, 28 February 2006(2).
- 44 Memorandum from Arcadio Choza, Director General of MARENA's Department of Natural Resources and Biodiversity to Silvia Martinez E., MARENA Director for Water Resources, 3 March 2006.
- 45 Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Ports Company, Reference DGCA-HEU-C 189-03-2006, 20 March 2006.
- 46 Letter from Engineer Noel S. Salinas Alvarado, Technical Manager, National Ports Company to Members of the Institutional Commission, Río San Juan Dredging Project, Engineer Milton Medina MARENA Delegate, Engineer Sergio Cordonero INETER delegate, Reference GT-0237-03-2006, 25 March 2006.
- 47 Letter from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Mr. Alejandro Fiallos Navarro Executive President of National Port Authority, Reference DGCA-HEU-C-413-07-2006, 3 July 2006 (1).
- Memorandum from Hilda Espinoza, General Director for Environmental Quality, Ministry for the Environment and Natural Resources to Dr. Ivan Ortega G. Director of the Secretariat of the Biosphere Reserve of Southeast Nicaragua, Reference DGCA-HE-324-07-06, 4 July 2006 (2).

- 48      Memorandum from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Adelina Ramírez, Documentation Center MARENA, Reference DGCA – EM – M291, 2 August 2006 (1).
- Memorandum from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to José Luis Galeano, MARENA Delegate Río San Juan, Reference DGCA – EM – M292, 2 August 2006 (2).
- Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Mr. Francisco Díaz Rivas, Municipality El Castillo, Reference DGCA – EM – C208, 2 August 2006 (3).
- Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Mr. César Collado Parada, Municipality San Juan del Norte Reference DGCA – EM – C209, 2 August 2006 (4).
- Letter from Edda Martínez, Director of Environmental Evaluation and Protection, Ministry for the Environment and Natural Resources (MARENA) to Alejandro Fiallos, engineer, Reference DGCA – EM – C210, 2 August 2006 (5).
- 49      Letter from Ing. Leonardo Zacarias Coreo T. General Manager Corea y Asociados S.A. (CORASCO) to Liliam Osejo Sacasa, Deputy Minister Environment and Natural Resources (MARENA), 21 September 2006.
- 50      Letter from Ing. Noel S. Salinas Alvarado Technical Manager , National Port Authority to Hilda Espinoza General Directorate of Environmental Quality Control, Ministry for the Environment and Natural Resources (MARENA) Reference GT-0791-09-2006, 22 September 2006.
- 51      Letter from Ing. Noel S. Salinas Alvarado Technical Manager, National Port Authority to Cristóbal Sequeira Minister, Ministry for the Environment and Natural Resources (MARENA) Reference GT-0794-09-2006, 25 September 2006.
- 52      Letter from Ing. Leonardo Zacarías Corea T. General Manager Corea y Asociados S.A. (CORASCO) to Ing. Noel S. Salinas Alvarado Technical Manager, National Port Authority, 2 October 2006.

- 53 Letter from Alejandro Fiallos Navarro Executive President, National Port Authority to Mr. Tito Sequeira Minister, Ministry for the Environment and Natural Resources (MARENA), Reference PE-AFN-0855-0-06, 3 October 2006.
- 54 Letter from Ing Alejandro Fiallos Navarro Executive President, National Port Authority to Cristóbal Sequeira Minister, Ministry of Environment and Natural Resources (MARENA), 5 October 2006.
- 55 Letter from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Mr. Jurgen Sengelman Director DGTA/MTI, Reference DGCA-EM-C258, 10 October 2006 (1).  
Letter from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Mr. Luis Palacios Director for Water Resources INETER, Reference DGCA-EM-C259, 10 October 2006 (2).  
Memorandum from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to José Luis Galeno Director SERB – SENMARENA, Reference DGCA-EM-M 396, 10 October 2006 (3).  
Memorandum from Edda Martínez Director for Environmental Oversight and Protection DGCA, MARENA to Iván Ortega Director for Protected Areas, MARENA, Reference DGCA-EM-M 397, 10 October 2006 (4).
- 56 Memorandum from Iván Ortega Gasteazoro, MARENA General Director for Protected Areas to Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, 25 October 2006.
- 57 Letter from Noel S. Salinas Alvarado of EPN to Zacarías Corea of CORASCO, Reference GT-0954-11-2006, 23 November 2006.
- 58 Work Report of Enrique Jardiel Arteaga Núñez, Second Chief of the National Police, Río San Juan Delegation to Commissioner José Miguel Pérez Solís, Head of Police Division, Río San Juan, 20 June 2008.
- 59 Letter from EPN Executive President, Virgilio Silva Munguía to Hilda Espinoza Urbina, Director General of MARENA's Department of Environmental Quality, Reference PE-VSM-0754-07-2008, 15 July 2008.
- 60 Memorandum from Julio C. Ordoñez L. to Executive President, Virgilio Silva Munguía ( accompanying report), 13 August 2008.



- 61 EPN Memorandum from Arosman Mendieta Jerez, Supervising Engineer to Lester Quintero Gomez, Technical Div. Manager, National Ports Company (accompanying minutes), Reference IS-AMJ-12-09-08, 23 September 2008.
- 62 Letter from Engineer Leonardo Zacarias Corea T. General Manager Corea & Associates (CORASCO) to Roberto Araquistain Vice Minister MARENA, 21 October 2008.
- 63 Letter from Carlos Robelo Raffone, Nicaraguan Ambassador in Geneva and Permanent Representative of Nicaragua before the United Nations and other International Organizations to Anada Tiéga, Ramsar Secretary General, RAMSAR, 30 November 2010.
- 64 Letter from Carlos Robelo Raffone, Nicaraguan Ambassador in Geneva and Permanent Representative of Nicaragua before the United Nations and other International Organizations to Anada Tiéga, Ramsar Secretary General, 2 December 2010.
- 65 Letter from Eng. Lester A. Quintero G. Technical Manager, National Port Authority to Ms. Hilda Espinoza Director General Environmental Quality MARENA, Reference GT-LACQG-0402-04-2011, 5 April 2011.
- 66 Letter from H.E. Mr. Jorge Urbina-Ortega, co-Agent of Costa Rica to the Registrar of the ICJ, Reference ECRPB-025-12, 3 July 2012.

### **DIPLOMATIC CORRESPONDENCE AND RECORDS**

- 67 Diplomatic Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DGAJ/127/03111, 24 March 2011.
- 68 Diplomatic Note from the Minister of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-DVM-217-2011,30 March 2011.
- 69 Diplomatic Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DM/AJST/349/04/11, 1 April 2011.

- 70 Diplomatic Note from the Minister of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-225-11, 4 April 2011.
- 71 Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DVM/AJST/500/11/11, 29 November 2011.
- 72 Diplomatic note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-AM-601-11, 29 November 2011.
- 73 Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DVS/VJW/0685/12/11, 10 December 2011.
- 74 Diplomatic note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DVM-AM-286-11, 20 December 2011.
- 75 Diplomatic Note from the Minister of Foreign Affairs of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-AM-046-12, 27 January 2012.
- 76 Diplomatic Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs of Costa Rica, Reference MRE/DM-AJ/116/02/12, 13 February 2012.
- 77 Diplomatic Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-AM-045-12, 26 January 2012 (1).  
Diplomatic Note from the Minister of Foreign Affairs of Nicaragua to the Minister of Foreign Affairs and Worship of Costa Rica, Reference MRE/DM-AJ/118/02/12, 13 February 2012 (2).  
Diplomatic Note from the Minister of Foreign Affairs and Worship of Costa Rica to the Minister of Foreign Affairs of Nicaragua, Reference DM-AM-144-12, 14 March 2012 (3).

## **MINUTES OF MEETINGS**

- 78 Joint Declaration of the Presidents of the Republics of Costa Rica, Rafael Angel Calderon Fournier and Nicaragua, Mrs. Violeta Barrios de Chamorro, Managua, Republic of Nicaragua, 31 January 1991 (1).  
Final Record of the IV Binational Nicaragua-Costa Rica meeting, 12 – 13 May 1997 (2).  
Final Record of the V Binational Nicaragua-Costa Rica meeting, 19 – 20 October 2006 (3).  
VII Meeting of the Nicaragua-Costa Rica, Bi-national Commission, 3 October 2008 (4).
- 79 Minutes of the Public Consultation in San Juan de Nicaragua, 9 August 2006 (1).  
Certification of the Municipal Council of San Juan de Nicaragua, 10 August 2006 (2).

## **AFFIDAVITS**

- 80 Affidavit of Jose Magdiel Perez Solis (POLICE), 15 December 2010.
- 81 Affidavit of Gregorio de Jesús Aburto Ortiz (POLICE), 15 December 2010.
- 82 Affidavit of Luis Fernando Barrantes Jiménez (POLICE), 15 December 2010.
- 83 Affidavit of Douglas Rafael Pichardo Ramírez (POLICE), 15 December 2010.
- 84 Affidavit of Suban Antonio Yuri Valle Olivares (POLICE), 15 December 2010.
- 85 Affidavit of Juan Francisco Gutiérrez Espinoza (MILITARY), 15 December 2010.
- 86 Affidavit of Manuel Salvador Mora Ortiz (MILITARY), 15 December 2010.

- 87 Affidavit of Norman Javier Juárez Blanco (MILITARY), 15 December 2010.
- 88 Affidavit of Denis Membreño Rivas (MILITARY), 15 December 2010.
- 89 Affidavit of Farle Isidro Roa Traña, 16 December 2010.
- 90 Declaration of Elsa Maria Vivas Soto, Agrocultural Engineer, General Department of Environmental Quality of the Ministry of the Environment and Natural Resources, 20 December 2010.

### **PRESS REPORTS**

- 91 *El Nuevo Diario*, Press Notice of the Availability of the Environmental Impact Document for the Project “Dredging of the San Juan River”, 7 August 2006.
- 92 *El Nuevo Diario*, Nicaragua Ticotimes.net, “Costa Rican Police Forces Sent to Nicaraguan Border”, 22 October, 2010 (1).  
*El Nuevo Diario*, Nicaragua Encourages Costa Ricans to join the military reserves on the anniversary of the abolition of the Costa Rican army, 1 December 2010 (2).
- 93 El 19 Digital, “Nicaragua will go to The Hague for delimitation of the border with Costa Rica”, 2 November 2010.
- 94 A.M. Costa Rica Third NewsPage, “Costa Rica mobilizes troops along Nicaraguan line”, available at <http://www.amcostarica.com/102210.htm> (*last visited* 21 July 2012), 22 October 2010.
- 95 TicoTimes.net, Adam Williams, “Tough talk as Costa Rica - Nicaragua border tightens”, 14 January 2011.
- 96 La Prensa, Nicaragua, “Costa Rican Foreign Minister starts tour against Nicaragua” 17 January 2011.
- 97 EFE, “Deputies call the Foreign Minister of Costa Rica a ‘bully’ and ‘outdated’”, 20 September 2011.

- 98 University Seminar, “Environmental damage feared due to construction of highway parallel to Rio San Juan”, 1 November 2011.
- 99 El País, Costa Rica, “Chinchilla Defends Highway Criticized by Nicaragua, Rejects Dialogue”,(Source: EFE / 13 December 2011), 14 December 2011.
- 100 El Nuevo Diario, Nicaragua, “Outrage everywhere over San Juan River parallel highway, No Studies Done for Costa Rican Highway”, 15 December 2011.
- 101 El Nuevo Diario, Nicaragua, “Costa Rica affirms Central American Court is politicized in favor of Nicaragua” (Source: EFE | 7/1/2012), 7 January 2012.
- 102 El Nuevo Diario, Nicaragua, “Costa Rican Vice-President suggests eating the San Juan”, 23 January 2012.
- 103 La Nación, Costa Rica “Conavi Built a Dirt Road along the Border without a Single Design Plan”, 23 May 2012.
- 104 La Nación, Costa Rica “Government avoided applying environmental control in border trail”, 24 May 2012.
- 105 Press release from CONAVI to the public, 25 May 2012.
- 106 El Pais, Costa Rica, “Faced with Criticism, Conavi Confirms to Have Done Work on 332 Kilometers of Roads around Route 1856”, 26 May 2012.
- 107 La Nación, Costa Rica “Serious errors expose trail to risk of collapse during the rainy season”, 28 May 2012.
- 108 Crhoy.com, “Engineers Association: ‘Emergency Decree does not justify absence of engineering principles’”, 30 May 2012.
- 109 Diario Extra, “Government acknowledges mistakes in the construction of the trail”, available at <http://www.diarioextra.com/2012/mayo/30/nacionales13.php>, 30 May 2012.

- 110 *La Nación*, Costa Rica, “Chinchilla: There may be errors, but road project should continue”, 31 May 2012.
- 111 Crhoy.com, “Path construction supervisors informed problems and the lack of oversight”, available at <http://www.crhoy.com/supervisores-de-trocha-senalaron-problemas-e-inexistencia-de-controles/>, 11 June 2012.

## VOLUME IV

### **Annex No.**

### **REPORTS**

- 112 UNITAR/UNOSAT, Morphological and Environmental Change Assessment: San Juan River Area (including Isla Portillos and Calero), Costa Rica, January 2011.
- 113 UNITAR/UNOSAT, “Update 1: Morphological and Environmental Change Assessment from 14 December 2010 to 24 January 2011 San Juan River Area, Costa Rica,” available at [www.rree.go.cr/file-noti.php?id\\_file=183](http://www.rree.go.cr/file-noti.php?id_file=183), 10 February 2011.
- 114 Van Rhee & De Vriend, Delft University of Technology, “Morphological Stability of the San Juan River delta, Nicaragua / Costa Rica,” 4 January 2011.
- 115 FUNDENIC SOS & FONARE, Technical Report “Evaluation of the environmental impacts caused by the construction of a 120 km long road parallel to the right bank of the San Juan de Nicaragua River”, March 2012.
- 116 Costa Rican Environmental Management Plan for the Rafael Mora Porras Road, April 2012.
- 117 Association of Federated Engineers and Architects of Costa Rica (CFIA Report), 8 June 2012.

## MAPS

- 118 Map of the Republic of Nicaragua (INETER) available at <http://www.ineter.gob.ni/>.
- 119 Baron A Bulow 1851 (A).  
2010 Satellite Image (B).  
Land Info Image of River (C).  
Map of the Republic of Nicaragua by Maximilian Sonnestern 1858 (D).
- 120 Map of 1831 by Mr. George Peacock with additions up to 1859.
- 121 Central America, Nicaragua San Juan del Norte or Greytown, Maxwell chart of 1888.
- 122 Republic of Nicaragua, by L. Robelin (191-) (A).  
Republic of Nicaragua, by A. Demersseman (1923) (B).  
Nicaragua Ministry of Development, General Department of Cartography (196-(C).  
Nicaragua, by Richard Mayer 1920 (D).  
Map of the Republic of Nicaragua and part of Honduras and Costa Rica, by Clifford D. Ham (1924) (E).  
Nicaragua Ministry of Development, General Department of Cartography (1965) (F).  
Nicaragua Ministry of Development, General Department of Cartography (1966) (G).
- 123 US Engineer Office Nicaragua Canal Survey (1929-31).
- 124 Costa Rica, U.S. Central Intelligence Agency, 1970, G4860 1970 U51.

- 125 Costa Rica, U.S. Central Intelligence Agency, 1970 (2), G 4860 1970 U52.
- 126 Official Map of Costa Rican, Geograpich Institute of Costa Rica, 1971.
- 127 Texaco (1978).
- 128 Nicaragua, U.S. Central Intelligence Agency (1979).
- 129 Costa Rica, U.S. Central Intelligence Agency, 1983, G 4860 1983 U5.
- 130 INETER Map of Costa Rican Navigation System.

#### **PHOTOGRAPHS/SATELLITE IMAGE/AERIAL IMAGE**

- 131 1940 Image.
- 132 US Government, 12 January 1961.
- 133 1961 Aerial Image (2).
- 134 Government of Costa Rica, Terra Project, 13 December 1997.
- 135 2007 Satellite Photograph.
- 136 2010 Satellite Image.
- 137 Photograph of Trees requiring removal from the area adjacent to the caño, Source: Site visit by Ambassador Carlos Argüello on 09 September 2010.
- 138 Photographs of trees and soil along the route of the road, Source: Site visit on the 1st of December, 2011.  
*Note: This photograph was taken from the San Juan River.*



- 139 Photographs of fragile soils removal.
- 140 Photographs of the modification of the drainage system. Source; Site visit on the 1st of December, 2011.  
*Note: This photograph was taken from the San Juan River.*
- 141 Photographs of the destruction of the natural habitat, Source: El Nuevo Diario (The New Daily), Nicaragua “*Environmentalists corroborate damage by the Costa Rican road in Río San Juan on sight, Violation of sovereignty*”, 5 December 2011.
- 142 Photographs of the destruction of the inherent scenic values and eco-tourism potential of the San Juan River.