

Natural Resources & Environment Secretariat

Application Form for Environmental License for Projects under Category 2 and 3

SINEIA F-02

SINEIA FORM F-02: INFORMATION ABOUT THE PROJECT AND THE ENVIRONMENTAL SURROUNDINGS						
Application Submission Date: (filled by a SINEIA authority)						
Place of Presentation:						
I.- General Information of the Project, Work or Activity						
1	1.1 NAME OF THE PROJECT	TOURISM CORRIDOR PROJECT IN HONDURAS: TRANCHE TELA - LA CEIBA				
	1.2 ACTIVITY BASED ON THE CATEGORIZATION TABLE	CONSTRUCTION OF ROADS, HIGHWAYS, RAILWAYS				
	1.3 PROJECT AMOUNT (LEMPIRAS)	L. 116,215,041.92 (Exchange rate as of September 3 2013 = 20.47) B/. 5,677,334.73				
2	2.1 EXACT LOCATION	The project starts at Highland Creek Bridge, in the municipality of Tela and ends when you reach the bridge over Rio Bonito, in the municipality of La Ceiba				
	2.2 MUNICIPALITY					
	2.3 DEPARTMENT	ATLÁNTIDA: Tela, Arizona, Esparta, La Másica, San Francisco, El Provenir, La Ceiba.				
	2.4 COORDINATES					
	UTM(NAD 27 CENTRAL)		WGS84 (DEGREES, MINUTES Y SECONDS)			
	X=	Y=	Latitude= 15°46'55.10"	Longitude= 87°26'2.44"	Beginning of the tranche at Highland Creek Bridge, in Tela	
	X=	Y=	Latitude= 15°44'41.73"	Longitude= 86°52'7.57"	End of the tranche bridge over Río Bonito.	
	2.5 PROJECT LOCATION IN RELATION TO LAND USE PLAN					
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AGRICULTURAL	FORESTRY	OTHERS
						Road Use
INFORMATION ONLY FOR COMPANIES IN OPERATION						
3	3.1 TELEPHONE NUMBER	3.2 FAX NUMBER		3.3 E-MAIL		
II.- OWNER'S GENERAL INFORMATION, LEGAL REPRESENTATIVE						
4	4.1 OWNER'S NAME, LEGAL REPRESENTATIVE OR CORPORATE NAME (INDIVIDUAL OR LEGAL ENTITY)			4.2 NATIONAL TAX REGISTRY NUMBER OR PASSPORT		
	Transportation, Civil Works and Housing Secretariat (CALLED SOPTRAVI) HEREINAFTER					
	4.3 ADDRESS :AVENUE/STREET/NUMBER		Bo. La Bolsa en Tegucigalpa			

	4.4 MUNICIPALITY		Distrito Central		
	4.5 DEPARTMENT		Francisco Morazán		
	4.6 Telephone numbers			4.9 E-MAIL	
	Fixed	Mobile	Fax		
2225-1771			Ugasoptravi1@gmail.com uga@soptravi.gob.hn		
III.- LEGAL REPRESENTATIVE GENERAL INFORMATION					
5	5.1 NAME OF THE LEGAL REPRESENTATIVE		Abg. Carlos Arlinton Velásquez Jiménez		
	5.2 ADDRESS		5.3 Certification Number		
	Barrio la Bolsa in front of Hospital & Clínicas San Jorge Comayagüela M.D.C		10744		
	5.4 TELEPHONE NUMBERS			5.5 E-MAIL	
	FIXED	MOBILE	FAX		
2225-5445	9934-4515		velasquesjimenez@yahoo.com		
IV.- CLASSIFICATION (ACCORDING TO THE CATEGORIZATION TABLE)					
6	6.1 SECTOR		6.2 SUB-SECTOR		6.3 CATEGORY
	Urban Development (Diverse Real Estate and Infrastructure)		Urban Development (Diverse Real Estate and Infrastructure)		Construction
	6.4 DIVISION		6.5 ACTIVITY NAME		6.6 DESCRIPTION
	Construction		Construction of roads, highways, railways		Selective rehabilitation and maintenance or maintenance of the existing road between Tela and La Ceiba. It includes repair of bridges, cleaning gutters and drains, installation of road signals and new asphalt bearing layer of approximately 5 cm.
	6.7 CIU CODE		6.8 Observations :		
SC					
V. INFORMATION REGARDING THE ENVIRONMENTAL SERVICE PROVIDER					
7	7.1 Name		7.2 Registration Number	7.3 Classification	7.4 Authorized until
	Ingeniería y Ambiente de Sula		RE-0017-2003	Environmental Analysis and Control in General Matters	Decembre 2014

VI.- TECHNICAL DESCRIPTION OF THE PROJECT

The Honduran State, through the National Commission For The Public-Private Partnerships (hereinafter called COALIANZA), and SOPTRAVI under the Law on Promotion of Public - Private Partnerships, established and awarded by International Competitive Tender, the Construction and Operation of the TOURISM CORRIDOR of Honduras. The successful bidder of this process was Atlantic Highway Consortium, SA de CV (Consortio Autopistas del Atlántico, S. A. de C.V.), comprising by GRODCO, S IN C.A. (Colombian companies), and PRODECON, SA de CV, (Honduran companies).

Project Components of the TOURISM CORRIDOR of Honduras

The Tourism Corridor of Honduras, includes the following components:

- 1. The design and construction of the Selective rehabilitation and maintenance undertakings of the highway's tranches connecting:** San Pedro Sula – El Progreso (17.50 km); La Barca – El Progreso (36.50 km); Camalote –Tela (62.66 km) and Tela – La Ceiba (97.00 km).
- 2. The expansion to four lanes, two on each way of circulation of the tranches that connect:** La Barca – El Progreso de 36.50 km and Camalote – Tela 62.66 km
- 3. The bypass of the city of El Progreso, this is a completely new construction:** The bypass of El Progreso 5.94 km
- 4. The rehabilitation of La Democracia bridge and construction of a new bridge made up of four lanes on the municipality of Santa Rita, over Humuya River.**

One of the objectives of the Concession of the Tourism Corridor Project of Honduras is to reduce travel times by providing a roadway surface in optimum condition and signposted, complying to national and international standards.

Environmental Technical Document

The Tranche object of this Environmental Study includes only the implementation of the Tranche Tela – La Ceiba with a length of 97.0 miles.

In this sense, the following describes in detail the activities to perform for the Tranche Tela – La Ceiba.

VI.1 PLANNING STAGE

At this stage the following activities will be executed:

- Dissemination of the project through the Citizen Participation Plan. The awarded project is presented in the media and outreach meetings held with all stakeholders, both representatives of civil society, institutions and the community in general.
- Preparation of technical environmental Documents and Application of the Environmental License. Parallel with this and the proposal in hand, the Technical Environmental Documents begins, as per the instrument indicated for each category, for later submission to SERNA to obtain the corresponding environmental license. (Regulation of the National System of Environmental Impact Assessment SINEIA - Agreement No. 189-2009).
- Processing of the corresponding permits. The CONCESSIONAIRE must take the steps required by the UGA (Environmental Management Unit) - SOPTRAVI for all the activities to be performed, for example, tree pruning permit, use of water resources from the Natural Resources & Environment Secretariat (hereinafter called SERNA), use of authorized sites by the municipal authorities (UMA's) for the final disposal of solid waste and construction waste, among others.
- Preparation of work program. The Concessionaire shall prepare or update a detailed work schedule and present it to SOPTRAVI for its approval.
- Location of sources suppliers of asphalt, disposal of surplus materials and solid waste (debris) sites. The Concessionaire, within its work schedule, should include the location of the production of asphalt plants and sites of disposal of wastes, which are qualified by the environmental authority to serve.
- Location of supply sources of building materials. Likewise, the Concessionaire must find the best supply sources of building materials and provide for continuous supply within its program of work to decrease the amounts and storage area. The Concessionaire must request permits for operation of borrow pits, through the ENVIRONMENTAL MANAGEMENT UNIT (UGA SOPTRAVI), before the HONDURAN GEOLOGY AND MINES INSTITUTE (KNOWN AS INHGEOMIN).

At this stage the concessionary company must start training workers in such a way to ensure adequate training for the protection of health, the environment and the people and at the same time preparation of terms of reference for the companies that will be subcontracted, in such a way to ensure compliance with current environmental regulations.

VI.1 CONSTRUCTION PHASE

8.1 Project Area (attach a copy of plans in double letter size)

There are no plans of the project area, since only maintenance and rehabilitation activities take place here, however the location of the project, is presented in Figure 8.1 and Annex I (Cartographic sheet).

8.1.1 Total Area of the Project (Apt) in m²

The total area of the project is 3,885,000 m². This area includes the 40 meters from the existing road easement, a location of temporary installations of 5,000 m² (0.5 ha), in a length of the tranche Tela – La Ceiba of 97.0 km.

8.1.2 Net area of the project (A_{pn}) in m²

The net area of the project (A_{pn}) is 3,885,000 m². This area includes the 40 metres from the existing road easement, by the length of the tranche Tela - La Ceiba, being 97.0 km plus an area intended for the temporary installations of at least 0.5 has.

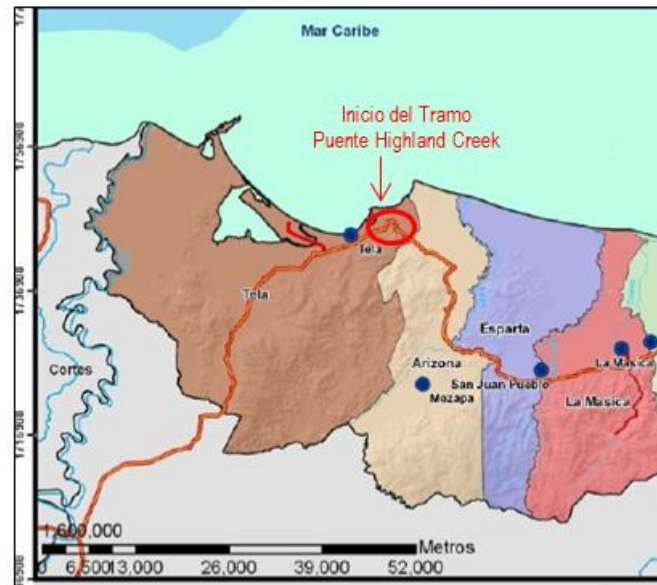
8.1.3 Total construction area in m²

Since it's a project of Selective rehabilitation and maintenance or Maintenance there will be no construction work, only the maintenance and repairing of existing roads.

8.1.4 Geographic Location and Limits

The Selective rehabilitation and maintenance of the tranche Tela - La Ceiba, is located in one of the main road networks of Honduras CA-13, specifically joining the municipalities of Tela, Arizona, Esparta, La Másica, San Francisco, El Porvenir and La Ceiba in the Department of Atlántida. This section starts at the bridge over Highland Creek River (15°46'55.10" - 87°26'2.44") and ends at the bridge over the Río Bonito (15°44'41.73" - 86°52'7.57") in the municipality of La Ceiba. See Figure 8-1:

Figure 8-1. Geographic Location of the Project



Fuente: <http://www.sinit.hn/index.php>

8.2 Describe the activities

8.2.1 Selective rehabilitation and maintenance stage

As pointed out in the Concession Agreement, the term Selective rehabilitation and maintenance are the activities of selective rehabilitation with tendency to renew the initial condition of the road, so that they meet the service levels specified in the Concession Agreement.

The Stage Selective rehabilitation and maintenance of the tranche existing between Tela – La Cieba, will last 12 months. The activities included in this stage are described as follows:

- **Location and Operation of Temporary Facilities:** This activity includes site selection for the installation, construction and/or purchase or rental of temporary facilities next to the worksite and the operation of these during the time provided under the work plan (they can be temporary or semi-permanent, during the construction phase). These facilities will at least be the following:
 - Field Offices for engineers and for the administrative sector.
 - Rest areas, food and sanitary services for workers.
 - Storage area for materials and equipment
 - Temporary parking for machinery

In the same way it's been provided to include the change in the land use, the leveling of the land, removal of vegetation, construction of offices, enabling and implementing a yard for machines, construction or rehabilitation of the access roads, parking area adequacy and whatever is necessary for security (perimeter fencing) and comfort of workers.

There are three proposed areas for location of the temporary facilities, which are presented below in Figure 8-2. It is expected to occupy an area approximately 0.5 ha.

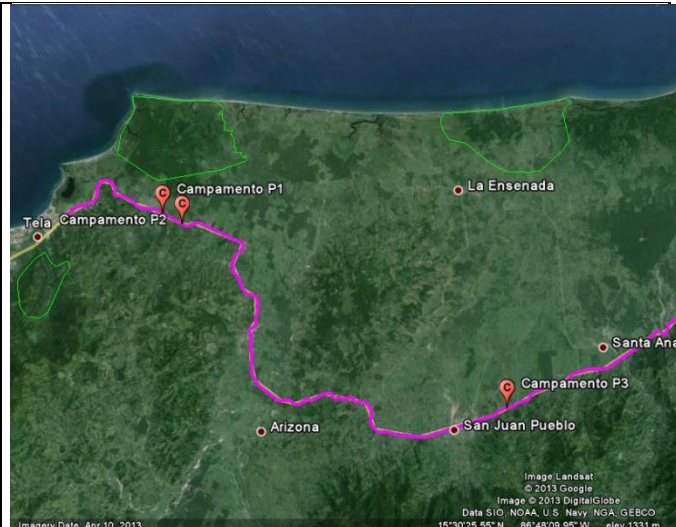
Figure 8-2. Current condition of the proposed sites for Temporary Facilities



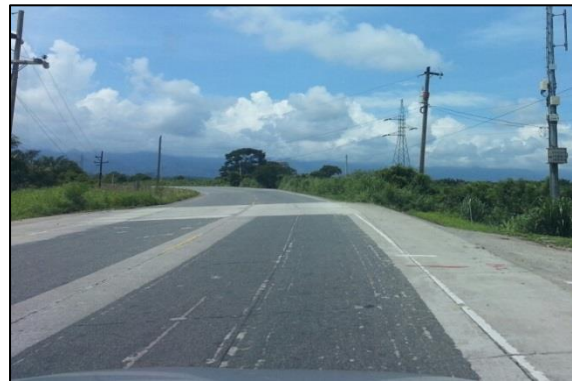
Intervened area	Area of grasslands and grazing	Intervened area
460166.00 m E	461350.57 m E	480952.36 m E
1743595.2 m N	1742584.1 m N	1725136.8 m N

Source: LBG, field work, June 2013.

Figure 8-3. Location of the proposed sites for Temporary Facilities



Source: Google Earth .



- **Maintenance of the roadway:** consists of cleaning or scheduled sweeps of the road, minor repairs coating (patching) bearing and paint over the carriageway.
- **Paving of the roadway:** This activity involves the placement, distribution and compacting of the base (usually a crushed granular base), transport and placement of the pavement layer, of the material (asphalt) and thickness defined in the design, from the site of preparation (asphalt concrete plant) to the site of placement. For this case operating asphalt plants located in San Pedro Sula and from the CORINSA plant, located on the 61k+ 200m station, will be used, in which case the Concessionaire will have to request the owner thereof the corresponding environmental license issued by SERNA.



- **Cleaning and pruning of trees:** The actions that are foreseen consist of cleaning, cutting and removal of grasslands on both sides of the roadway and in the central strips along the alignment.

Cutting grass or shrubs will be done on both sides of the road, up to a length of 1.0 m from the outer part of the gutter (concrete, stone or formed in the natural soil). Priority will be given in curves, access to bridges, intersections and areas of low visibility



- **of the drainage Works:** it consists of cleaning and removal of debris, dirt, residue, sand or any other material from the gutters, inlets and culverts, minor repairs to gutters, drains, sewers, discharge heads or any other work of drainage that may require it.



- **Bridge maintenance:** This activity is more specific and is based on the structural inspection that makes up bridges (e.g. brackets, stirrups, beams, etc.) as well as the cleaning and repair of joints, guardrails, drainage, pavement layer, etc.

The purpose of this activity is to keep the bridge under good condition, repairing damaged secondary members, keeping the channel free of obstructions for the free flow of water and keeping clean the superior and inferior areas of the bridge.

- **Installation of road signals and illumination:** Consists

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or replacement of signage, both vertical and horizontal and light poles; and verification of the operation and programming of traffic lights and luminaries.

- Surrounding brush will be cleaned.
- The installation of horizontal road signals or painting the dashed centerline on the pavement and the continuous line that runs along the edges with white paint. The edges of the islands in the central part of the road should be painted with a yellow line. The purpose of this activity is to define the traffic

lanes for drivers to stay within them and have a guide or reference..

- The vertical signals that are deteriorated will be restored and replaced.

- **Use of water sources:** This activity consists on obtaining and transporting water resources from surface water bodies within the area of influence of the project to where it is required for those Works that require it, compaction, concrete casts irrigation, etc.). This resource is usually obtained by pumping from the providing body (river with permanent or semi-permanent flow) to a temporary storage tank from where it will be transported to the worksite.

- **Exploitation and transportation of materials from borrow pits:** This activity involves cutting (exploitation) and transport of stone material to be used for the construction of fillings or embankments from its borrow source (pit, dry or alluvial) to the Worksite. This activity requires greater mobilization of trucks, equipment and construction machinery, and will initiate securing the area with protective barriers that will limit traffic through the internal roads of the Worksite. This action will ensure the safety of pedestrians and workers.

In which case depending on the type of borrow pit, either dry or floodplain soil, it must comply with the technical guidelines for its use. Pits identified and their location, are presented in table 8-1. If the Concessionaire decides to use another borrow pit's material for the Selective rehabilitation and maintenance activities, it will need to follow all the procedures established for the exploitation of pits by the HONDURAN GEOLOGY AND MINES INSTITUTE (HEREINAFTER CALLED INHGEOMIN) and request the appropriate exploitation permit through the UGA (Environmental Management Unit) - SOPTRAVI.

Table 8-1. List of the Borrow pits that have been identified

Verified Use	Owner
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1	La Citranela Pit, Citranela Village , San Alejo Sector, 2.1 km from the turnoff to the community of San Alejo, at the right side of the center line of the road of El Progreso-Tela, 15 km from the city of Tela. The pit is in the bed of San Alejo River. Coordinates UTM (438689; 1735748)	<ul style="list-style-type: none"> Gravel for concrete Sand for concrete Crushed base Filler Stone embankments drainage beds 	<p>Cooperativa Mixta Teleña Limitada, COMTEL.</p> <p>Representative: Mr. Marco Obdulio Carranza. Tel: 98 76 95 65; 33 98 22 89</p> <p>The Cooperativa (credit union) has a Concession for its exploitation.</p>	The pit is in the river, materials are boulders very resistant, gray color. Upstream we find thick materials. By crushing and screening we obtain the different materials. The Concession currently authorized by INGEOMIN. Figure 8.4
2	El Naranjo pit in the community of El Naranjo, on the road that leads to Mezapa, 1.8 km on the left of the road to El Progreso – Tela, Coordinates UTM (429659; 1721084)	<ul style="list-style-type: none"> Dirt roads, Might require chemical stabilizing 	<p>Mr. Eduardo...</p> <p>Representative of the owner: Mr. Amadeo Galdámez</p> <p>Tel: 32 11 65 90</p>	Yellowish-brown material fine and very plastic, with a CBR> 10, possibly required to be stabilized with clay loam material. See Figure 8.5
3	El Naranjo Pit, in the community of El Naranjo, on the road leading to Mezapa, 2.7 km off The left side of the road to El Progreso - Tela, next to “Licores Hernández”, Coordinates UTM (429281; 1721789)	<ul style="list-style-type: none"> Dirt roads, Might require chemical stabilizing 	<p>Ms. Martha Lazo</p> <p>Tel: 98 47 90 80</p>	Yellowish-brown material fine and possibly plastic with a CBR> 10, possibly required to be stabilized with lime clay material. See Figure 8.5
4	Guaymón River Pit, on both sides of the bridge, Coordinates UTM (428459; 1715832)	<ul style="list-style-type: none"> Gravel for concrete Sand for concrete Crushed base Filler Stone embankments drainage beds 	<p>Concession Granted under concession to Transportes Juárez</p>	The pit is in the river, the materials are boulders and very resistant, gray color. Upstream the material is thicker. By crushing and screening we can be required materials. See Figure 8.6

Source: The Concessionaire

Note: Only the borrow pits from the list have been identified, in the event that the Concessionaire decide to use other borrow pits, it will have to comply with all the procedures that are required by the INHGEOMIN, for the exploitation of these and apply for the appropriate permissions through the UGA (Environmental Management Unit) - SOPTRAVI.

Figure 8.4. La Citranela Borrow Pit



Source : LB, field work, April 2013

Source: Google Earth

Figure 8.5. Borrow Pit at El Naranjo



Source: LB, field work, April 2013

Figure 8.6. Guaymón River Borrow pit





Source: LB, field work, April 2013

- **Management of construction waste and solid waste:**

This activity involves the collection, separation, transportation, and disposal of surplus materials or construction waste generated during the construction of the work in any of the activities mentioned above (including the restoration or removal of temporary facilities), as well as solid and domestic waste and the activities of the construction generated by the operation of the temporary facilities.

Below on Table 8.2 we present the description of the current conditions of the sites chosen as dumps for this work:

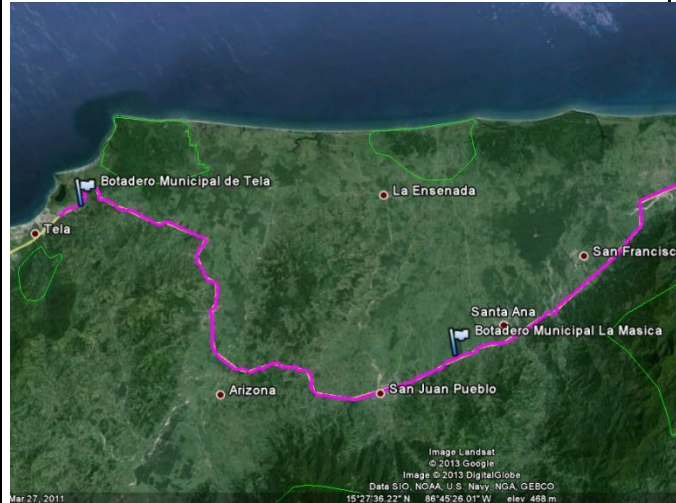
Table 8-2. Description of the Dump Sites

TYPE OF ALLOWED WASTE	CURRENT
Solid Wastes	
Solid Wastes	

Source: The Concessionaire

The location of the authorized dump site for the Project are shown below:

Figure 8-7. Location of the Dump Sites



Source: Google Earth. Field work, April 2013

8.3 Describe the machinery to be used in the construction stage

With regards to the machinery to be used during the Selective rehabilitation and maintenance of the Tranche Tela – La Ceiba the following are listed (See Table 8-3):

Tablea 8-3. Maquinaria a utilizar

Phase	Activity	Machinery and Equipment
Operating y Maintenance	Maintenance of the roadway, drainage and bridges works Cleaning and pruning of trees	Backhoe loader, tankers, dump trucks, others (sweepers).
	Preparation of the Worksite	Bulldozer, front loader, dump truck, platform truck
	Placement of the pavement layer	Moto bulldozer, double drum roller, pneumatic compactor, asphalt setter, dump trucks, platform truck
	Maintenance of road signals and illumination	Crane truck

Source: Contractor

8.3.1 Vehicular Equipment

The traffic flow, product of the activities of the project during the Selective rehabilitation and maintenance will consist mainly on moving raw materials from Works and waste disposal, truck fuel dispenser or asphalt distributors. It also includes inspections, operation personnel and field supervisor transportation.

8.4 List the materials to use in each construction stage (detail the origin of aggregates, masonry wood, foundry, water, etc.)

The development of the various works comprising this project will require supply of construction materials in a timely and efficient manner. In this sense, a Supply Plan will be developed to guarantee in advance the materials required for each stage of the work, so that it can meet a timetable for execution and with the required quality by the specifications.

A storage policy, aimed at the management and control of materials according to their displacement, replacement time and the importance of its application in the execution of the work and in that sense supply contracts, consignment and auto parts will be signed. Orderly transport of materials is contemplated, with no major impacts on the transit of the storage site or supply, until the areas of the work.

Some of the main materials are specified in Table 8-4:

Table 8-4. List of Basic Raw Materials

Materials
Asphalt
Sand
Steel (shaft)
Wood
Paint
Concrete
Zinc
Cyclone wire
Wire mesh

Source: Concessionaire

In the case of asphalt, it will be purchased from existing asphalt

plants operating in the area, located in the city of San Pedro Sula and on the road to La Ceiba, property of CORINSA, at the 61k +200m station.

8.4.1 Fuel

Fuel will be supplied by trucks used for these services or asphalt distributors, who will transport it from the fuel storage site in temporary facilities and will supply the machinery daily in each work front. These trucks shall have all the signaling and emergency implements such as fire extinguishers, triangles or cones, first aid kits and spill absorbent material.

8.4.2 Energy

For field offices and camps: these must be connected to the system of the National Electrical Energy Company (ENEE), in case of an emergency, an own fuel-based generator would be used. Also for road works, portable fuel operated generators will be used.

8.5 Describe the origin of water to be consumed / amounts to use

During the construction phase, water needed for the program of control of dust emissions, which is detailed in the pga, will be obtained from the nearest surface water bodies existing in the alignment, after obtaining the permission from the Water Resources Authority of SERNA.

Table 8-5. Existing Bodies of Water within the alignment

Name	Name
Highland Creek River	Alegre Creek
Nutria River	Agua Tibia Creek
San Antonio River	San Juan River
Santiago River	El Oro Creek
Plátano River	Agua Caliente Creek
De Arena Creek	Bijagualosa Creek
Hicaque River	San Antonio Creek
River of Saco	Colinas Creek
Coloradito River	Montenegro Creek
Arizona River	Cuero River
Leán River	La Presa Creek
Chiquito River	Jimerito River
Grande Creek	Cuyamel River
Lombardía Creek	Las Camelias River
El Espinoso Creek	Del Trapiche Creek

Perla River	Coloradito River
Zacate River	Porvenir River
Seca Creek	Bonito River

Source: Concessionaire

With regards to the consumption of drinking water by workers, 5 gallon bottles or more should be used. Private companies could provide this service.

8.6 Number of employees at this stage (work area)

The development of the works referred to in this project will generate direct and indirect jobs in the construction phase; It is estimated that for every direct job 3 indirect jobs will be generated.

On Table 8.6, the jobs that are expected to be needed during the construction phase are shown. The list makes reference to 50 jobs during the Selective rehabilitation and maintenance of this Tranche, since despite being a tranche of 97km., it will be worked with crews in accordance to the progress in the maintenance of the tranche.

Administrative Personnel, chief environmental specialist, and manager for workplace safety are not listed below, but will be taken into account as necessary personnel for the development of this work.

Table 8.6. Jobs during the Selective rehabilitation and maintenance

CANTIDAD	DESCRIPCION
1	Master of Paving work
1	Master of Mechanical works
1	Work Master of the Crushing Plant
1	Topographer
2	Prism holder
1	Assistant of the topographer
1	Tractor Operator
1	Frontal loader Operator
5	Dump truck operator
1	Concrete truck Operator

1	Crushing Plant Operator
1	Concrete plant Operator
1	Water tanker Operator
1	Compressor Operator
1	Horizontal Signal Equipment Operator
4	Masons
10	Construction Assistants
2	Mechanics
1	Electrician
1	Welder
2	Greasers
1	Lube truck driver
3	Light Vehicle Drivers
4	Flaggers
1	Environmental Specialist
1	Manager of workplace safety
50	Total

Source: Own compilation.

VI.2 Operation Phase

9

9.1 Describe the course of business or activity when in operation

For the road to be kept in operational safe conditions within the design horizon, maintenance activities must be performed. For this tranche in particular SOPTRAVI will be in charge of maintenance.¹

¹ El Contrato de Concesión no incluye el mantenimiento de este Tramo. El mismo estará a cargo de SOPTRAVI u otra empresa designada para dicha actividad.

9.2 Describe the services or products to provide or produce

During the operation phase (which SOPTRAVI will be in charge of) the following activities will be executed:

- Drainage work Maintenance.
- Cleaning of vegetation on the sides of the road
- Bridge maintenance
- Road signs and illumination maintenance
- Road repair or patcing where needed.

9.3 Describe the machinery to be used

The machinery to be used in the operation phase, is presented in Table 9.1:

Table 9.1. Equipment List - Operation and Maintenance Phase

Phase	Activity	Machinery and Equipment
Operation and Maintenance	roadway, drainage woks, and bridges maintenance	Backhoe
		Dump trucks
		Others (sweepers, etc.)
	Road signal and illumination maintenance	Crane truck

Source: Concessionaire

9.4 List the materials and raw materials to be used

During the operation phase, the raw material will consist mainly of the inputs required for the maintenance of the Tranche.

Some of the main materials are described in Table 9.2:

Table 9.2. List of Basic raw materials (Operations Phase)

Materials
Asphalt
Paints
Wood
Biodegradable detergent for cleaning of the road signals
Gasoline, kerosene or diesel to clean road signs
Coarse or gravel (if required for patching)
Gravel or sand (if needed for patching)

9.5 Describe the origin of water and the amounts to be used

The consumption of water in the operation stage shall be the minimum necessary for the activities of cleaning of bridges, roadway among others. These amounts will not exceed 25% of the remaining flow.

9.6 Hazardous substances to be used

Some of the hazardous substances to be used are: asphalt, paints, oils for machinery, solvents or degreasers, hydrocarbons, diluents, additives for concrete.

Hazardous substances to be used must have their safety sheet (MSDS) and the staff that handles them must have the required training and protective equipment required for handling them for safety purposes.

9.7 List the number of employees by department (detail gender)

The number of employees or hiring in this operation and maintenance stage will be assigned directly by SOPTRAVI.

VII Description of the Environmental Surroundings of the Project

VII.1 Physical Environment

All aspects of the physical environment baseline in the project area are presented in this section. The information presented in this section was obtained from both the review of existing information like surveys and direct on-site measurements.

10.1 Bodies of water

10.1.1 Rivers, lakes, lagoons, wetlands, sea

Along the alignment of Tela – La Ceiba, several water bodies are present, main rivers and streams, are presented in Table 10.1:

Table 10-1. Bodies of water flowing through the alignment

Name	
Highland Creek River	Alegre Stream
Nutria River	Agua Tibia Stream
San Antonio River	San Juan River
Santiago River	El Oro Stream
Plátano River	Agua Caliente Stream
De Arena Stream	Bijagualosa Stream
Hicaque River	San Antonio Stream
River of Saco	Colinas Stream
Coloradito River	Montenegro Stream
Arizona River	Cuero River
Leán River	La Presa Stream
Chiquito River	Jimerito River
Grande Stream	Cuyamel River
Lombardía Stream	Las Camélias River
El Espinoso Stream	Del Trapiche Stream
Perla River	Coloradito River
Zacate River	Porvenir River
Seca Stream	Bonito River

Source: The Concessionaire, based on field work.

10.1.2 Basin

Municipality of Tela²

The municipality of Tela, has the following Micro-basins: San Alejo River, Santiago River, Tinto River, Lancetilla River o Tela River, Río Santiago, Highland Creek River, Piedras Gordas Stream, Quinel La Piojosa, Crique Martínez.

Municipality of Arizona³

The main basin of the municipality of Arizon is made up by Leán River with 43% of the basin area, which is shared with the municipality of Tela; San Juan and Cuero River basin have an area of 2.96% of the municipality. Arizona also has an extensive network of water that forms a series of sub-basins and micro-basins that supply drinking water to the communities within the area.

The municipality has 15 micro-basins which are: Saco River or Tiburones Stream, Pio Quinto de Arizona Stream, Fuente de luz y Vida Creek, Pico de Botella Stream, Hicaque Stream, Cristalina Stream, La Bebedora Stream, Santos Murillo Stream, Noé Trejo Stream, Nacimiento Las Piedras, El Eden Stream, Flor del Valle Stream, Santa Lucía Stream, Santamaria Stream, Astra Stream. (Source: Municipality of Arizona/UMA. ICF, 2010, data from ERSAPS-SIAR, 2008).

Municipality of Esparta⁴

The municipality of Sparta is bathed by the rivers Nutria and San Juan by the east, and on the West side by River Lean or Lions' river, with two natural dividing lines. To the East River San Juan between Esparta – La Masica and to the West Lean River between Esparta – Arizona. It also has lagoons, streams, and rivers.

A large expanse of its territory is located on the shores of the Caribbean Sea (16 kms of beach) which provides tourism development, sailing and fishing.

The major basins of the Municipality of Esparta are the rivers: San Juan and Lean, where it joins the Atlantic Ocean or Caribbean Sea, it also has an extensive water network that comprises a number of micro-basins that supply drinking water to the communities settled in the area.

Municipality of La Masica⁵

The water resources of the municipality of La Masica are mainly made up by San Juan River and Cuero River with their respective

² Elaboración de Planes de Desarrollo y Ordenamiento Territorial de la Subregión IV del Valle de Leán. Municipio de Tela. Procorredor

³ Elaboración de Planes de Desarrollo y Ordenamiento Territorial de la Subregión IV del Valle de Leán. Municipio de Arizona. Procorredor

⁴ Haciendo Memoria del Municipio de Esparta, Atlántida, Honduras – agosto 2011. Procorredor.

⁵ Elaboración de Planes de Desarrollo y Ordenamiento Territorial de la Subregión IV del Valle de Leán. Municipio de La Masica. Procorredor

tributaries, also to the Southwest is the San Antonio Stream and the Montenegro Stream, all of them born in the mountain range Nombre de Dios and consequently flow into the Atlantic Ocean or Caribbean Sea. MAMUCA, 2010.

The surface hydrology on the central part of the city of La Masica is mainly made up by Cuero River, it gets an average flow of 5 m³/sec, it presents a morphological pattern of almost a straight line until it flows into the sea. To the Southwest is the San Antonio Stream, source on which the dam which will supply both La Masica and the project of Ramal de Tierra Firme is being built. This stream has a micro- basin of approximately 5.53Km².

In the municipality of La Masica the Major Basin is found: Cuero River and 19 Sub-basins: Peñas del Edén, Chiquito Stream, Galana Stream, La Cumbre Stream, Nacimiento Brisas Norteñas, Los Conejos Stream, Agua Tibia Stream, La Presa Stream, El Bañadero Prieto Stream, El Paraíso Stream, Agua Caliente Stream, Cerro Azul Stream, San Juan Stream, San Antonio Stream, El Oro Stream, El Zapote Stream, Bijagualosa Stream y Arena Stream. MAMUCA, 2010.

Municipality of San Francisco⁶

Among the rivers that run through the municipality we find: Santiago River, Jimerito o San Francisco River, El Ocotol, El Coco on which en cuya cabecera se encuentra la pila de agua que abastece a Santa Ana, Río Cuyamel, en donde se encuentra la pila de captación de agua de la cabecera municipal, San Francisco.

Municipality of El Porvenir⁷

The municipality of El Porvenir has an extense water network which makes up a series of sub and micro-basins that provide drinking water to communities settled in the area.

Table 10-2. Basins of the Municipality of El Porvenir

Micro- basins	Communities
Los Laureles Stream	El Porvenir
La Ruidosa Stream	El Porvenir
Zacate River	Bamboo La Ceiba
Coloradito River	El Pino, El Provenir

Source: ICF, MAMUCA 2011.

Municipality of La Ceiba⁸

The hydrology of the municipality of La Ceiba is made up by the

⁶ Elaboración de Planes de Desarrollo y Ordenamiento Territorial de la Subregión IV del Valle de Leán. Municipio de San Francisco. Procorredor

⁷ Elaboración de Planes de Desarrollo y Ordenamiento Territorial de la Subregión IV del Valle de Leán. Municipio de El Porvenir. Procorredor

⁸ Plan Estratégico de Desarrollo Municipal. Municipio de La La Ceiba, Departamento Atlántida.

micro- basins:

- Grande Stream: benefiting the communities of Armenia Bonito, Rodas Alvarado and 1 de Mayo.
- Rio Danto Stream: Benefiting La Ceiba, La Colorada, Planes de Las Delicias and Las Mangas. Rio Viejo and Yaruca
- Los Chorros Stream: benefiting the communities of Los Limpios, El Pital and El Naranjal.
- La Danta Stream: Plan Grande, Punta Caliente, Tierra Fría, El Cielo and La Muralla.

We also find rivers with less flow such as Juana Leandra, Perú, Satuyé, María, Jimerito, Cuyamel, Chiquito, Sambo Creek, Piedras and Ramírez.

10.1.3 Production and water recharge zones

The micro- basins declared for the use of water in Arizona are: Saco River, Arizona River, Santa María River, Jilamito River, Mangungo River, Mezapita River (Source: ICF-2006 and Municipality of Arizona, UMA, 2010).

This information was not obtained for any of the other municipalities of the Project area.

10.1.4 Possible location of underground water.

According to CEDEX, 2003. The use of underground water in the Atlantic Region depends on the volume stored in the water source. Infiltration is abundant due to high precipitation rates and generally fast, so the discharge is produced in high volumes and during months next to the reload one. It is important to take into account the protection of the aquifers, since in the basins of the Atlantic; there is always surface contribution, although during the dry season the importance of base flow is greater.

According to hydrogeological map there are local and extensive, moderately productive aquifers located along the alignment of the tranche Tela – La Ceiba Also located in areas close to the town of Esparta, there are rocks with local groundwater and limited resources. See **Error! Reference source not found.** 10-1

Figura 10-1. Hydrogeology in the Project Area



Map Key

- Acuíferos extensivos y altamente productivos
- Acuíferos locales y extensivos, moderadamente productivos
- Acuíferos locales y extensivos, pobre a moderadamente productivos
- Acuíferos locales, moderada a altamente productivos
- Lago de yojoa
- Rocas con recursos de agua subterránea locales y limitados

Source: Hydrogeology. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

10.2 Land (According to classification by category)

10.2.1 Type

Municipality of Tela

The Municipality of Tela, has a variety of soils: Sandy-loam soil, frank clay, clay soil, limy soil, sandy soil. The plain soils, are made up by sedimentation draggings of rivers, which is why they are called floodplain soils. Within the Municipality of Tela we find 5 different types of soil:

- Tomalá Soil in the unit of Mountain with 28%
- Sandy beach Soil in the coastal plains with 9%
- Toyo Soil 24.7%.
- Floodplain Soil in the mid part with 23.26%.
- Swamps and marshes 14.99%.

Municipio de Arizona

Within the municipality of Arizona we find 5 different types of soil:

- Tomalá Soil in unity of Mountain 40%.
- Sandy beach Soil in the coastal plain 9%.

- Valleys Soil in the central part of the municipality 14%.
- Floodplain Soil in the mid part 25%.
- Toyo Soil in the mid part 12%.

Municipality of Esparta

Within the municipality of Esparta we find 5 different types of soil:

- Sandy beach soil in the coastal plain
- Floodplain soil.
- Toyo Soil.
- Vallesy Soil.
- Tomalá Soil.

Municipality of La Masica

Within the municipality of La Masica we find 4 different types of soil:

- Tomalá Soil in the unit of mountain 50%.
- Sandy beach soil in the coastal plain 7%.
- Valleys Soil in the mid section 3%.
- Floodplain Soil in the mid part 40%.

Municipality of San Francisco

The soil in the northern sector is formed by sedimentary deposits among which frequent intrusions of volcanic rocks can be seen, tropical forest areas have humus layer from organic matter in decomposition, characteristic of these ecosystems..

The southern sector is characterized by clay loam and sandy loams deposited by periodic floods, plain soils have been formed by sedimentation draggings of rivers, which are called floodplain soils.

Municipality El Porvenir

Within the municipality of El Porvenir we find 4 different types of soil:

- Tomalá Soil in the unit of mountain 64%.
- Sandy beach Soil in the coastal plain 9%.
- Floodplain Soil in the mid part 24%.
- Toyo Soil in the mid part 3%.

According to the study by Simmons and Castellanos, 1968 and FAO classification, the variety in the origin and composition of the rocky material and differences in landscape, altitudinal and climatic

conditions, drainage systems, are the main cause for the municipality of El Porvenir to exhibit a regular variety of soils and associations plan that also allow for a variety of productive agricultural activities, management and exploitation of forestry, tourism, and water production for economic purposes under efficient exploitation, protection, and management systems.

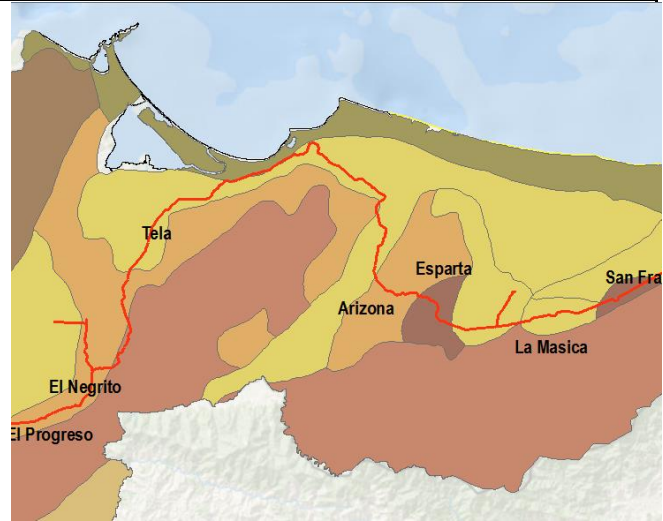
Municipality of La Ceiba

The variety in the origin and composition of the rocky material and the differences in landscape, altitudinal and climatic conditions, drainage systems, are the main cause for La Ceiba to display a regular variety of soils and associations plan, detailed below:

- **Floodplain Soil:** Well drained soils with a fine texture, they are common in the alluvial plains, and especially in the coastal zone. They are located below the 200 masl, they are moderately fertile and suitable for the development of various tropical crops, pastures, and basic grains.
- **Toyo Soil:** They are deep soils, well drained, located in latitudes lower than 500 m asl, with moderate to steep slopes (20 to 40%). Mostly covered by dense broadleaf forest and another part is used for cultivation of subsistence and intensive grazing, are suitable for the establishment of permanent crops, forest and agro-forestry plantings.
- **Tomalá Soils:** They are shallow soils, well drained, and located at altitudes higher than 1,200 meters above sea level, with steep slopes with accents up to more than 60%. For the most part they are covered by high dense broadleaf forest, proper of cloudy forests; they are suitable for the establishment of permanent crops and plantations.

On Figure 10-2 the types of soils in the Project area according to Simmons are shown.

Figure 10-2. Types of Soil in the Project area according to Simmons



Key

- ALLUVIALS
- JACALEAPA
- SUELOS DE LOS VALLES
- SULACO
- TOMALA
- TOYOS

Source: Type of soil according to Simmons. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

10.2.2 Slope

In the tranche Tela – La Ceiba, the elevations vary in between 0 masl and 100 masl in tranches closer to the municipality of Esparta, resulting in moderate plain slopes, that are located in the 0- 15% range.

10.2.3 Geology

In terms of the general geology of the study area, the following geological formations are distinguished. See Figure 10-3:

- Quaternary Alluvium (Qal): of fluvial sediments, strength of soft rock, very poor quality of the rock and zero level of susceptibility
- Intrusive Rocks (Pzi, Ki, Kti y Ti): granites, granodiorites, strenght of the rock soft-hard, poor quality rock and very high level of susceptibility.
- Cacaguapa Schists (Pzm): gneiss schists, strenght of the rock soft to moderate hard, poor quality rock, and high level of susceptibility.

- Metamorphic Rocks (pC) Its origin dates back to the Precambrian, formed by differentiated schists, gneiss, phyllite, quartzite, and marble. They are located at elevations lower than 1.900 m.a.s.l.

Figure 10-3. Geology of the Project area



Qal

Sedimentos continentales y marinos, recientes; incluyendo depósitos de pie de monte y terrazas de grava, planicies de inundación y depósitos de cauce.

Ki

Rocas intrusivas: granitos, granodioritas, dioritas y tonalitas de edades variables

Source: National Geologic Map. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

10.2.4 Capacity of Land use

The alignment of the Tranche Tela – La Ceiba, there is evidence of land with the following capacities of use. See Figure 10-4:

The distribution of agro-ecological classes in the municipality of Tela presents lands for the use of intensive farming class I, II, III in the alluvial plains and a coverage of broadleaf forest on the mountain strip with high farming pressure and expansion of oil palm and the rest marshes, wetlands or flooded land covering more than a third of the territory, however with the presence of extensive livestock farming and oil palm.

Practically soils for intensive and extensive crops are located in the municipality of Arizona. Annual crops developed in this municipality are mainly focused on products such as rice and Palm. Intensive farming is constituted by the plantations of tabasco chile, plantain

in small scale, cocoa and pineapple.

Most of the municipality of the Masica, has soils of forest use (57.52% of the surface), but in greater proportion the deciduous broadleaved forest is found with 48.81% of the municipal area. To a lesser extent is the sparse coniferous forest with 3.97%, dense coniferous forest with 3.88% and mixed forest with 0.86%.

Agricultural soils in turn comprise the 38.51% of the territory. In higher proportion we find wasteland land to grassland (not cultivated or arable land) with 19.36% of the municipal area, followed by the pastures and paddocks with 11.17%. The remaining 7.96% is cultivated agricultural soils, composed of areas in extensive system with 3.56%, areas in intensive regime with high yielding crops (2.23%) and areas of intensive agriculture with cultivation of normal performance (2.19%).

In the municipality of San Francisco, the high productive value is attributed in the middle part where there are areas of livestock, oil palm and rambutan; in connection soils I,II,III covering flood prone areas of the coastal plain bordering on the Protected Areas of Cuero and Salado.

The municipality of El Porvenir has vegetation of broad-leaved forests in the mountain area and wetland forests in the lower area; use of soil characterized by small-scale agriculture and extensive livestock. The characteristics of the productive sector of the municipality of El Porvenir, is related to the correct use of Intermountain Valley and floodplain of water meadows of rivers with a high potential for annual and permanent crops; suitable for agriculture and livestock in the middle part of the territory on the right bank of the Perla River between the communities of La Union and Montevideo.

The distribution of agro-ecological classes in the municipality of Arizona presented intensive class I, II, III by 40% and with coverage of broadleaf forest by 45% with class V Tomala, Toyo soils from and other uses of marshes, wetlands or flood-prone lands. In this regard, given the conditions of land tenure where their majority is national property use is restricted to forest use and conservation.

Figure 10-4. Capacity of land use Tranche Tela - La Ceiba



Source: National Geologic Map. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

10.3 Climate

According to the climatic classification of Zuniga, in the municipality of Tela, the following climates are present: very rainy with rainy winter, very rainy with regular distribution of rains and very rainy tropical.

The municipality of Arizona, is dominated by the very rainy tropical climate, which is characterized by abundant rainfall throughout the year without a strong winter season; the average temperatures are kept permanently above and 25°C. the prevailing winds from the Northeast, bring moist air to the coast; the massif of Texiguat causes moisture that reaches the coast to turn to rain, making the most humid areas of the country those of the plains and mountains of the Atlantic.

In the municipality of Esparta, a jungle tropical rainy climate is present with very rainy season and it's more copious in the form of drizzle and showers during the months of July to November (cyclone season by COPECO) during the winter months.

In the municipality of La Masica, there are four different climates: climate very rainy with rainy winter, very rainy climate with regular distribution of rain, little rainy climate of transition and the predominant very rainy tropical climate. SERNA, 2009.

In the municipality of San Francisco, the climate is tropical and ranges between 18 ° to 32 ° c, with an average of 2,000 to 3,000 mm.

In the case of the municipality of El Porvenir, a rainy with regular distribution of rain predominates, and some areas with tropical very wet weather.

The Municipality of La Ceiba, presents a very rainy season and its most abundant period in the form of scattered showers and thunderstorms, occurs during the winter months in the northern hemisphere.

The map of climate classification is shown in Figure 10-5:

Figure 10-5. Climate classification of the Tranche Tela - La Ceiba



- Muy lluvioso con Invierno lluvioso
- Muy lluvioso de barlovento
- Muy lluvioso tropical
- Variante lluvioso de altura
- Variante muy lluvioso de Barlovento (Semiest)
- lluvioso de altura
- muy lluvioso con distribución regular de lluvia
- variante muy lluvioso tropical

Source: National Geologic Map. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

10.3.1 Pluviometry (annual average precipitation, wettest months, etc.).

The climatic conditions in the municipality of fabric, the rainiest months are October through December. Its rainy and cold period coincides with the winter in the northern hemisphere, during which predominates the influence of the cyclone and cold fronts. In its period of peak rainfall occurs in the form of drizzle.

The average total annual rainfall reaches values close to 2,900 mm in sectors reduced to Windward of the Nombre de Dios mountain. The period of rains prevailing in this region is characterized by the following:

- Convection rainfall: rainfall in the afternoon in the form of downpours.
- Orographic precipitation: smaller and more persistent than the conventional drops.
- Rains of watercourses: rains of 2-3 days without interruption.
- Cold fronts or north fronts from North to South.

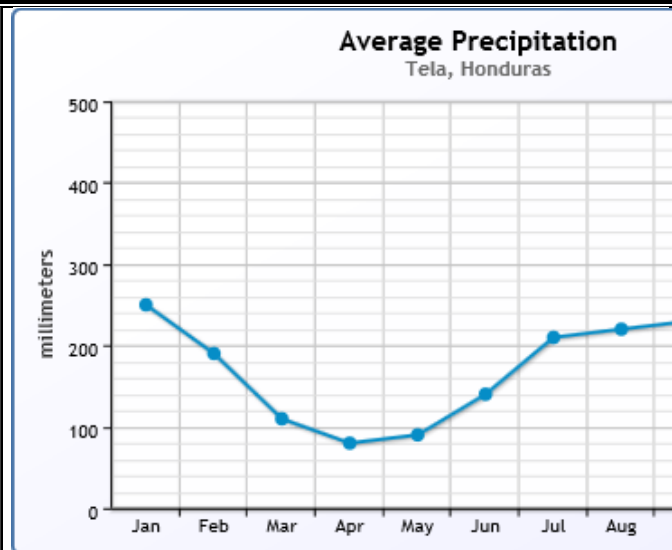
The average annual rainfall for a record of 39 years of measurement in Tela, is presented in table 10-3 and Figure 6-10:

Table 10-3. Average Annual Precipitacion (mm) in Tela

An nu al	J a n	F e b	M a r	A p r	M a y	J u n	J u l	A u g	S e p	O c t	N o v	D e c
2790	250	190	110	80	90	140	210	220	230	400	400	400

Fuente: <http://www.weatherbase.com/>

Figure 10-6. Average Annual Preciitation in Tela



Fuente: <http://www.weatherbase.com/>

Ranges of annual precipitation in the Municipality of Arizona (consultation to documents of Management Plans, National Meteorological Service) are 1600 mm - 2900 mm in prone to flood valley areas and being more frequent in areas with higher slopes, varying its microclimate. The rainiest months are October and November with an estimated 185 days rain; and the driest months are from March to May is the time of heat wave or Indian summer the absence of precipitation.

In the Municipality of Esparta, the average rainfall is 180 days a year. The average annual rainfall is around 2,000 mm, increasing this average, up to the 2.900 mm in the middle and upper areas. There is also the Bermuda effect or heat waves, during the months of July and August

The annual average precipitation of La Masica is 2,500 mm/year, being the wettest months October and November; the driest period is from March to may. It has an annual average of 190 days with rain per year. SERNA. 2009.

The average rainfall in San Francisco is 2,600 mm/year being the wettest months October and November; the driest period is March to May being a warm climate. It has an annual average of 180 days with rain

In the Municipality of El Porvenir, the precipitation in the area ranges from 1900 to 3000 mm average per year. Being the wettest months October and November and the driest May. CEDEX 2003. According to information provided by the Department of Water Resources, the average of rainy days in the town is 200.

The Municipality of La Ceiba, has an average annual rainfall of around 2.359 mm, increasing this average, up to 3.165 mm in the middle and high areas. The average number of days with rain per year is 179 and the wettest months are October and November and out of these two months, November is the wettest with an average of 467 mm; the less rainy months are April and May, of which April, is the less rainy, with an average of 81 mm. There is also the Bermuda effect or heat waves, during the months of July and August.

10.3.2 Average Annual Temperature

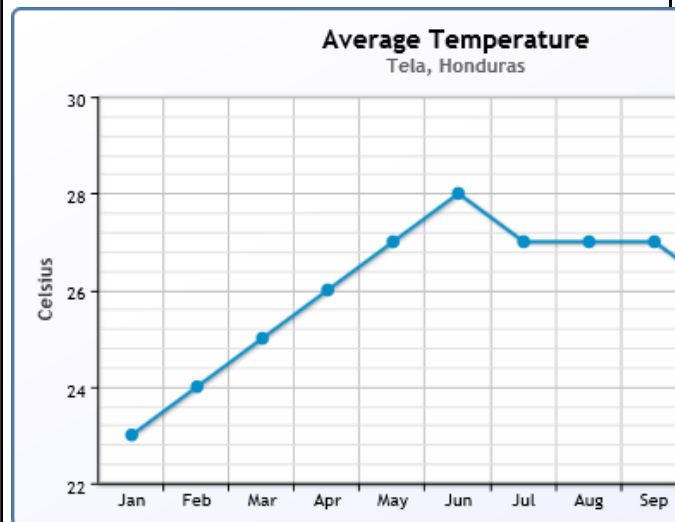
The annual average temperature in the municipality of Tela, is about 26° c, with annual averages of maximum and minimum of 30°C and 20°C respectively, according to records of 18 years of measurement. See table 10-4 and Figure 10- 7:

Table 10-4. Average Annual Temperature (°C) in Tela

An nu al	J a n	F e b	M a r	A p r	M a y	J u n	J u l	A g o	S e p	O c t	N o v	D i c
26	2	2	2	2	2	2	2	2	2	2	2	2
°C	3	4	5	6	7	8	7	7	7	6	5	4
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C

Fuente: <http://www.weatherbase.com/>

Figure 10-7. Average Annual Temperature in Tela



Fuente: <http://www.weatherbase.com/>

In the Municipality of Arizona, the average temperatura equals 27°C, maximum 30.4°C and minimum 20.7°C.

The minimum average annual temperature is 26°C and the maximum 40°C, being the warmest 30°C in the municipal capital of Esparta.

In the municipality of La Masica the temperature ranges between 18 and 32°C. (SERNA, 2009).

In the municipality of San Francisco a very rainy climate with rainy winter on lands that do not exceed the 100 meters prevails, the wettest months are November and December and with temperature averages 30 °C with ranges of 18 - 28 °C

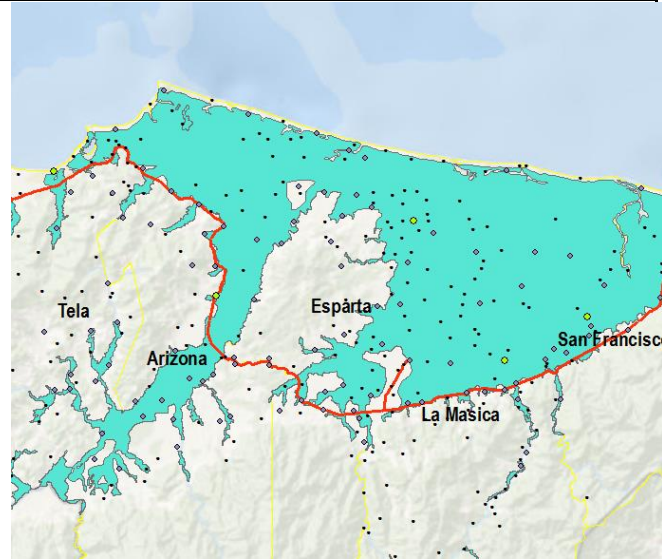
In the case of the municipality of El Porvenir, according to the records of the weather station located in El Porvenir Montecristo, there is a minimum average temperature during the year of 18.8 °C and a maximum temperature of 32.5 °C. On the basis of the average temperature it is shown that December is the month with lower temperatures, while the highest average temperature is recorded in the month of April. The average temperature is 30.5°C.

In the case of the municipality of La Ceiba, the average annual temperature is 25.8 °C. However, the large masses of cold air from the polar regions, influence and maintain monthly averages of minimum temperature in the months of December, January and February. The warmest months are June, July and August. Sway The average annual temperature is only 8.8 °C, due to the influence of the temperature of the sea.


10.4 Risks of flooding (according to official maps or documented experiences)

In Figure 10 8, presents the floodplain of the municipalities Tela, Arizona, Esparta, La Masica, San Francisco, El Porvenir and La Ceiba. The areas with high risk of flooding are obtained through a buffer made to 1 km of the alignment of the existing road, registering the populated locations, within the floodplains, closest to the alignment.

Figure 10-8. Areas with risk of Floods



Key

 Flood threats

Source: Flood threats. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

The urban area of the municipality of Tela, presents two types of floods that affect the area: flooding resulting from overflowing rivers and flooding resulting from surface runoff. Fortunately, the infrastructure (obsolete) for the control of surface runoff exists in the area. The rehabilitation through re-design of the network of canals relief considering climate change scenarios for the region would minimize the risk of flooding in a large percentage of the current flood area. Some of the populated areas with high risk of flooding within this municipality are: La Ica, San Alejo, El Guano (Col. La Montañita, Col Flores del Guano, Kilómetro Diez), El Junco (Col. Buena Vista, Las Flores), Tarralosa, Puerto Arturo, Tela (Kilómetro Cuatro), El Triunfo de la Cruz (Kilómetro siete, El Boquete, Las Delicias, Finca Miramar).

In the municipality of Arizona, some communities vulnerable to floods are: Arizona (Dakota, Arizona), San Francisco de Saco, Atenas de San Cristóbal o km 16, Hicaque (Col. 16), la Leona o Kilómetro 12.

In the municipality of Esparta, the following communities are vulnerable to floods: Las Américas N°1 y Lombardía o la Curva.

The commnuties vulnerable to floods in the Municipality of La Masica are: San Juan Pueblo (Hacienda Pineda, Agua Tibia), El Oro (El Oro, Hda. Fidel Martínez), Agua Caliente, San Antonio, Monte Negro (Hda. Villalobos), El Desvío, El Naranjal (El Japon,

Colonia El Paraíso, El Naranjal).

The communities vulnerable to floods in the Municipality of San Francisco are: Santa Ana (Las Delicias y Santa Ana) y Saladito.

The communities vulnerable to floods in the Municipality of El Porvenir are: La Ruidosa, Caracas (Perlas y Caracas), La Unión (Curva), El Pino (El Playón), López Bonito.

In the municipality of La Ceiba, there are no recorded villages vulnerable to floods close to the alignment of the road.

10.5 Landslide Risks (in a radius of at least one kilometer)

Municipality of Tela: landslide risks are lower and its impact is indirect. The risk for landslides prevails on the slopes of the mountains near the city of Tela; specifically in the area of La Esperanza in the South of the city.

Municipality of Arizona: Unstable slopes are located in the stretch of the main road that leads from Arizona to cloth to the height of the village Rio Chiquito, Arizona, Atenas de San Cristóbal e Hicaque.

Municipality of Esparta: Analysis of the susceptibility of slope movements in the municipality, presents characteristics of landslides in the communities of Siempre Viva, Lombardía and Las Delicias given the conditions of steep slopes over 45 degrees and the geological conformation of hills and mountains of the surrounding area.

Municipality of La Masica: Analysis of susceptibility of movements of hillside in the municipality, has characteristics of landslides in communities of San Marcos Centro, El Manchón, El Recreo, Nueva Esperanza, Las Minas, Suyapa, Cerro Azul, Los Laureles, Betania, El Zapote, in the municipality of La Másica; given the conditions of steep slopes.

The Municipality of San Francisco, presents areas at high risk of flooding in the vicinity of the beach, including the municipal capital, this risk decreases to a low level as you head away from the coast. The danger of landslides is present in moderate level in the foothills of the southern end of the municipality.

Municipality of El Porvenir: There are areas in the municipality that reach moderate levels of risk to the landslides that have to do with the steep topography in the southern part of the Municipality. Among the areas of high slopes, the sierra Nombre de Dios with slopes up to 1000 m.a.s.l.

Municipality of La Ceiba: Cases of landslides of slopes are due to heavy rains. Some of the most affected areas in the municipality are: La Ceiba (Col. Menonita Parte baja), Col. 26 de Junio Cerro, Col. 9 de Junio Cerros, Dantillo Búfalo, Las Delicias, Danto Col. D

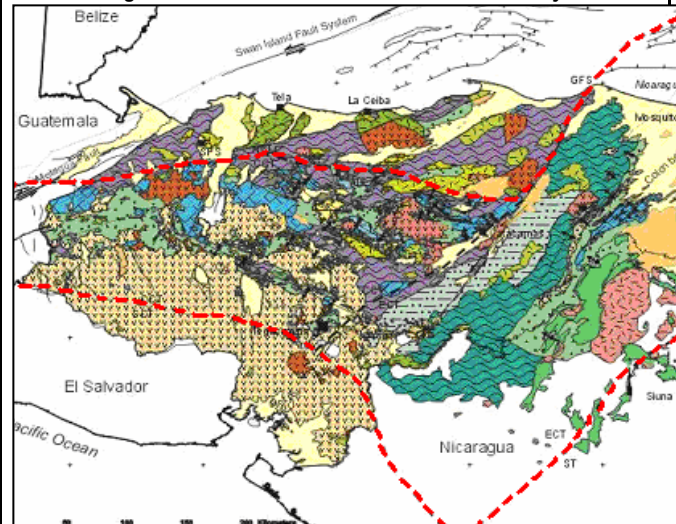
Antony, Col. San Judas, Las Mangas Corozal. These damages happen in some occasions due to the lack of conservation works of slopes in tracks of road access.

10.6 Risk of earthquakes or tremors (verifiable information)

The Honduran territory is geologically bounded by two tectonic plates, the plate of cocos and North America. The first one shows a subduction over the second, resulting in constant release of energy of varying intensity.

Data from all the epicenters shown in the map have been using a model of intensity and frequency reflected on a map, which reflects the threat of seismic hazard in Central America, projecting the Bay Islands fault and on the same trajectory the Motagua fault. Inside the country a series of faults are reflected (see Figure 10.9), which have molded the national topography, including the Patuca fault and others crossing west toward the center of the country.

Figure 10.9. Faults in the Honduran Territory



Source: Country Document, DIPECHO. 2007

The base map associated with earthquakes was generated taking into account the contributions of the Program for Disasters of the United Nations, whose vector database identifies the frequency of earthquakes in the Central American territory and the measured intensity in the Richter scale. The population exposed to the threat of earthquakes in prioritization executed at the national Shop included a total of 899.438 inhabitants (projected to 2007) of 49 municipalities.

The geographical prioritization of earthquake threats resulted in the following vulnerable areas:

1. Department of Yoro (municipalities of Yoro, Yorito), Department of Francisco Morazán (Marale).
2. Ocotepeque (Ocotepeque, Mercedes, Santa Fe, Concepción, Dolores Merendón, San Jorge, San Fernando), Lempira (Cololaca, Guarita, San Juan Guarita, Valladolid, La Virtud, Mapulaca, Virginia,

Piraera), Copán (Florida, El Paraiso, Copán Ruinas) e Intibucá (San Antonio, Sta Lucia, Magdalena, Colomoncagua) and La Paz (Santa Elena La Paz, Yarula, Marcala, Cabañas, Santa Ana, Opatoro, Mercedes de Oriente, San Antonio del Norte).

3. Valle (San Lorenzo, Nacaome, Amapala, Guascorán, Caridad, Aramecina and Alianza) and Choluteca (El Triunfo, Concepción de Maria, Namasigue, Choluteca and Marcovia).
4. Cortés (Omoa and Puerto Cortés).
5. Guanaja.

From the above it is concluded that in prioritizing areas vulnerable to earthquakes, the municipalities of the area of influence of the Project are not mentioned as risk areas.

VII. 2 Biological Environment

This chapter covers the information necessary to know the current status of the biological environment in the area of influence of the project. This information will be used in the identification and recovery of the potential impacts that the Works could generate and if applicable, to give special attention to the corresponding Management Plan.

The baseline developed for this study included the compilation of secondary data of the area, which responds to research by different authors and rapid biological inventory, which does not represent the total number of species present in the area. It was a diagnosis that allowed to have an overview of the area's resources.

The species of flora and fauna that are traditionally found in high traffic roads, are usually closely related with ornamental sowing patterns and often do not respond to the original vegetation, it is only in some points where roads pass through water bodies where sometimes remnants of flora and fauna can be observed similar to those on the regions not being intervened.

Introduction

Honduras has a large plant biodiversity which until 2000 had reported a total of 7,524 plant species, which are deposited in different herbaries of the country, this number is the product of many years of research throughout Honduras and in recent years has been increased by the report of new plant species on the country.

According to Matamoros (2009) in his list of freshwater species of Honduras, he mentions that there are 172 species inhabiting the continental and insular waters of Honduras, with 8 primary type species, 47 secondary species and 111 peripheral.

In Honduras 03 orders, 33 genera and approximately 119 species of amphibians, being anurans the largest group with 86 species (Marineros and Aguilar 2000) have been registered, according to research by McCranie Wilson, Cruz, Espinal, Köler, Porrás and Williams, in the last 11 years 38 endemic species have been reported.

With respect to reptiles, in Honduras, 214 species of reptiles belonging to 04 orders and 103 genera have been recorded. The most numerous group consists of 114 species of snakes, followed by saurians with 83 species, 15 species of turtles and 02 species of crocodiles.

From the vertebrates group, mammals are probably of greater importance in terms of protein intake as part of the diet of the average Honduran living in rural areas; this situation makes mammals located between the most threatened species by habitat destruction and hunting.

To obtain information on the field data of species of flora and fauna of the tranche Tela – La Ceiba, a quick tour of the tranche was made without seasonal transepts.

The main characteristic features of the biological environment in the Project Area are described as follows.

11.1 Protected areas (declared or define their declaration status)

With the Selective rehabilitation and maintenance of tranche Tela – La Ceiba, there won't be any effect on protected areas. However, for the purposes of this document, some protected areas near the alignment are presented, as a reference in terms of its state of conservation and species reported.

Municipality of Tela

The municipality of Tela, is characterized by a significant amount of natural resources, distinguishing protected areas of great value that are summarized in the following Table 11-1:

Table 11-1. Protected Areas of the Municipality of Tela

N°	Name	National Category	Management Plan	Co management Existence Agreement
1	Blanca Jeannette Kawas Fernández (Punta sal)	National Park	Approved	Agreement with PROLANSATE
2	Lancetilla	Botanic Garden	Elaborado	ESNACIFOR
3	Punta Izopo	National Park	Approved	PROLANSATE

Source: Plans of Development and Territorial Planning of the IV Sub region Valle de Leán. Municipality of Tela, with information from ICF

Municipality of Arizona

Within the Municipality of Arizona there are two protected areas: The Wildlife Shelter Texiguat and the National Park Punta Izopo. See Table 11-2.

Table 11-2. General Information of protected areas from the Municipality of Arizona

Category	Description	Type of resource	Legal Base	Support	Extension Has.
Wildlife Shelter Texiguat	Tropical Rainforest	High Biodiversity	Decrete 87-87	ICF PROLANSATE USAID	33,267.16

National Park Punta Izopo	Tropical Rainforest	Wetland	Decrete 261-2000	ICF	18,584.54
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Source: Plans of Development and Territorial Planning of the IV Sub region Valle de Leán. Municipality of Arizona, based on data provided by the Department of Protected Areas and Wildlife of ICF

Municipality of Esparta

Within the Municipality of Esparta there are three protected: National Park Punta Izopo (2.91%), The Wildlife Shelter Cuero y Salado RVSCYS (2.62%) and The Wildlife Shelter Texiguat (15.39%).

Table 11-3. General information of the protected areas from the Municipality of Esparta

Category	Description	Type of resources	Legal Base	Support	Extension Has.
Wildlife Shelter Texiguat	Tropical Rainforest	High Biodiversity	Decrete 87-87	ICF PROLANS ATE USAID	33,267.16
National Park Punta Izopo	Tropical Rainforest	Wetland	Decrete 261-2000	ICF	18,584.54
Wildlife Shelter Cuero y Salado	Tropical Rainforest	Wetland	Decrete 99-87	ICF Municipalidad	1,207.15

Source: Plans of Development and Territorial Planning of the IV Sub region Valle de Leán. Municipality of Esparta, based on data provided by the Department of Protected Areas and Wildlife of ICF

Municipality of La Masica

Within the Municipality of La Masica there are three protected areas, whose territory is made up of:

- National Park Pico Bonito (23.11%)
- Wildlife Shelter Cuero y Salado (3.55%)
- Wildlife Shelter Texiguat (8.28%)

Municipality of San Francisco

In the Municipality of San Francisco, there are two protected areas se encuentran Wildlife Shelter Cuero y Salado and National Park Pico Bonito.

Table 11-4. General Information of the protected areas from the Municipality of San Francisco

Category	Description	Type of resources	Legal Base	Support	Extension Has.
National Park Pico Bonito	Rainforest	Cloud forest	Decreto 99-87	ICF, INA, USAID, WWF	107,090 ha
Wildlife Shelter Cuero y Salado	Rainforest	Wetland	Decreto 99-87	ICF, INA, USAID, WWF	12,800 ha

Source: Plans of Development and Territorial Planning of the IV Sub region Valle de Leán. Municipality of San Francisco, based on data provided by the Department of Protected Areas and Wildlife of ICF

Municipality of El Porvenir

Within the Municipality of El Porvenir we can find two protected areas: Wildlife Shelter Silvestre Cuero y Salado with (28.45%) of the territory and National Park Pico Bonito (17.74%) of the municipal territory.

Table 11-5. General Information of the protected areas from the Municipality of El Porvenir

Category	Description	Type of resource	Legal Base	Support	Extension Has.
Parque Nacional Pico	Bosque Húmedo	Alta Biodiversidad	Decreto 87-87 Acue	ICF, Municipalidades, Población CURLA	107,090 ha

Bonito			rdo 118- 92		
Refugio de Vida Silvestre Cuero y Salado	Bosque Húmedo	Humedal	Decreto 99-87	ICF, INA, USAID, WWF	12,400 ha*

Source: Plans of Development and Territorial Planning of the IV Subregion Valle de Leán. Municipality of El Porvenir, based on data provided by the Department of Protected Areas and Wildlife of ICF

* The extension in Has corresponds to the nucleus.

Municipality of La Ceiba

In the municipality of La Ceiba there are a significant amount of natural resources identified, registered in the protected area for the National Park Nombre de Dios. It does not have a Management Plan and actions are currently being carried out for the revision of its limits. The municipality borders in addition with the National Marine Park Cayos Cochinos which can be accessed by the waterway.

The National Park Nombre de Dios is part of the mountain chain Nombre de Dios. It has more than 30 thousand hectares of territorial extension, located in the municipalities of La Ceiba y Jutiapa.

11.2 Fauna (most common animals in the project environment)

During the development of diagnostic for this tranche there were was species, habitat or ecosystem observed that could be directly affected by the activities to be undertaken.

Birds

Birds have a varied density and generally related to the climatic conditions according to geographical region. In the case of the United States even with its large surface extension, there are only about 688 species of birds, while in Honduras, with a considerably smaller area there are approximately 740 bird species of which 520 are reproduced in Honduran territory and approximately 200 are migratory (Bonta and Anderson 2003). Finding only one that is endemic, the Honduran Emerald Hummingbird *Amazilia luciae* (Monroe 1968).

The diversity of birds in the town of Cortes, Yoro and Atlántida including all the ecosystems, Rainforest, mangroves, agricultural systems, riparian and aquatic systems, due to this diversity of ecosystems, it is estimated at about 400 to 500 species of which 750 species are recorded for Honduras (Thorn et al 2012).

During the diagnosis bird observations were conducted in visual and auditory manner. For their identification 10 X 42 mm pair of prismatic binoculars was used and two guides on bird identification.

During the tour, we identified 5 orders, 19 genera and 20 species resident in the area. None of them is reported in the list of CITES species

Table 11-6. Bird species watched in the Tranche Tela - La Ceiba

No	Order	Family	Scientific Name	Common Name	Status
1	Pelecaniformes	Ardeidae	<i>Bubulcus ibis</i>	Garcita bueyera	R
2	Accipitriformes	Cathartidae	<i>Coragyps atratus</i>	Zopilote	R
3	Accipitriformes	Cathartidae	<i>Cathartes aura</i>	Tincute	R
4	Columbiformes	Columbidae	<i>Zenaida asiatica</i>	Paloma ala Blanca	R
5	Columbiformes	Columbidae	<i>Columbina inca</i>	Turquita inca	R
6	Columbiformes	Columbidae	<i>Columbina talpacoti</i>	Turquita rojiza	R
7	Cuculiformes	Cuculidae	<i>Crotophaga sulcirostris</i>	Tijul	R
8	Piciformes	Picidae	<i>Melanerpes aurifrons</i>	Carpintero	R
9	Passeriformes	Tyrannidae	<i>Pitangus sulphuratus</i>	Cristo fue	R
10	Passeriformes	Tyrannidae	<i>Megarynchus pitangua</i>	Mosquero picudo	R
11	Passeriformes	Tyrannidae	<i>Myiozetetes similis</i>	Chilero social	R
12	Passeriformes	Tyrannidae	<i>Tyrannus melancholicus</i>	Tirano	R
13	Passeriformes	Hirundinidae	<i>Stelgidopteryx serripennis</i>	Golondrina gris	R
14	Passeriformes	Turdidae	<i>Turdus grayi</i>	Zorzal	R
15	Passeriformes	Thraupidae	<i>Thraupis</i>	Tanagra	R

5	rmes	e	<i>episcopus</i>	azuleja	
1	Passerifo	Emberizida	<i>Sporophila</i>	Semillero	
6	rmes	e	<i>torqueola</i>	de collar	R
1	Passerifo				
7	rmes	Icteridae	<i>Dives dives</i>	Clarinero	R
1	Passerifo		<i>Quiscalus</i>		
8	rmes	Icteridae	<i>mexicanus</i>	Zanate	R
1	Passerifo		<i>Icterus</i>		
9	rmes	Icteridae	<i>pectoralis</i>	Chorcha	R
2	Passerifo		<i>Passer</i>	Pinzón	
0	rmes	Passeridae	<i>domesticus</i>	Casero	R

Source: Diagnostic conducted in June 2013.

Note: R = Resident; M= Migratory

Figura 11-1. Bird species reported in the Tranche Tela – La Ceiba



Tyrannus melancholicus (Atrapamoscas tirano)

Mammals

During the tour 3 people from the area were interviewed. They point out that on the road they've seen skunks with stripes from the genera *conepatus sp*, Opossum, (*Didelphis marsupialis*) and by the area that goes through the Botanic Garden a jaguar (*pantera onca*) has been spotted near the road on occasions. This species has been reported for the Botanical Garden Lancetilla and for the National Park Janeth Kawas.

Table 11-7. Mammal species

Order	Family	Scientific Name	Common Name
Mammalia	Didelphidae	<i>Didelphis marsupialis</i>	Opossum
	Dasyproctidae	<i>Dayprocta punctata</i>	Agouti
	Procyonidae	<i>Procyon lotor</i>	raccoon
	Mephytidae	<i>Conepatus sp</i>	skunk

Source: Diagnostic conducted in June 2013.

Reptiles and Amphibians

During the tours in the tranches, we observed the presence of 03 families, 03 genera and 03 species of lizards, among which is the Iguana (*Ctenosaura similis*), the Charancaco (*Vaialiscus vittatus*) and Stripped Pichete (*Cnemidophorus sp.*). However for the type of ecosystem you can find flag pichetes *Norops sp.*, iguana and striped Pichete *Sceloforus.sp* among others.

It is also possible to find amphibian species as *Hyla microcephala*, *Smilisca bahudini*, *Sinax staufferi* *Lithobates* and hopefully red eye frogs *Duelmanohila salvavida* (endemic) or *Agalychnis*.

Table 11-8. Reported reptiles and amphibians species

No	Order	Family	Scientific Name	Common Name
1	SQUAMATA	Coritophani dae	<i>Basiliscus vittatus</i>	Charancaco
2		Iguanidae	<i>Iguana iguana*</i>	Iguana Verde
3		Iguanidae	<i>Ctenosaura similis</i>	Garrobo
4		Teiidae	<i>Cnemidophorus sp</i>	Pichete rallado
6		Colubridae	<i>Clelia clelia*</i>	Zumbadora
8		Elapidae	<i>Micrurus nigrocinctus*</i>	serpiente de coral

Source: Diagnostic conducted in June 2013.

11.3 Flora (trees and plants, etc.)

In the tour of this tranche, there were 53 species of trees reported, distributed in 26 families and 49 genera. In Table 11-9, are the species of flora found in the stretch, making mention of the status of the plant between native and exotic (introduced species).

Table 11-9. Flora Species in the Tranche Tela - La Ceiba

	Family	Scientific Name	Status	Common Name
1	Anacardiaceae	<i>Magifera indica</i> L.	Native	Mango
2	Apocynaceae	<i>Plumeria alba</i> Aubl.	Native	Flor de mayo
3	Apocynaceae	<i>Stemmadenia donnell-smithii</i> (Rose) Wood	Native	Cajón de burro
4	Bignoniaceae	<i>Crescentia alata</i>	Native	

5	Bignonia ceae	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Native	San Andrés
6	Bombaca ceae	<i>La Ceiba pentandra</i> (L.) Gaertn.	Native	La Ceiba
7	Boragina ceae	<i>Cordia alliodora</i> (Ruiz & Pav.) Cham.	Native	Laurel
8	Boragina ceae	<i>Cordia dentata</i> Poir.	Native	Tigüilote
9	Burserac eae	<i>Bursera simaruba</i> (L.) Sarg.	Native	Indio desnudo

	Familia	Nombre Científico	Status	Nombre común
10	Caricaceae	<i>Papaya cauliflora</i> (Jacq.) Poir.	Native	Papaya
11	Casuarinaceae	<i>Casuarina equisetifolia</i> L.	Exotic	Casuarina
12	Combretaceae	<i>Terminalia catappa</i> L.	Native	Almendro
13	Eleocarpaceae	<i>Muntingia calabura</i> L.	Native	Capulín
14	Euphorbiaceae	<i>Ricinus communis</i> L.	Native	Cagalera
15	Lamiaceae	<i>Gmelina arborea</i> Roxb.	Exotic	
16	Lecithydeaceae	<i>Couroupita guianensis</i> Aubl.	Exotic	Bala de cañón
17	Leguminosae	<i>Acacia fistola</i> L.	Native	cañafistula
18	Leguminosae	<i>Caesalpinia coriaria</i> (Jacq.) Willd	Native	acacia
19	Leguminosae	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Native	Acacia roja
20	Leguminosae	<i>Cassia siamea</i> Lam.	Exotic	Acacia amarilla
21	Leguminosae	<i>Clitoria fairchildiana</i> R.A. Howard	Native	
22	Leguminosae	<i>Cojoba graciliflora</i> (S.F. Blake) Britton & Rose	Native	Barba de jolote
23	Leguminosae	<i>Delonix regia</i> (Bojer ex Hook.) Raf	Exotic	Morazán
24	Leguminosae	<i>Enterolobium cyclocarpus</i> (Jacq.) Griseb.	Native	Guanaca ste
25	Leguminosae	<i>Gliricidia sepium</i> Kunth ex Steud.	Native	Madriado
26	Leguminosae	<i>inga punctata</i> J. León	Native	Guama
27	Leguminosae	<i>inga vera</i> Kunth	Native	Guama
28	Leguminosae	<i>Lysiloma auritum</i> (Schtdl.) Benth.	Native	Quebrac ho

29	Leguminosae	<i>Mimosa peltita</i> Humb. & Bonpl. ex Willd.	Native	Carbón
30	Leguminosae	<i>Racosperma mangium</i> (Willd.) Pedley	Exotic	
31	Leguminosae	<i>Senna reticulata</i> (Willd.) H.S. Irwin & Barneby	Native	
32	Malpighiaceae	<i>Byrsonima crassifolia</i> (L.) Kunth	Native	Nance
33	Meliaceae	<i>Cedrela odorata</i> L.	Native	Cedro
34	Meliaceae	<i>Melia azedarach</i> L.	Native	Paraíso
35	Meliaceae	<i>Swietenia macrophylla</i> King	Native.	Ape II Caoba
36	Moraceae	<i>Arthocarpus altilis</i> (Parkinson) Fosberg	Native	Mazapán
37	Moraceae	<i>Cecropia peltata</i> L.	Native	Guarumo
38	Moraceae	<i>Ficus insipida</i> Willd.	Native	amate
39	Myrtaceae	<i>Eucaliptus</i> sp	Exotic	Eucalipto
40	Myrtaceae	<i>Psidium guajava</i> L.	Native	Guayaba
41	Palmae	<i>Atelea guinensis</i> L.	Native	Corozo
42	Palmae	<i>Cocos nucifera</i> L.	Native	Coco
43	Palmae	<i>Eleais oleifera</i> (Kunth) Cortés 1897	Exotic	Palma africana
44	Palmae	<i>Roystonea regia</i> (Kunth) O.F.Cook	Native	Yagua
45	Pinaceae	<i>Pinus caribaea</i> Morelet	Native	Pino
46	Piperaceae	<i>Piper aduncum</i> L.	Native	Cordoncillo
47	Piperaceae	<i>Piper arboreum</i> Aubl.	Native	Cordoncillo
48	Rubiaceae	<i>Morinda citrifolia</i> L.	Native	Nonis
49	Rutaceae	<i>Citrus sinensis</i> (L.) Osbeck	Native	Naranja
50	Salicaceae	<i>Salix humboldtiana</i> Andersson	Native	Sauce
51	Simarubaceae	<i>Simarouba glauca</i> DC.	Native	Aceituno
52	Ulmaceae	<i>Guazuma ulmifolia</i> Lam	Native	Caulote
53	Vochysiaceae	<i>Vochysia guatemalensis</i> Donn. Sm.	Native	San Juan

Source: Diagnostic conducted in June 2013.

Species with economic value were observed in the tranche, among

which we can mention the pine (*pinus caribaea*), cedar (*cedrela odorata*), laurel (*cordia alliodora*) and mahogany (*swietenia macrophylla*), the exotic teak (*tectona grandis*), and before arriving at the city of La Ceiba the most abundant species is *racosperma mangium* plant native to Australia.

On the other hand the only species which is in the Appendix II of CITES, is the mahogany.

Figure 11-2. Flora species observed in the Tranche Tela - La Ceiba



Tyrannus melancholicus
(Atrapamoscas tirano)

Lysiloma auritum (Schltdl.)
Benth. Frutos. **Quebracho**

11.4 Ecosystems

all of the alignment of the tourist corridor in honduras: stretch fabric - ceiba, is located according to the classification of ecosystems, in the "farming system", including ecosystems with human intervention, agriculture, livestock farming, shrimp, salt mines and others. Close to the alignment it is possible to observe areas of coastal tropical vegetation with very recent, moderately drained soils and and tropical forests always green broadleaf, submontane. See Figura 11-3:

Figura 11-3. Ecosystems characteristic of the Project area



Key

- Bosque tropical semideciduo mixto, submontano
- Herbazal pantanoso con gramíneas, palmas y/o arbustos
- Sistema agropecuario
- Vegetación tropical costera en suelos muy recientes, moderadamente drenado
- Bosque tropical siempreverde latifoliado, submontano
- Área urbana

Source: Vegetable Ecosystems Map of Honduras. Technical Secretariat of Planning and External Cooperation (SEPLAN). National Land Information System.

VII. 3 Social Environment

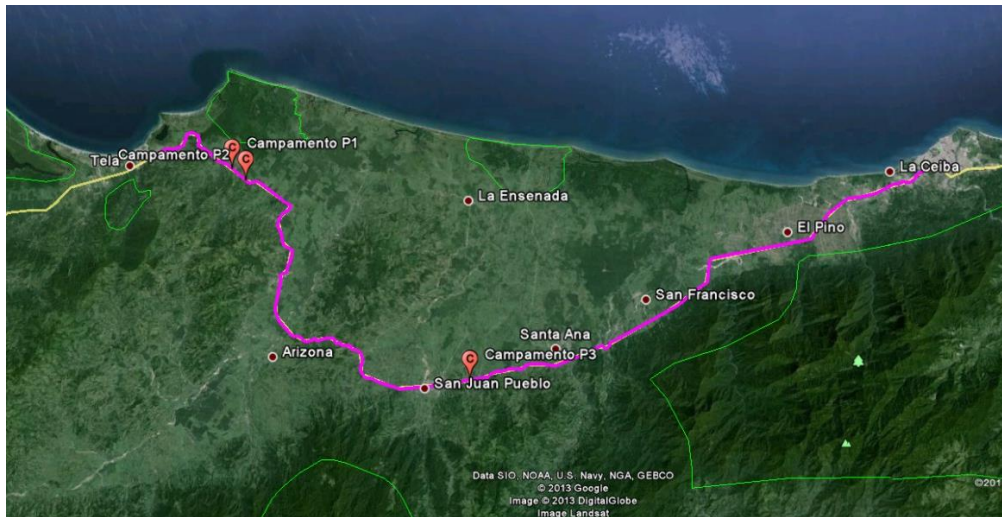
This section is the result of an analysis of information from the Population and households Census in addition to the review of related documents describing the area. It includes information on population characteristics, education, and other socio-demographic and economic indicators that provide relevant information about the quality of life of communities, equipment, services, infrastructure and economic activities, among others.

For this environmental assessment, the description of this section shall consist on the general aspects of the departments, municipalities, and in any possible cases, at the level of communities located along the alignment within the area of influence of the project.

12.1 Population where the project is located (attach location map and satellite image 1:50000)

The Project Maintenance of the Tranche San Pedro Sula- El Progreso is located in one of the main road networks of Honduras, CA-13; it is located in the departments of Cortés and Yoro, connecting the municipalities of San Pedro Sula, La Lima, San Manuel, and El Progreso. See Figure 13-1:

Figure 13-1. Satellite Image of the location of the Project



Source: Google Earth. 2013.

12.1.1 General characteristics of the population of the area of influence

In this section we detail the characteristics at a level of knowledge, beliefs, education and behaviors of the population of the area of socioeconomic influence of the Project. Some of the general characteristics of the municipalities affected by the project are described as follows:

12.1.1.1 Demographics

The population estimate for 2010, conducted by the National Statistics Institute of Honduras, for municipalities of the socioeconomic influence area is presented in Table 12.1:

Table 13-1. Estimación de la población por Municipios, por área rural y urbana. 2010

Department/ Municipality	Urban Population			Rural Population			TOTAL
	Men	Women	Total	Men	Women	Total	
Atlántida	128,350	138,003	266,353	71,801	69,397	141,198	407,551

Tela	22,179	23,354	45,533	21,330	20,780	42,110	87,644
Arizona	2,428	2,699	5,127	8,044	8,205	16,249	21,376
Esparta	-	-	-	8,142	7,947	16,089	16,089
La Masica	5,533	6,411	11,944	8,258	8,000	16,258	28,202
San Francisco	2,996	3,475	6,471	2,800	2,779	5,579	12,050
El Porvenir	7,685	7,404	15,090	4,038	3,390	7,428	22,517
La Ceiba	85,748	92,667	178,414	3,985	3,431	7,416	185,831

Source: National Statistics Institute of Honduras. Population projections by Departments and Municipalities. 2010.

Talking about the urban and rural population of the municipalities (year 2010), in the area of socio-economic influence, shows that in the municipality of Tela, 65% of the population resides in urban areas and 35% in rural areas. In the case of the municipality of Arizona, 24% of the population resides in urban areas, while in the municipality of Esparta, the entire population is considered as rural. In the case of the municipality of La Masica, 42% of the population is considered urban, in San Francisco, about 54% of the population is considered urban. Finally for the municipalities of El Porvenir and La Ceiba, you have that the urban population is 67% and 96% respectively.

12.1.1.2 Ages

Below is the distribution of the population by age ranges by Municipality

Table 13-2. Distribución de la población por rangos de edades por Municipio – año 2010

Municipality	Age Groups							
	Total	0-3	4-6	7-12	13-17	18-24	25-64	65+
Tela	87,644	8,514	6,616	13,166	10,618	11,502	3,235	4,878
Arizona	21,376	2,282	1,799	3,524	2,652	2,698	7,407	1,013
Esparta	16,089	1,726	1,307	2,733	1,981	1,932	5,652	757
La Masica	28,202	3,168	2,449	464	3,409	3,614	9,698	1,223
San Francisco	12,050	1,313	963	1,812	1,372	1,564	4,406	621
El Porvenir	22,517	241	1,657	3,161	2,514	3,317	8,534	923
La La Ceiba	185,831	17,584	12,365	23,879	20,224	28,276	75,548	7,955

Source: Projections INE, 2010

12.1.1.3 Housing

The total number of occupied private housing in the Municipalities of the area of socioeconomic influence of the Project, are listed below:

Table 13-3. Total occupied houses in the Municipalities of AISE

Municipality	Total private homes occupied
Tela	15,766
Arizona	3,776

Esparta	3,014
La Masica	4,367
San Francisco	2,215
El Porvenir	2,849
La La Ceiba	27,853

Source: Honduras National Statistics Institute. Occupied private dwellings. 2001 census

12.1.1.4 Education

The main indicators of education of the population in the area of socio-economic influence, are presented in Table 12-4:

Table 13-4. Rate of illiteracy by municipality- 2008-2009

Municipality	Rate of illiteracy in adults (% de 15 años y más)	Combined gross attendance rate. Primary, secondary and tertiary education (%)
Tela	14,3 %	63 %
Arizona	18.70 %	62 %
Esparta	18.9 %	61 %
La Masica	17.9 %	61 %
San Francisco	13.40 %	67 %
El Porvenir	12.6 %	63.7 %
La Ceiba	6 %	70 %

Source: Human Development Report Honduras 2008 / 2009

Evidenced based on the table above, the highest illiteracy rates are observed in the municipalities of Esparta, Arizona and La Masica 18.7%, 18.9% and 17.9% respectively, while the lowest rate (6%) occurs in the municipality of La Ceiba.

12.2 Economic activity of the population

12.2.1 Municipality of Tela

The main activities in the municipality of Tela are related to the primary sector of the economy, mainly oriented to agriculture and livestock activities characterized for involving traditional production systems none-technified. As for the secondary sector, there is no developed industry, except for food agroindustry such as dairy products for consumption in the municipality and sales within the region. Among the services (tertiary sector), the municipality has mainly companies engaged in commerce, transport and tourism.

42.9% of the working population in the municipality of Tela is engaged in "agriculture, forestry, hunting and fishing", followed by 16.3% dedicated to "wholesale and retail commerce, hotels and restaurants" and 12.1% works in other credit-commercial and lending activities "community, social and personal services". See Table 12-5:

Table 13-5. Percentage of population by branch of economic activity in Tela

Branch or activity	% of population
Agriculture, forestry, hunting and fishing	42.9

Wholesale and retail commerce, hotels and restaurants	16.3
Community, social and personal services	12.1
Manufacturing	9.9
Construction	6.9
Non-specified activities	6.4
Transport, storage and communications	3.0
Finance, insurance, real estate and business services establishments	2.3
Electricity, gas and water	0.2
Mine and quarry exploitation	0.1

Source: INEH, 2001 Census.

12.2.2 Municipality of Arizona

The predominant activities in the municipality of Arizona are related to the primary sector of the economy, mainly oriented to agriculture, livestock and forestry activities characterized by traditional, non technified production systems. Most cattle farms are mainly dedicated to raising cattle for milk production and the minority to the rearing of calves for fattening. There is also a high population of poultry and pigs, in small quantities horses, sheep and mules. In terms of fishing, this activity is done in small-scale and artisanal character on the coast of the municipality, especially in the community of Hisopo. The forest resource is used in traditional form, mainly getting timber and firewood. Sawmill equipment settled in communities close to Nombre de Dios mountain extract wood in a regulated way. Wicker and some medicinal plants are also used.⁹

As for the secondary sector, a developed industry does not exist. The main industries placed in the area are of agro industrial character and intermediate, for its products are raw material of other industries, except for the transformation of the wood, and the extraction of oil of the fruit of the African palm and the processing of milk in low scale. Within the services (service industries), the municipality has (relies on) companies dedicated to commerce and to transport. The major commercial relationship of the Municipality of Arizona is with the municipality of Tela.

Table 13-6. Percentage of population by branch of economic activity in Arizona

Branch or Activity	% of the population
Agriculture, forestry, hunting and fishing	60.49
Wholesale and retail commerce, hotels and restaurants	10.38
Community, social and personal services	8.68
Manufacturing	7.81
Construction	5.13
Non- specified activities	4.50
Transport, storage, and communications	1.73
Finance, insurance, real estate and business services establishments	1.16
Electricity, gas, and water	0.08
Mine and quarry exploitation	0.04

Source: INEH, 2001 Census.

⁹ Elaboración de planes de Desarrollo y Ordenamiento Territorial de la Subregión IV Valle de Leán. Municipio de Arizona.

12.2.3 Municipality of Esparta

Commercial agricultural activities are cattle raising, agriculture, trade, the cultivation of African Palm and, on a smaller scale commerce. Vegetables such as tomato, pepper and cabbage for local and external commercialization are also cultivated.

Sources of work, other than the demand for labor to sow African Palm, are reduced. The closure of the Standard Fruit Company marked the closure of the major source of employment in the area. The women of the municipality are organized into 6 groups, one of which is Eden, dedicated to cattle ranching, oil palm, beans, maize and other crops.

66.21% of the population working in the municipality of Esparta is dedicated to the "agriculture, forestry, hunting and fishing", followed by a 9.92% dedicated "non- specified activities" and an 8.58% serves "community, social and personal services".

Table 13-7. Percentage of population by branch of economic activity

Branch or Activity	% of the population
Agriculture, forestry, hunting and fishing	66.21
Wholesale and retail commerce, hotels and restaurants	6.20
Community, social and personal services	8.58
Manufacturing	3.79
Construction	3.20
Non- specified activities	9.92
Transport, storage, and communications	1.17
Finance, insurance, real estate and business services establishments	0.38
Electricity, gas, and water	0.54

Source: INEH, 2001 Census.

12.2.4 Municipality of La Masica

The predominant activities in the municipality of La Masica are related to the primary sector of the economy, mainly oriented to agriculture and cattle raising, activities characterized by traditional, non technified production systems. Fishing is carried out in small-scale and artisanal character on the coast of the municipality of La Masica, particularly in the community of Boca Cerrada.

In regard to the secondary sector, there is no industry developed. In the municipalities of the MAMUCA modern industrial activities have not yet been developed. The main industries settled in the area are of agro-industrial nature and intermediate

Within the service sector, the municipality's offer is diverse, covering varied activities from repairs of household appliances, automobile workshops, and secretarial services. Commerce is carried out mainly in the population of San Juan Pueblo followed by La Masica. The products that are marketed are plastics for industrial use, shadow for nurseries, plastic bags for agricultural use, plastic pots, agricultural products, clothing, groceries, food, and school supplies, among others.

Table 13-8. Percentage of population by economic activity in La Masica

Rama o actividad	% de la población
Agriculture, forestry, hunting and fishing	59.89
Wholesale and retail commerce, hotels and restaurants	12.66
Community, social and personal services	8.18
Manufacturing	4.61
Construction	4.57
Non-specified activities	6.76
Transport, storage and communications	1.85
Finance, insurance, real estate and business services	1.3
Electricity, gas and water	0.5
Mine and quarries exploitation	0.11

Source: INEH, 2001 Census.

12.2.5 Municipality of San Francisco

The main activities in the municipality of San Francisco are related to the primary sector of the economy, mainly oriented to agriculture and livestock activities characterized for involving traditional production systems none-technified. As for the secondary sector, there is no developed industry, except for the transformation of the african palm fruit into oil and the processing of low-scale dairy. Among the services (tertiary sector), the municipality has mainly companies engaged in commerce and transportation.

Tabla 13-9. Percentage of population by economic activity in San Francisco

Branch or activity	% of population
Agriculture, forestry, hunting and fishing	43.3
Wholesale and retail commerce, hotels and restaurants	12.1
Community, social and personal services	13.4
Manufacturing	10.7
Construction	6.0
Non-specified activities	9.9
Transport, storage and communications	2.4
Finance, insurance, real estate and business services	2.2
Electricity, gas and water	0.1

Source: INEH, 2001 Census.

12.2.6 Municipality of El Porvenir

The main activities in the municipality of El Porvenir are related to the primary sector of the economy, mainly oriented to agriculture and livestock activities characterized for involving traditional production systems none-technified.

As for the agricultural production, the Standard Fruit Company has pineapple plantations in a great extension of the municipal territory and according to estimates it provides work to more than 1,600 individuals, becoming the most economically important crop. With regard to fishing, this activity is done in low scale and in artisanal character in the coast of the Municipality of El Porvenir. There are also forest exploitation in the southern zone of the municipality

supported by programs that promote the rational use of the forest as an economic activity.

Tabla 13-10. Porcentaje de población por rama de Actividad económica en San Francisco

Rama o actividad	% de la población
Agricultura, silvicultura, caza y pesca	43.3
Comercio al por mayor y menor, hoteles y restaurantes	12.1
Servicios comunales, sociales y personales	13.4
Industria manufacturera	10.7
Construcción	6.0
Actividades no bien especificadas	9.9
Transporte, almacenamiento y comunicaciones	2.4
Establecimientos financieros, seguros, bienes inmuebles y servicios a las empresas	2.2
Electricidad, gas y agua	0.1

Fuente: INE, Censo 2001.

12.2.7 Municipality of La Ceiba

In La Ceiba, the primary sector, represented by agriculture and livestock, is of lesser importance than in other municipalities, but the population depends on it for subsistence. There are also forests models and organized groups of sawmills that promote sustainable forestry.

The main activities in the municipality of La Ceiba are related to the tertiary sector of the economy, mainly oriented to commerce, finance, construction, transport, tourism, among others. The municipality of La Ceiba by its strategic location and its access infrastructure, being a port of historic importance and having an international airport, it has facilitated it to become an important center of economic development in the region, generating sources of income to both the population and the municipality by the taxes that are generated as a result of economic activity.¹⁰

Tabla 13-11. Percentage of population by economic activity in La Ceiba

Branch or activity	% of population
Agriculture, forestry, hunting and fishing	8.34
Wholesale and retail commerce, hotels and restaurants	25.90
Community, social and personal services	18.91
Manufacturing	12.96
Construction	9.92
Non-specified activities	8.78
Transport, storage and communications	7.35
Finance, insurance, real estate and business services	7.05
Electricity, gas and water	0.70
Mine and quarries exploitation	0.09

Source: INEH, 2001 Census.

12.3 Source of water supply for the population

¹⁰ Preparation of development plans and land use of the Subregion IV Valle de Leán. Municipality of La Ceiba, 2011.

In Honduras, the drinking water systems are classified according to the following system used by SANAA:

Table 13-12. Classification of water systems according SANAA

Categoría	Descripción
A	El sistema de agua potable está funcionando bien. Hay agua potable todos los días. El clorador está funcionando, hay una Junta Administradora y hay una tarifa establecida, los abonados generalmente están al día en sus pagos.
B	El sistema de agua potable puede estar funcionando, pero hay deficiencias administrativas que ponen en peligro la sostenibilidad del sistema. No se requiere inversión monetaria para ponerlo en "A".
C	El sistema de agua potable puede estar funcionando, pero hay deficiencias físicas y administrativas que ponen en peligro la sostenibilidad del sistema. Se requiere inversión monetaria para ponerlo en "A", pero el monto esta dentro de las posibilidades de la comunidad.
D	El sistema de agua potable esta en tan mal estado fisico como administrativo, que los costos de solucionar los problemas escapan de las posibilidades de ola comunidad. Solamente con financiamiento externo podrían solucionarse los problemas.

Fuente SANAA

12.3.1 Municipality of Tela

According to a socio-economic study by Bermello, Ajamil & Partners, INC. Phase I Final Report: Study of Cruise Port and Master Plan for the Bay of Tela in October 2005, at the municipal level the coverage of drinking water is just 16.8%. In the urban area there is a greater than 90% coverage. The sources of supply for the city of Tela are La Esperanza, Piedras Gordas (Highland Creek) and Lancetilla rivers, who provide in 80% the water used by the city of Tela, in which the service is operated by the Municipal Water Division of Tela (DIMATELA). In the Municipality of Tela, it has about 60% of the system of water supply, it is found in good condition and the other 40% is in poor condition and should be replaced. See Table 12-13.

The Bañaderos system that caters to New Tela, Tela low sector and the communities of San Juan and Tornabé, has a water treatment plant using chlorine, which operates in good condition. The Garifuna community of Triunfo de la Cruz, La Ensenada, San Juan, Tornabé, Barra Vieja and Miami, primarily use wells for the production of drinking water.

12.3.2 Municipality of Arizona

The Municipality of Arizona, has 24 drinking water supply systems. De acuerdo a la información proporcionada por el Instituto Nacional de Estadísticas (Censo de Población y Vivienda 2001), en el municipio de Arizona el 87% de las viviendas están conectadas a sistemas de abastecimiento de agua potable, 3% la obtienen de pozos, 9% la toman directamente de ríos o arroyos y 2% hacen uso de otros métodos. Se observa que el 50% de los sistemas de abastecimiento de agua potable se encuentran en buen estado y el otro 50% se encuentra en mal estado o por reemplazar. Ver **Error! Reference source not found.**

12.3.3 Municipality of Esparta

The municipality of Esparta, has 20 systems of potable water supply. In the municipality of Esparta 74% of the housing is connected to the drinking water supply systems, 9% is obtained from wells, 11% taken directly from rivers or streams, and 5% make use of other methods (Census, 2001). In Esparta, 60% of the drinking water supply systems are in good condition, and the remaining 40% have a malfunction or must be replaced. See table 12-13

12.3.4 Municipality of La Másica

The municipality of La Masica has 22 systems of supply of drinking water (collection, treatment, conduction, storage and distribution). According to the information provided by the National Institute of Statistics (2001 Population and Housing Census). 45% of supplies of drinking water in the municipality of La Masica, are in good condition, while the remaining 54% is in poor condition. See table 12-13. In the Municipality of La Masica 82% of the houses are connected to drinking water supply systems, 4% obtain it from wells, 11% take it directly from rivers or streams and 3% make use of other methods.

12.3.5 Municipality of San Francisco

The municipality of San Francisco has 8 systems of supply of drinking water (collection, treatment, conduction, storage and distribution), of these, 50% is in good condition and the other 50% in poor condition. See table 12-13.

According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of San Francisco 88% of houses connected to drinking water supply systems, 4% obtain it from wells, 5% take it directly from rivers or streams and 4% make use of other methods.

12.3.6 Municipio de El Porvenir

The Municipality of El Porvenir has 11 systems of supply of drinking water (collection, treatment, conduction, storage and distribution), of which 45% is in good condition and the remaining percentage is damaged or they must be replaced. See table 12-13.

According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of El Porvenir 89% of houses connected to drinking water supply systems, 3% obtain it from wells, 4% take it directly from rivers or streams and 4% make use of other methods.

12.3.7 Municipio de La Ceiba

The municipality of La Ceiba has 19 systems of drinking water (collection, treatment, conduction, storage and distribution), of which 74% are working well. See Table 12-13. SANAA supplies 60% of the city with 86% coverage, between 25 and 30% of the city is supplied by groundwater sources or rivers or other sources and 15% has no water supply.

Table 13-13. Drinking water supply systems in the Municipalities

Municipality	Total by municipality	Systems			
		A	B	C	D
Tela	50	18	12	12	8
Arizona	24	8	4	4	8
Esparta	20	6	6	1	7
La Masica	22	4	6	3	9
San Francisco	8	3	1	2	2
El Porvenir	11	1	4	7	0
La Ceiba	19	1	13	0	5

Fuente: Elaboración propia en base al Documento "Elaboración de planes de Desarrollo y Ordenamiento Territorial de la Subregión del Valle IV de León. Municipios de Tela, Arizona, Esparta, La Másica, San Francisco, El Porvenir y La Ceiba.

12.4 Cultural heritage

The concept of cultural heritage refers to "the legacy of tangible and intangible assets that endorses a specific society over time and from which forges an identity as a people or nation; cultural heritage expresses a form of be, do, and dream, a vision of life, a meaning, a meaning of existence."

Municipality of Tela

The municipality of Tela has the old building belonging to the Tela Railroad Company, it has not yet been put into touristic value.

In general, settlements and urban nuclei of the Leán Valley Region date from the eighteenth century onwards, for which antique and representative edifications and vernacular architecture is identified and can be put in value as part of tourism in the municipalities and the department in general.

Municipality of La Ceiba

Recently, the Secretariat of Arts, Culture and Sports, issued statement of "National Monument" to the historic center of La Ceiba, with the objective to preserve the architecture that identifies this city. With this declaration, the authorities are claiming that the old buildings that were gradually disappearing with the rise of the modern shopping malls, retained fullness. The owners of the buildings considered historical, not be able to make improvements or changes to their buildings or homes, without prior consensus with the Office of the Attorney General and with the IHAH.

Before the garifunas there was no population of relative importance in the zone, although it is known from settlements in Yaruca and La Colorada, the latter inhabited by local indigenous people. In these sites located in the basin of the Cangrejal River and the coastal area, have been found archaeological remains that have been investigated and studied.

12.4.1 Archaeological ruins

Inside the area of servitude of the path of this road or adjoining to the same one archaeological ruins do not exist, the Institute of Anthropology and History, IHAH; was consulted on the request of proceeding with steadfastness of liberation of the project, to which it was answered that it was not necessary, since the enlargement of the road has not been planned.

12.4.2 Communities or ethnic people or Afro-descendants

Municipality of Tela

The Garifuna culture is very strong, with great emphasis on music, dance and history. They have their own religion, which consists of a mixture of Catholicism, africanisms and indian beliefs. The representative manifestations of this culture and which have been consolidated as part of the tourist offer of the department and to its majority correspond to the settled communities along the Bahía de Tela. The villages of Rio Tinto, Miami, Tornabé, San Juan, La Ensenada, and Triunfo de la Cruz are identified from west to east.

Municipality of Esparta

The Garifuna culture is very strong, with great emphasis on music, dance and history. They have their own religion, which consists of a mixture of Catholicism, africanisms and indian beliefs. The representative manifestations of this culture in the municipality of Esparta, correspond to the communities of Nueva Go, Rosita y Cayo Venado.

Municipality of La Ceiba

The Garifuna culture is very strong, with great emphasis on music, dance and history. They have their own religion, which consists of a mixture of Catholicism, africanisms and indian beliefs. In the municipality of La Ceiba the Sambo Creek community stands out, located about 15 kilometers to the east of La Ceiba on the shores of the Caribbean Sea.

12.4.3 Cultural interest sites

Municipality of Tela

The Saint Anthony of Padua Parish Church stands out, located in Barrio La Isla, there are various churches of other denominations located throughout the barrios and colonias of the city.

The House of Culture and Youth, is located in Barrio El Way and the municipal library in the same barrio. There is a Garifuna Museum, of ethnographic exhibition on the cultural richness of the Garifuna.

Municipality of La Ceiba

The Cathedral in honor of Saint Isidro Labrador stands out, also the Saint Antonio María Claret Church, to the east of the city in the colonia Las Palmas, La Milagrosa Church next to the Bonilla park and The Nativity Church in the western sector of the city, and various small churches scattered in the various colonias, nursing homes and children's villages. There are various churches of other denominations located throughout the city center.

There is also a house of culture, located in the former customs building built in 1917. In regard to libraries, the Public Library of La Ceiba, located in La Ceiba-Tela road back from the Golosón airport, the Juan Ramón Molina Library, located in the Government Building are listed.

La Casona del Mar Museum, located in the Sambo Creek Village, the house is designed to accommodate people interested in the study of the arts in our country or to study specific topics in the visual arts; contains an important collection of works of renowned Honduran artists, the Museum of the Insects and Butterflies located in Colonia El Sauce.

12.5 Transportation

Municipality of Tela

The bus terminal belongs to the Hedman Alas company, and is located in the Barrio San Antonio, there is a point of buses (San Pedro Sula-La Ceiba), a point of buses (villages west of Tela), and a point of buses (villages east of Tela), all located in Barrio El Centro.

Municipality of La Ceiba

The CA-13 highway that crosses the municipality observes good conditions up until the city of La Ceiba. In its passage through the city driving conditions are very difficult especially in the peak hours. Within the city rolling the folder of notes significant fatigue conditions and the right of way is totally invaded.

In the city of La Ceiba, the network of streets and avenues that make up a somewhat messy road network, are deteriorating conditions important given the substantial increase of the vehicles, population growth and the lack of regularization of public transport, among others.

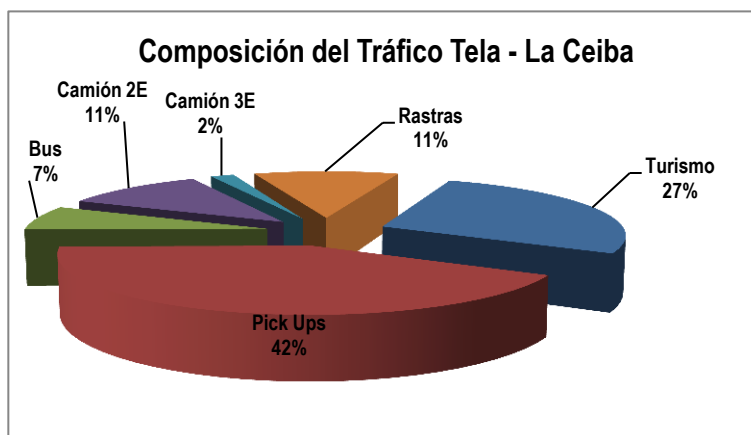
The interdepartmental bus terminal is located in the vicinity of the San Jose market, there are also bus terminals of private companies, which make travel to Tela, Tegucigalpa and San Pedro Sula among others, among which we can list, Viana; in the Esso gas station Miramar, Mirna, at the Shell station road Suyapa road to Ceiba-Jutiapa , Hedman Allas; road The Ceiba-Jutiapa . Scattered throughout the city are located points of buses and taxis from urban routes.

In the Department of Atlántida as main airport infrastructure, we can identify Golosón International Airport it is located precisely in the city of La Ceiba. Currently only maintains domestic operations with full flights to the cities of Tegucigalpa, San Pedro Sula, Roatan, Utila, Guanaja and Puerto Lempira.

12.5.1 Traffic

The composition of the current traffic in the tranche: Tela - La Ceiba, is as follows: 27% light weight vehicles make up it (tourism), 42% the pick up trucks, 7% buses, 11% trucks type 2E, 2% 3E type trucks and 11% lorries. See Table 12-14:

Tabla 13-14. Composition of Traffic in Tela – La Ceiba

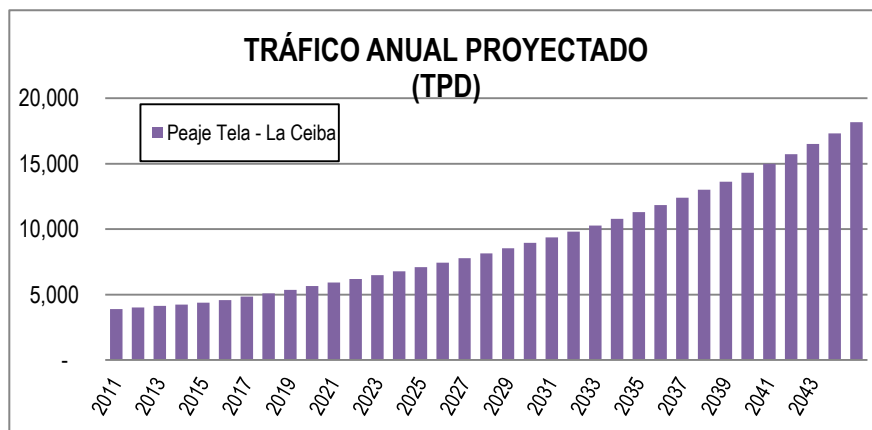


Source: Consultor, based on performed projections.

The annual traffic (TPD) by 2013 in the tranches Tela - La Ceiba, is of 4,128 vehicles. It is expected to increase in 2015, to 4,383 vehicles when Selective rehabilitation and maintenance is completed,.

The annual increase in traffic will be about 2.62% and will reach 5.4% in 2019, to remain until the 2045 a rate of annual increase of 4%, according to projections made. See Table 12-15:

Table 13-15. Annual traffic increase in the Tranche Tela – La Ceiba



Source: Consultant, based on performed projections

12.6 Solid wastes

12.6.1 Collection (containers, soil, etc.)

In the municipality of Tela, the service of collection and disposal of solid waste is provided by City Hall with coverage close to 90% only encompassing the municipality's capital. Garifuna communities service of collection and disposal of solid waste is carried out by private, either on an individual basis and with basic equipment or by small businesses, however there are still many people who bury or burn their trash and do not make use of private systems.

The municipality of Arizona does not have infrastructure for the management of solid waste. Therefore the population practices the burning or burial of their waste and proliferate dumps along roads, as well as in rivers and streams. According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of Arizona 5% of houses throw their garbage to the street, river, creek; 1% collects it in trucks; 92% burn it or bury it and 1% pay private individuals to throw it.

The municipality of Esparta does not have infrastructure for the management of solid waste. Therefore the population burns or buries their waste and proliferate dumps along roads, as well as in rivers and streams. According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of Esparta el 1% of houses throws their garbage to the street, river, creek; 93% burn or bury it 1% pay individuals to throw it and the rest makes use of other methods.

According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of La Masica 4% of households throw wastes to the street, river, creek; 6% is collected in trucks; 83% burn it or bury it and 1% pay individuals to throw it and 5% make use of other methods.

According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of San Francisco 3% of households throws wastes to the street, river, creek; 2% collects it in trucks; 90% burn it or bury it and 3% pay individuals for throw it and 2% make use of other methods.

According to the information provided by the National Institute of Statistics (2001 Population and Housing Census), in the municipality of El Porvenir 3% of households throws wastes to the street, river, creek; 4% collects it in trucks; 90% burn it or bury it and 1% pay individuals for throw it and 2% make use of other methods.

In the municipality of La Ceiba, collection and transport of waste is made by trucks that cover 11 to 13 routes to tend neighborhoods from the urban quarter of the municipality. The service coverage is estimated at 70% and areas not covered usually are marginal areas illegally occupied.

12.6.2 Transportation (compactors, dump trucks, barrows, etc.)

In the Municipality of La Ceiba, the frequency of collection is daily in the downtown area of the city and a up to three times per week in the rest of the routes. In most cases the vehicles used to provide the service are medium-sized trucks.

12.6.3 Disposal (uncontrolled landfill, controlled landfill, sanitary filling)

In the Municipality of Tela, the final disposal is carried out in a dump located 4 kilometers from the center of the municipal capital city in the road that leads to the municipality of La Ceiba. This dump is managed by the Municipality since 1995 and receives daily around 38 tons of waste from the municipal capital city of the community of Triunfo de la Cruz and private cars that make use of the site.

The Municipality of Arizona, Esparta and El Porvenir, is not provided with infrastructure for solid waste management.

The Municipality of La Masica, is provided with a site of waste disposal, located on the side of the CA 13 road.

In the Municipality of La Ceiba, the site of final disposal of waste has been carried out actions corresponding to a technical shutdown with enhanced operation, and in general terms it could be argued that they have a sanitary landfill processing except for the fact that the site does not have waterproofing. The filling of 4 blocks is located in a municipal field in the Colonia Los Laureles, on the road to Trujillo.

It is currently receiving an average of 150 tons/day. The filling is operated with the technical processing of sanitary landfill. Upon arrival at the landfill vehicles are weighed on the digital scale, the residues are unloaded to then be distributed in layers that are compacted and are then covered with soil daily to prevent foul odors and vectors.

12.7 Collection, treatment and disposal of wastewater

In relation to waste water management, in the Municipality of Tela, the network coverage of the sanitary sewage system barely reaches 24.6%, the rest of the municipality, specially the Garifuna villages makes use of latrines. At the level of the municipal capital, Tela has a sewage system divided into two sections called Tela Nuevo and Tela Viejo. Tela Viejo sector has a network of sewage systems built in 1952 and has a coverage of 42%. The Tela Nuevo sector has a network of sewage systems built by the Tela Railroad Company and currently only covers about 46% of households in the sector.

In relation to waste water management, in the Municipalities of Arizona, Esparta, La Masica, San Francisco and El Porvenir, It does not have a sewer system and makes use of individual solutions (septic tanks and/or latrines).

In relation to waste water, in the Municipality of La Ceiba, since 2004 the body responsible for the operation, administration and maintenance of the sanitary sewage system is the Municipal Office of Water and Sanitation (OMASAN). In the municipality, only the municipal capital city of La Ceiba offers sanitary sewage system with an approximate coverage of 75%. Outside the village, it makes use of septic systems and in the mountainous area still latrines are used, also, discharges of wastewater directly into the ditches are observed, fact that it contributes to the deterioration of the surface, especially in the lowest points of the network of streets and avenues, and contributes to the contamination of human settlements and the environment in general.

12.8 Health

The table below presents a summary of public health facilities presented in the Municipality of Tela:

Table 13-16. Health Facilities in the Municipality of Tela

Municipality	Location	Health Unit
Tela	Tela	Hospital del área
	Mezapa del Norte	CESAMO
	Paujiles	CESAMO
	Puerto Arturo	CESAR
	Rio Tinto	CESAR
	San Juan Tela	CESAR
	Triunfo de la Cruz	CESAMO
	Tornabé	CESAR
	VillaFranca	CESAR
	Buenos Aires	CESAR
	Cangelica	CESAR
	El Zapote	CESAR
	Melcher 6.5	CESAR
	Agua Chiquita	CESAR
Las Minas	CESAR	

	4 de Enero	CESAR
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Source: Department of Health Atlántida District. 2009.

Municipality of Arizona

The health and medical care facilities consist of 3 CESAMOS and 2 CESARS. Located throughout the municipality, they offer dentistry, pharmacy, and medical consultation services. It also has a private clinic, 2 pharmacies and a nursing home in Bo. El Centro which it is not operating. The table below presents a summary of public health facilities presented in the Municipality of Arizona:

Table 13-17. Health Facilities in the Municipality of Arizona

Municipality	Location	Health Unit
Arizona	Mezapa de Leán	CESAMOS
	Santa María	CESAR
	Kilómetro 17	CESAR
	Arizona	CESAMOS
	Jilamo Nuevo	CESAR

Source: Department of Health Atlántida District. 2009.

Municipality of Esparta

The table below presents a summary of public health facilities presented in the Municipality of Esparta:

Table 13-18. Health Facilities in the Municipality of Esparta

Municipality	Location	Health Unit
Esparta	Ceibita Way	CESAR
	Esparta	CESAMOS
	San Isidro	CESAR

Source: Department of Health Atlántida District. 2009.

Municipality of La Másica

The table below presents a summary of public health facilities presented in the Municipality of La Másica:

Table 13-19. Health Facilities in the Municipality of La Másica

Municipality	Location	Health Unit
La Másica	La Másica	CESAMOS
	San Antonio	CESAR
	Trípoli	CESAR
	San Juan Benque	CESAR
	San Juan Pueblo	CESAR
	Santa Fe	CESAR
	La Cumbre	CESAR

Source: Department of Health Atlántida District. 2009.

Municipality of San Francisco

Health and care equipment, consist in a CESAMOS, located in the Bo. En Centro, offering the services of general consultations, first aid, etc. The table below describes the health facilities presented in the Municipality of San Francisco:

Table 13-20. Health Facilities in the Municipality of San Francisco

Municipality	Location	Health Unit
San Francisco	San Francisco	CESAMOS
	Santa Ana	CESAR
	Frisco 1	CESAR

Source: Department of Health Atlántida District. 2009.

Municipality of El Porvenir

The table below presents a summary of public health facilities presented in the Municipality of El Porvenir:

Table 13-21. Health Facilities in the Municipality of El Porvenir

Municipality	Location	Health Unit
El Porvenir	El Porvenir	CESAMOS
	La Unión	CESAMOS
	El Pino	CESAR
	Salado Barra	CESAR

Source: Department of Health Atlántida District. 2009.

Municipality of La Ceiba

The table below presents a summary of public health facilities presented in the Municipality of La Ceiba:

Table 13-22. Health Facilities in the Municipality of La Ceiba

Municipality	Location	Health Unit
La Ceiba	La Ceiba	Hospital Regional
	Corozal	Cesamos
	La Pizzaty	Cesamos
	Sambo Creek	Cesamos
	Yaruca	Cesar
	El Confite	Cesamos
	El Pital	Cesar

Source: Department of Health Atlántida District. 2009.

In Addition there are:

- 9 Private Hospitals
- 91 Private Clinics located throughout the city center
- 10 Clinical Testing Laboratories located throughout the city center
- 26 Dental Clinics located throughout the city center

VIII.- Affidavit Of The Legal Representative

I **Carlos Arlinton Velásquez Jiménez** of **Honduran** Nationality , Of legal age, **married**, Identity number (passport, resident card) number **1803-1970-00322**, residing in: **Barrio La Bolsa, frente al Hospital y Clínicas San Jorge, Comayagüela, MDC.**, under the condition of **Legal Representative** of The Civil Works & Transportation And Housing Secretariat (known as SOPTRAVI) project: Tourism Corridor of Honduras: Tela – La Ceiba Tranche.

Located **between the Municipalities of Tela, Arizona, Esparta, La Masica, San Francisco, El Provenir and La Ceiba**; I declare that the information here provided on this form is true. I therefore manifest that I am aware of the existence of the Code of Good Environmental Practices of Honduras and declare that I agree to comply in all that apply to this Project, Work or Activity.

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Legal Representative Signature

IX.- Affidavit of the Lender of Environmental Services

I, **Carol Yisel Perdomo Cardona** , of legal age and of this domicile, **Civil Engineer** by profession and acting in my capacity as legal **representative of the consulting firm Ingeniería y Ambiente de Sula**, registered in the Natural Resources & Environment Secretariat (Known In Spanish as SERNA) **RE-0017-2003**, and hereby certify that all the information concerning the environmental status of the area where you plan to build the **Tourism Corridor Project Tranche Tela – La Ceiba** in the municipalities of **Tela, Arizona, Esparta, La Masica, San Francisco, El Provenir and La Ceiba** is true at the time of the inspections. In witness whereof I sign this in the city de _____ on ____ of the year ____

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Lender of Environmental Services Signature

X.- Additional Requirements to Submit

15	A	Form F-02 Assessment of the Significance of the Environmental Impact (Digital Matrix and printed)	X
	B	Environmental Management Plan	X
	C	Document of company constitution, individual trader or legal person	NA
	D	Title Deed or lease of the place where the project will be developed, duly stamped and registered	N/A
	E	Certificate issued by the Municipal Environmental Unit (MEU), which states the status of the project (if it has commenced operations and if it is located in an environmentally fragile area) (only for procedures in the Natural Resources & Environment Secretariat Known in Spanish as SERNA)	N/A
	F	Publication (in a newspaper of general circulation) of alert of entry before this Secretariat, five days prior to the presentation of this form and other requirements.	X
	G	Detail or breakdown of the amount of global investment activity, work or project.	X
	H	The basic design of the site corresponds with a general level of activity, work or project to be developed	NA
	I	The copy of the map sheet in which is the AP located	X
	J	Certification issued by the consultant responsible for the geotechnical and civil engineering situation of the land where the project is located.	NA
	K	Certification issued by a consultant responsible for the situation of geology, geomorphology, hydrogeology and natural terrain threats.	NA
	L	Certification issued by the consultant responsible for the archaeological situation of the land where the project will be located.	X

Photocopies of any deed or other documents must be authenticated

XI.- COMPETENT AUTHORITY ONLY						
16.1 ENVIRONMENTAL AUTHORITY RECEIVING			16.2 DATE		month	year
16.1.1 SERNA	16.1.2 Municipality		16.3 TIME		16.4 Seal (receipt)	
16.5 Name of civil servant receiving						
16.6 Position						
16.7 FOLLOW-UP ON FILE						
Name	Position	Action			Date	
		Report	Revision	Opinion	Starts	Ends
XII.- Results of the Environmental Evaluation Process						
17.1 Environmental Feasibility	17.1.1 Accepted		17.1.2 Rejected			
17.2 Civil servant authorizing the License				17.3 Position		
17.4 Signature of Civil Servant authorizing				17.5 Number of License		

**A- F02 FORM – EVALUATION
OF THE ENVIRONMENTAL
IMPACT SIGNIFICANCE
(MATRIX)**

1. RESOURCE CONSUMPTION																		
A. CONSTRUCTION STAGE																		
Component/ Subcomponent	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	y	Regulatory framework (z)					X= y * z	Value per Component					
	(Value = 1)	(Value = 2)	(Value = 3)	(Value = 4)	(Value = 5)		a	b	c	d	e							
Recursos	1.1 Water																	
	1.1.1 Source/ consumption	Body of water (surface or underground) within or outside the ADI not used as a source of drinking water	Body of water (surface or underground) which supplies the drinking water network outside ADI communities	Body of water (surface or underground) from which the community's drinking water network is supplied	Drinking water network outside the ADI project/ Well within the ADI project	Drinking water network within the ADI project	1		4						4.00	4.00	General Water Law	
	1.2 Energy																	
	1.2.1 Source / consumption		An own generator will be used, which will make noises, cause gases, and vibrations in the ADI, where there is NO population	An own generator will be used, which will make noises, cause gases, and vibrations in the ADI, where there is population	It will be necessary to disconnect the public network in order to make the project's own connections	The public network's consumption might generate supply problems to the community	3		4						12.00	12.00	The Electric Subsector Framework Law	
B. OPERATION STAGE																		
Recursos	1.3 Water	1.3.1 Consumption in public supply network	Water consumption does not exceed 50 m ³ /month.		Water consumption between 50 and 200 m ³ /month.										0.00			
		1.3.2 Superficial body of water consumption		Water consumption does not exceed 25% of the remaining flow.	Water consumption is greater than 25% and less than 50% of the remaining flow	Water consumption is greater than 50% of the remaining flow.	Greater consumption than the remaining flow.	2		4						8.00	8.00	General Water Law
		1.3.3 Consumption of underground source		Water consumption is no greater than 50 m ³ /day.	Water consumption between 50 y 200 m ³ /day.	Water consumption greater than 200 and less than 500 m ³ /day.	Water consumption greater than 500 m ³ /day.									0.00		
	1.4 Energy	1.4.1 Energy self-sufficiency through biofuels	Less than 360,000 liters are consumed	More than 360,000 liters and less than 750,000 liters of fuel per year are consumed	More than 750,000 liters and less than 7,500,000 liters of fuel per year are consumed	More than 750,000 liters and less than 15,000,000 liters of fuel per year are consumed	More than 15,000,000 liters of fuel per year are consumed									0.00		
		1.4.2 Energy self-sufficiency through fossil fuels	Less than 360,000 liters are consumed	More than 360,000 liters and less than 750,000 liters of fuel per year are consumed	More than 750,000 liters and less than 1,800,000 liters of fuel per year are consumed	More than 1,800,000 and less than 3,600,000 liters of fuel per year are consumed	More than 3,600,000 liters of fuel per year are consumed	1				2				2.00	2.00	Regulations for the installation and operation of service stations, deposits of fuel for own consumption and alternative or substitute products. (Agreement No. 1011, The General)
		1.4.3 External supply	Less than 240 Mwh/year, or 360,000 liters of fuel per year, or 12 TJ/year will be consumed.		More than 240 and less than 1200 Mwh/year, or more than 360,000 L and less than 1800,000 L of fuel per year, or more than 12 or less than 60 TJ/year will be consumed.		More than 1200 Mwh/year, or 1,800,000 L of fuel per year, or 60 TJ/year will be consumed.									0.00		
A Consumptio												26.00						

2. IMPACT ON THE BIOLOGICAL ENVIRONMENT															
A. CONSTRUCTION STAGE															
Component/ Subcomponent	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	y	Regulatory framework (Z)					X= y * z	Value per Component		
	(Value = 1)	(Value = 2)	(Value = 3)	(Value = 4)	(Value =5)		a	b	c	d	e				
2.1 Fauna	2.1.1 Terrestrial fauna			There will be some type of impact (displacement, hunting, destruction of habitat)		There will be impact on endangered species, indicators, CITES, endemic or with small populations.	3			3			9.00	9.00	Environment General Law
	2.1.2 Aquatic fauna			There will be some types of impacts(displacement, hunting, destruction of habitat, etc.)		There is an impact on endangered species, indicators, CITES, endemic or with small populations.							0.00		Environment General Law
	2.1.3 Coral reefs					There will be limitations and conditions.							0.00		
	2.1.4 Introduction of non-native species of fauna					There will be introduction.							0.00		
2.2 Flora	2.2.1 Terrestrial flora			There will be some type of impact (logging, burning, extraction of timber, etc.)		There will be an impact on endangered species, indicators, CITES, endemic or with small populations.	3			3			9.00	9.00	Environment General Law
	2.2.2 Aquatic flora			There will be some impact(extraction, cutting, siltation, etc.)		There will be an impact on endangered species, indicators, CITES, endemic or with small populations.							0.00		Environment General Law
	2.2.3 Wetlands					There will be impact.							0.00		Environment General Law
	2.2.4 Introduction of non-native species of flora					There will be introduction.							0.00		

A. OPERATION STAGE															
2.3 Fauna	2.3.1 Terrestrial fauna			There will be some type of impact (displacement, hunting, destruction of habitat, etc.)		There will be an impact on endangered species, indicators, CITES, endemic or with small populations.	3			3			9.00	9.00	
	2.3.2 Aquatic fauna			There will be some type of impact (displacement, hunting, destruction of habitat, etc.)		There is an impact on endangered species, indicators, CITES, endemic or with small populations.							0.00		
	2.3.3 Coral reefs					There will be limitations							0.00		
	2.3.4 Introduction of non-native species					There will be introduction.							0.00		
2.4 Flora	2.4.1 Terrestrial flora			There will be some type of impact(logging, burning, extraction of timber, etc.)		There will be an impact on endangered species, indicators, CITES, endemic or with small populations.	3			3			9.00	9.00	Environment General Law
	2.4.2 Aquatic flora			There will be some impact (extraction, cutting, siltation, etc.)		There will be an impact on endangered species, indicators, CITES, endemic or with small populations.							0.00		
	2.4.3 Wetlands					There will be impact.							0.00		
	2.4.4 Introduction of non-native species					There will be introduction.							0.00		
												SEI Biological environment	36.00		

3. Physical Environment																
A. Construction Stage																
Component/ subcomponent	CASE 1 (Value = 1)	CASE 2 (Value = 2)	CASE 3 (Value = 3)	CASE 4 (Value = 4)	CASE 5 (Value = 5)	y	Regulatory Framework (z)					X = y * z	Valuation by component			
							a	b	c	d	e					
3.1. Atmosphere	3.1.1.1 Stationary sources(see regulations of emissions by stationary sources)	Controlled emissions but which may cause impacts		Partially controlled emissions		Uncontrolled emissions.	3				2		6.00	17.00	Regulations for the control of emissions generated by stationary sources.	
	3.1.1.2 Mobile sources (see regulations of vehicle emissions)	Mobile equipment, in fair condition, will be used				Mobile equipment, old and in poor condition, will be used.	1				2		2.00		Rules for the Regulation of emissions of polluting gases and smoke in motor vehicles.	
	3.1.1.3 Air pollution emissions (dust, smoke, and others not included in Regulations)	Controlled emissions but which may cause impact		Partially controlled emissions.		Uncontrolled emissions.	3				3		9.00		General Environment Law	
	3.1.1.4 Ionizing radiations.					There are emissions							0.00			
	3.1.2 Other emissions not included in Regulations (odors, gases, and others)	Air pollution is generated and it is controlled, but could generate damages		Air pollution is generated, but it is partially controlled.		Air pollution is generated, but it is uncontrolled.	3				3		9.00	9.00		
3.1.3 Noises and/or vibrations			There is generation of noise or vibration and it exceeds the limit of the applicable regulation and/or could be alleviated.		There is generation of noise or vibration and it exceeds the limit of the applicable regulation and/or could not be eased.	3					2		6.00	6.00	General regulations for prevention of accidents at work and occupational diseases	
3.2. Bodies of Water	3.2.1 Reduction in capacity of infiltration		From 1,500 to 7,500 m ² of waterproof area	More than 7,500 to 15,000 m ² of waterproof area	More than 15,000 to 30,000 m ² of waterproof area	More than 30,000 m ² of waterproof area.							0.00		General Environment Law	
	3.2.2 Place for excretal disposal		In portable septic pits	Septic pits will be built	Outdoors, inside the AP, or on the AID	In bodies of water	2				1		2.00	8.00	Technical standard of discharges of Wastewater into Receiving Bodies and Sewerage	
	3.2.2 Place of sewage disposal (remains of concrete, oils, fuels, paints, sealants and other liquid chemical substances)	They will be treated and deposited to guaranteed receivers.	They will be disposed in places properly controlled by competent authority.	They will be taken to places, not controlled, but authorized by the municipality	Outdoors, inside the AP, or on the AID	In bodies of water	2				3		6.00		Health Code	

3.3. Soil	3.3.1 Residue subsoils	3.3.1.1 Specials	Disposed in cell of confinement in controlled landfills or use means of stabilization or incineration authorized by the competent authority	Are disposed in landfills without cells specific for special waste	Final disposal treatment or no adequate provision	Final disposal in uncontrolled dump or unauthorized location	4				2		8.00	28.00	Regulations for the Integral Management of Solid Waste	
		3.3.1.2 Non specials.	Final disposal in a landfill or an authorized treatment method		Final disposal in controlled landfill	Final disposal in uncontrolled dump or unauthorized location	4				2		8.00		Regulations for the Integral Management of Solid Waste	
		3.3.1.3 Inert	It is finally disposed in a dump in the AP or to a non-commercial third party	It is finally disposed in a landfill with classification or a dump outside the AP.		It is disposed in places not approved by the competent authority	2				2		4.00		Regulations for the Integral Management of Solid Waste	
		3.3.1.4 Transportation of waste	Complies with existing regulations	It will use the municipal transport system and it does not comply with regulation	It will use its own transport system and it does not comply with regulation	Subcontract a transportation service and it fails to comply with regulation	4				2		8.00		Regulations for the Integral Management of Solid Waste	
3.3.2 Use of Soil					Use will be modified							0.00	0.00	Municipalities Act / General Environment Law		
3.3.3 Movement of soil.		Soil movements and filling without mobilization outside the project area, are expected.	Soil movements and carrying it outside the AP up to volumes of 1,000 m ³ or less.	Soil movements and carrying it outside the AP up to volumes of 10,000 m ³ or less.	Soil movements and carrying it outside the AP up to volumes greater to 10,000 m ³ or less.	4				3		12.00	12.00	General Environment Law		
3.3.4 Sloping.	The net area has a slope of about 0-15%.	The net area has a slope of about 15-25%.	The net area has a slope of about 25-45%.	The net area has a slope of about 45% y 60%.	The net area has a slope greater to 60%.	1				3		3.00	3.00	General Environment Law		
3.3.5 Density of construction.		Coverage of construction is less than 25% of the Project's total area.	Construction coverage is greater than 25% but less than 50% of the Project's property total area.	Construction coverage is greater than 50% and less than 70% of the Project's property total area.	Construction coverage is greater than 70% of the Project's property total area.							0.00	0.00	Municipalities Act / General Environment Law		

B. OPERATION STAGE															
Component/ subcomponent		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	y	Regulatory Framework (Z)					X= y * z	Valuation by component	
		(Valor = 1)	(Valor = 2)	(Valor = 3)	(Valor = 4)	(Valor =5)		a	b	c	d	e			
3.4. Atmosphere	3.4.1.1 Stationary sources(see regulations of emissions by stationary sources)			Emissions will be generated									0.00	21.00	Rules for the Regulation of emissions of polluting gases and smoke in motor vehicles
	3.4.1.2 Mobile sources (see regulations of vehicle emissions)			Mobile equipment, that it is not known if it will comply with emission standards, will be used.		Mobile equipment, that will not comply with emission standards, will be used.	3				2		6.00		
	3.4.1.3 Air pollution emissions (dust, smoke, and others not included in Regulations)					It will produce emissions	5			3			15.00		
	3.4.1.4 Ionizing radiations.					There will be emissions							0.00		
	3.4.2 Other emissions not included in Regulations (odors, gases, and others)	Air pollution will be generated and it is controlled, but could generate damages		Air pollution will be generated, but it is partially controlled.		Air pollution will be generated, but it is not controlled.								0.00	0.00
	3.4.3.Noises and/or vibrations			There is generation of noise or vibrations and it exceeds the limit of the applicable regulation and/or could be alleviated.		There is generation of noise or vibrations and it exceeds the limit of the applicable regulation and/or could not be alleviated.	3				2		6.00	6.00	General regulations for prevention of accidents at work and occupational diseases
3.5 Bodies of Water	3.5.1 Type and quantity of sewage			More than 3,785 m ³ and less than 3,785 m ³ per day or, industrial sewage, agro-industrial, agricultural and aquaculture		More than 3,785 m ³ per day or special sewage category A or B	1					1	1.00	5.00	Technical standard of discharges of Wastewater into Receiving Bodies and Sewerage
	3.5.2 Place of sewage disposal	Control based on volume or source and composition is not required	Unload waste water to the sewer system, complying with the regulations.	Unload wastewater to receiving body, complying with the regulations	Download wastewater to receiving body, without complying with the regulations	Unload wastewater to receiving body, without complying with the regulations	4					1	4.00		

3.6 Soil	3.6.1.1 Specials	Disposed in cell of confinement in controlled landfills or use means of sterilization or incineration authorized by the competent authority		Are disposed in landfills without cells specific for special waste	Final disposal treatment or no adequate provision	Final disposal in uncontrolled dump or unauthorized location	3					2	6.00	26.00	Regulations for the Integral Management of Solid Waste
	3.6.1.2 Non specials.	Final disposal in a landfill or an authorized treatment method			Final disposal in controlled landfill	Final disposal in uncontrolled dump or unauthorized location	4					2	8.00		
	3.6.1.3 Inert		It is finally disposed in a dump in the ap or to a non-commercial third party	Is finally disposed in a landfill with classification or a dump outside the AP.		It is disposed in places not approved by the competent authority	2					2	4.00		
	3.1.1.4 Transportation of waste	Complies with existing regulations		It will use the municipal transport system and it does not comply with regulation	It will use its own transport system and does not comply with regulation	Subcontract a transportation service and it fails to comply with regulation	4					2	8.00		
	3.6.2 Use of soil					Its use will be modified							0.00		
	3.6.3 Population density.	A density less than 50 occupants per hectare is expected		A density greater than 50 and less than 200 occupants per hectare are expected.		A density greater than 200 occupants per hectare are expected.							0.00	0.00	
												Physical Environme	141.00		

4. SOCIAL ENVIRONMENT

A. CONSTRUCTION STAGE

Component/subcomponent	CASE 1 (Value = 1)	CASE 2 (Value = 2)	CASE 3 (Value = 3)	CASE 4 (Value = 4)	CASE 5 (Value = 5)	y	Legal Framework (Z)					X=z * y	Valuation per component		
							a	b	c	d	e				
4.1 Housing	4.1.1 Impact on homes or other assets				Temporary	Permanent							0.00	0.00	Compulsory purchase Act, Decree 113
	4.1.2 Mobilization, relocation of people from the AP.					There is mobilization, relocation, relocation of people living in the PA or area influenced by the effect of the project.							0.00	0.00	Compulsory Purchase Act, Decree 113
4.2 Culture	4.2.1 Landscape.				Development of infrastructure in an urban area and causes an imbalance in the texture of the existing landscape.	Development of infrastructure in an rural or urban area and it affects the texture of the existing landscape.							0.00	0.00	General Environment Law
	4.2.2 Patrimony.				The project partially affects the existing scientific, architectural, anthropological or archaeological heritage.	The project entirely affects the existing scientific, architectural, anthropological or archaeological heritage.							0.00	0.00	Cultural Heritage Law
4.3 Validad	4.3.1 Vehicular, maritime, air traffic, etc.	Generates new traffic ratio greater to 10% and less than 25% of the current traffic.		Generates new traffic ratio increased to 25% and less than 50% percent of the current traffic.		Generates new traffic ratio increased to 50% of the current traffic.	1		4				4.00	4.00	Traffic Law
	4.3.2 Means of communication					The roads of the ADI are not designed to withstand the traffic equipment and machinery							0.00	0.00	
4.4 Basic Services	4.4.1 Water					The project will alter the quality of the ADI's water source							0.00	0.00	
	4.4.2 Solid wastes			Generating solid waste will bring on problems to the public recollection system.		The generation of solid waste will collapse the municipal disposal site.							0.00	0.00	
	4.4.3 Residual water					RW layout will be in soil or bodies of water used (or to be used) by the community.							0.00	0.00	

4.5 Population's Health	4.5.1 Generating diseases			The project could affect the health of the population in the area of influence of the project.		The project affects the health of the population in the area of influence of the project.	3					2	6.00	12.00	Health Code Regulations
	4.5.2 Vectores			The project could generate or increase the type and quantity of vectors in the project area.		The project generates or increases the type and quantity of vectors in the project area.	3					2	6.00	12.00	Health Code Regulations
	4.5.3 Quality of the environment					The project could alter the normal pace of life of the population							0.00	0.00	General Environment Law

B. ETAPA DE OPERACIÓN

Component/subcomponent	CASO 1 (Valor = 1)	CASO 2 (Valor = 2)	CASO 3 (Valor = 3)	CASO 4 (Valor = 4)	CASO 5 (Valor = 5)	y	Marco legal (z)					X=z * y	Valoración por efecto			
							a	b	c	d	e					
4.6 Housing	4.6.1 Impact on homes or other assets				Activities could generate vibrations or other impacts that damage houses.								0.00	0.00		
4.7 Culture	4.7.1 Patrimony.				The project partially affects the existing scientific, architectural, anthropological or archaeological heritage.	The project entirely affects the existing scientific, architectural, anthropological or archaeological heritage.								0.00	0.00	
	4.7.2 Culture , traditions					New religions, new celebrations or customs different from those of the community will be introduced.								0.00	0.00	
4.8 Validad	4.8.1 Vehicular, maritime, air traffic, etc.	Generates new traffic ratio greater to 10% and less than 25% of the current traffic.		Generates new traffic ratio increased to 25% and less than 50% percent of the current traffic.		Generates new traffic ratio increased to 50% of the current traffic.	1		4				4.00	4.00	Traffic Law	
	4.8.2 Means of communication					The roads of the ADI are not designed to withstand the traffic that will be generated by the project.							0.00	0.00		

6. SIGNIFICANCE OF ENVIRONMENTAL IMPACTS OF THE PROJECT, WORK OR ACTIVITY

The grade obtained (SEI preliminary value) in the attached form must be weighted with the following factors to obtain the final grade that will serve as a criterion for the classification according to the significance of the environmental impact (SEI) outlined in this document.			
1. SEI preliminary value, i.e. the sum of all the SEI values of each evaluated mean (Σ)			336
2. According to the regulations applicable to the operation of the activity, work or project (p)			
2.a With the commitment from the developer to adhere, voluntarily, to the standards or guidelines of a sector, subsector of best environmental practices, that might exist for the work or project. Said instrument will be of mandatory compliance for the proponent from the moment in which the corresponding authority of the SINEIA gives the environmental license.	0.9	2.c Without specific environmental legislation governing the activity work or project	2
2.b With specific environmental legislation governing the activity, work or project. Specify _____	1	2.d With specific environmental legislation that establishes the prohibition of the performance of the work or project	3
		(p)	1
3. Value of SEI adjusted by regulations (SEI_R) =			336
4. Classification of the area according to the location of the project area (β)			
4.1. Location authorized by the Plan of Land of Use, regulation or approved zoning plan or another environmental planning of land use	0.5	4.2 Location authorized by the Plan of Land of Use, regulation or approved zoning plan or another environmental planning of land use, not approved Localización autorizada por Plan de Uso del Suelo, reclamo o plan de zonificación u otra	1
4.3. Location in area without a plan for use of the land, regulation or zoning plan or another environmental planning of land use	1.5	4.4 Location in environmentally fragile area, except that referred to in the paragraph 4.1	2
		(β)	0.5
5. Final score of the SEI:			168
6. Classification on the basis of the final score and that establishes the procedure of the SINEIA, according to the decision path.			
Type	Grade	Final Category	Procedure
Moderate	Less or equal to 850	2	Guide for good environmental practices or in its defect the over view of the Environmental Management Plan
High	Greater than 850 and less or equal to 2,800.	3	Environmental Management Plan using an established structure in the terms of reference indicated by the SINEIA scheme of the Evaluating and Environmental Manual.
Very High	Greater than 2,800	4	Environmental Impact Study, according to the terms of reference indicated by the SINEIA

INTRODUCTION

This document presents the Environmental Management Plan (EMP) of the Tourism Corridor of Honduras Project: Tranche Tela – La Ceiba, as established by Agreement No. 189-2009 of the Regulation of the National Environmental Evaluation System (SINEIA), which notes that the EMP will be an integral part of environmental assessment tools in order to organize the applicable environmental measures and commitments.

The EMP is a set of technical operations and proposed actions, which aim to ensure the operation of any human activity, within legal, technical and environmental standards, techniques to prevent, correct or mitigate negative environmental impacts or risks and to ensure continuous improvement and compatibility with the environment.

The EMP describes programs or mitigation measures that should be executed or completed by the developer to prevent and minimize environmental impacts during the planning and design, construction, and operation of the Tourism Corridor of Honduras: Tranche Tela – La Ceiba. In the event that the developer proposes different measures to those described in the Plan, it is his responsibility to obtain approval from Natural Resources & Environment Secretariat (hereinafter called SERNA) and/or other state agencies whose competence requires it for the implementation of the new measures.

EMP Objectives:

1. Provide the Civil Works, Housing and Transportation Secretariat (hereinafter called SOPTRAVI) the developer a document attesting to all the measures identified by the consultant to prevent, minimize, mitigate and compensate for potential negative impacts from the Tourism Corridor Project: Tranche Tela – La Ceiba and to enhance positive impacts;
2. Define the parameters and variables that will be used to assess environmental quality in the area of influence of the Project;
3. Establish mechanisms for relevant authorities to follow up the environmental variables of the Project and implement the necessary controls;
4. Designing mechanisms for preventing and responding to accidents and contingencies.
5. Ensure compliance with social and environmental goals of the project, including compliance with the Equator Principles and Performance Standards on Social and Environmental Sustainability of the International Finance Corporation (IFC).

The Project Tourism Corridor of Honduras: Tranche Tela – La Ceiba will be developed within the framework of social and environmental sustainability, also it will be guided by the Equator Principles and the Performance Standards on Social and Environmental Sustainability of The International Finance Corporation (IFC). Based on this principle, the Environmental Management Plan developed here includes the elements set for compliance with the Standards and Principles of Performances of Ecuador and must include the following elements:

- Environmental and Social Assessment;
- Management Program;
- Organizational Capacity;
- Training;
- Community Involvement;
- Supervision; and
- Accountability Reports

The Financial Institutions signatory of the Equator Principles (EPFIs, for its acronym in English) financed projects only when they meet the following requirements¹¹:

Review and Categorization. Based on Agreement N° 1714-2010, of the Secretariat of Natural Resources and Environment, to achieve full compliance with the given objectives and responsibilities we proceed to modernize and issue a new Table of Environmental Categorization in the Republic of Honduras. This categorization Table, has as main objective to identify activities Works or projects subject to the process of environmental impact assessment, as well as categorize or classify them according to their potential environmental impact. This project, due to its nature is defined as Category 2, which corresponds to those human activities classified from Low to Moderate Potential environmental impact or environmental risk. This is consistent with the Performance Standards and Equator Principles, where this project, according to their potential impacts is defined in the "**Category C**: Projects with a minimum non-adverse environmental and social impact and risk".

Social and Environmental. This principle complies with the identification of the social and environmental impacts, including labor and safety and health, considered in this Environmental Impact Evaluation, in compliance with the requirements of Decree Number 104-93, of the General Law of Environment of the Republic of Honduras, and its regulation as established under Agreement number 104-93, besides the application and obligatory compliance with the norms in force in Honduras in terms of, Industrial Health, Safety and Hygiene.

Applicable Social and Environmental Standards. As you can see in this EMP, this project will adopt the Performance Standards of the IFC and the sector guidelines WB/IFC as social and environmental standards and comply with the requirements of environmental regulations established in Honduras by Decree No. 104-93 and its regulations Agreement No. 109-93, besides the application and obligatory compliance with the norms in force in Honduras in terms of, Industrial Health, Safety and Hygiene.

The Action Plan and Management System. According to this requirement, this project includes the Environmental Management Plan (EMP), which is equivalent to the Action Plan and Social and Environmental System Management, establishing the Performance Standards and Equator Principles. This EMP includes specific plans including Hazardous materials Management Plan, through the Collection Program, Separation and Disposal and Waste, Plan for Preparedness and Emergency Response, through the Contingency Plan and Plan for health and Safety through a Risk Prevention Plan.

Consultation and Disclosure. The Performances Standards and Equator Principles require the project to properly incorporate the concerns of the affected communities and/or involved through a process of consultation and outreach to ensure the free, anticipated and informed consultation and that it facilitates participation. Therefore, during the process of Elaboration of the assessment impact by the relevant instrument according to category, interviews were conducted to ascertain the opinion of the mayors and key stakeholders in each municipality of the area of socioeconomic influence of the Project. Moreover, as indicated by mandatory requirements for obtaining the environmental permit, a sign will be placed in the area where the project will be developed, where the name of the project, work or activity, location and address of the Proposer shall be indicated, where the public can get more information.

¹¹ Principles 7, 8 and 9 are not mentioned because they are agreements established between the financial institution and the borrower, they are beyond the scope of this EIA.

Complaint mechanism. This project, in the Citizen Participation Plan established a Complaints Mechanism as part of the management system to allow the reception and facilitate the resolution of concerns and complaints from affected individuals or groups, which will remain during the execution of the work. This mechanism consists on a Field Office established by the Concessionaire with a "single window" as well as receiving them in the offices of the Environmental Management Unit of SOPTRAVI.

Affected Communities. After defining the area of influence of the Project, it is confirmed that despite the existence of villages or communities along the alignment of the Tourism Corridor project Tranche, Tela – La Ceiba, they will only be impacted in a negative way by the development of certain specific and temporary activities, such as increased traffic, dust generation and polluting gases product of machinery, among others, as the activities to be developed, will be conducted only in areas of existing easements.

2. GENERAL INFORMATION

2.1 Information regarding the consultant or professional equipment that the EMP produced

This Environmental Management Plan has been prepared by the company The Louis Berger Group, Inc and the Honduran company Ingeniería y Ambiente de Sula S de R.L with Registration Number in the Natural Resources & Environment Secretariat RE-0017-2003, consists of the following providers of environmental services:

Table 2.1. List of Environmental Services Providers

Name	Registration No.	Company	Classification
Carol Perdomo	RI-007-2004	Ingeniería y Ambiente de Sula	General environmental specialists. General review
Ana Marcela García	RI-029-2003	Ingeniería y Ambiente de Sula	General environmental specialists. Developing MIIA, description of impacts
Judith Perla	RI-0032-2003	Ingeniería y Ambiente de Sula. Subcontracted	Biologist Environmental Specialist.
Contributors			
Saulo Romero		Ingeniería y Ambiente de Sula. Subcontracted	Biologist with emphasis in Zoology. Description of the biological environment and mitigation

			measures
Germán Sandoval		Ingeniería y Ambiente de Sula. Subcontracted	Biologist
Julio Aysa		The Louis Berger Group	Coordinate the Project. Environmental Specialist General review
Zuleika Ibañez		The Louis Berger Group	Environmental Specialist GIS support
Yiseth Martínez		The Louis Berger Group	Environmental Specialist Description of mitigation measures
Julio Vanegas		The Louis Berger Group	Road specialist
Horacio Ibarra		The Louis Berger Group	Geotechnical specialist

Source: Own Compilation

2.2.1 Identification of standards and legislation to be complied

This section mentions the environmental requirements and other legislation applicable to the Project under the Environmental Assessment.

During the different phases of project some activities that generate environmental impacts will be developed and it is important then to know the laws and regulations for each specific case.

2.2.2 Legislation

The legislation discussed below contemplates:

- Environment designed for the protection of natural resources and the environment,
- Any sector that has environmental relevance and
- Various topics, such as the regulations of the Territorial Ordinance Plan and health code.

2.2.2.1 Constitution of the Republic of Honduras

The Constitution of the Republic, Title III, Chapter VII of Health, that "the right to health protection is recognized. The duty of everyone to participate in the promotion and preservation of personal and community health. The State will preserve the environment to protect the health of the people"(Art. 145).

A very important aspect for this project, in terms of environmental protection regulation, it is exposed in Article 340 of the Constitution which states:

"A technical and rational exploitation of natural resources of the Nation is declared as a public utility and necessity. The State shall regulate its use, in accordance with the public interest and determine the conditions of Concession to individuals. The country's reforestation and conservation of forests are declared of national interest and collective interest. "

Article 354 states that "the tax or property may only be awarded or sold to individuals and in the form and manner prescribed by the laws. The state has the power to set or change the demarcation of areas of control and protection of natural resources in the country".

Finally on private property, the Constitution of the Republic of Honduras, Article 103 states, "The State recognizes, promotes and ensures the existence of private property in its broadest concept of social function and without other limitations than those for reasons of necessity or public interest established by law. ""The right of property shall not prejudice the eminent domain of the State" (Article 104).

Then "No one shall be deprived of his property, but because of necessity or public interest ranked by the law or decision based on law and without prior to fairly priced compensation". (Art 106)

2.2.2.2 General Environment Law

On June 30, 1993 the General Environmental Law came into force, with principles and objectives that govern the environmental activity of all public and private bodies, having them cited in any administrative or judicial proceeding. Here are the most important items with the related activities that will be developed in this project:

Article 1: Thus the Environmental Law among its general principles defines that it is of common interest, the integral ordinance of the national territory considering the environmental aspects and economic, demographic and social factors.

Article 4: The public and private projects that affect the environment should be designed and implemented taking into account the interrelatedness of all natural resources and interdependence between man and his environment.

Article 5: The projects, industrial facilities or any other public or private sector, likely to pollute or degrade the environment, natural resources or the historical cultural heritage of the nation, will be preceded mandatorily by an Environmental Impact Assessment (EIA), which will allow preventing possible negative effects.

Article 6 -. The provisions of this Act and the special laws concerning the protection of human health and the protection, conservation, restoration and proper management of natural resources and the environment, will become mandatory in the evaluation of EIA , referred to in the preceding article.

Article 30: It is responsibility of the State and municipalities in their corresponding jurisdiction, the management, protection and conservation of watersheds and natural water reservoirs, including the preservation of natural elements involved in the hydrological process. Water users, regardless of the intended purpose, they are required to use it wisely, preventing its waste and ensuring wherever possible its reuse.

Article 31: The following categories will be object of protection and special monitoring the water of:

- a) The water intended for human consumption or populations in general;
- ch) Those that are in protected areas, and;
- d) Any other source of general importance.

Article 32: It is forbidden to discharge in inland or marine waters over which the State exercises jurisdiction, all kinds of polluting wastes, whether solid, liquid or gaseous, may affect the health of humans or aquatic life, altering the quality water for their own purposes or to alter the ecological balance in general.

The Secretariats of Public Health, Natural Resources and National Defense and Public Safety, will be responsible for exercising control over the management of inland and marine waters, noting the technical standards and regulations established by the sectorial laws and regulations.

Article 33: It is prohibited to place human settlements, military bases, industrial plants or any other type in the areas of influence of sources of water supply to populations or irrigation of agricultural crops intended for human consumption, whose residues even if treated, present potential risks of contamination, the municipalities ensure the correct application of this regulation.

Article 41.- Protected flora and fauna should be understood those species of plants and animal that must be subject to especial protection due to their rareness, their condition on the ecosystem or for their condition as endangered species. Their exploitation, hunting, trapping, commercialization or destruction is prohibited.

Article 48: The land of the national territory should be used rationally and compatible with its natural vocation, trying to maintain its productive capacity, without altering the balance of ecosystems.

Its potential use is determined by considering socio-economic, physical, ecological, factors in the framework of the relevant land management plans.

Article 51: The usage of urban land will be object of plans on behalf of the corresponding municipalities, considering among others, the civic residential sectors, commercial, industrial, residential and recreational sectors, complying the quality of life of the inhabitants and the protection of the environment.

Article 54 -. Discharge and disposal of solid and liquid waste from any source, toxic and nontoxic can only be made in locations assigned by the competent authorities and in accordance with the relevant technical regulations and pursuant to the corresponding municipal bylaws.

Article 59: is of public interest the activity tending to avoid air pollution by the presence of harmful gases, smoke, dust, particulate matter, radioactive materials or other discharges that are harmful to human health, to public or private property flora and fauna and the ecosystem in general.

Article 60: In order to prevent the negative physiological effects on people, flora and fauna, the Executive Power, through the Secretariat of State for Public Health, in consultation with the National Environment Council and other competent bodies, will identify the technical regulations establishing the permissible emission levels and emission of pollutants, for which it will issue the necessary regulations.

The motor vehicles, industries and other fixed or mobile, public or private facilities which discharge gases or other pollutants in the atmosphere, are bound to observe such standards, including treatment systems that may be relevant. The municipalities in their corresponding jurisdictions, shall have authority to supervise the compliance with those standards.

Article 61: The Executive Branch through the Ministry of Public Health, will regulate the tolerance indexes of noise, vibration and emissions of smoke and dust.

Article 66: The solid and organic wastes from domestic, industrial or agricultural, livestock, mining, and other public uses, sources technically be treated to prevent alteration in the soils, rivers, lakes, lagoons and generally in maritime waters and terrestrial, and to prevent air pollution.

Article 68: The State shall exercise in accordance with the Health Code, the laws of Vegetal Health and Animal Health and other related provisions, control over the manufacture, formulation, importation, distribution, sale, transport, storage, use and disposal of toxic or hazardous agrochemicals and products used in agriculture, livestock, industry and other activities.

Toxic or hazardous substances shall not be subject to manufacturing, storage, importation, marketing, transport, use or disposal if they have not been duly authorized by the Secretariat of State for Public Health in the department of authority. Once the authorization has been given it must be enrolled in the corresponding special registers.

Article 70: The anthropological, archaeological, historical, artistic, cultural and ethnic heritage as well as its natural setting, are under state protection.

Article 78: The natural or legal persons, public or private, who want to do any work or activity that could seriously alter or impair the environment including natural resources, are required to report the same to the competent authority in respect of the matter and prepare an environmental impact assessment (EIA) in accordance with the provisions of Article No. 5 of this Act

Included within these activities: chemical, petrochemical, steel, oil, tannery, paper, sugar, cement, beer, shrimp, liquor, coffee and agribusiness in general; generation and transmission of electricity, mining; construction and operation of pipelines; transport; final disposal, treatment or disposal of waste and hazardous substances, projects in the sectors of tourism, recreation, urbanization, forestry, human settlements and any other activities that can cause severe damage to the ecological balance.

Article 79 The work or activity which the preceding Article relates to cannot be executed without having an assessment and corresponding authorization.

Article 83: State agencies that have jurisdiction in environmental matters shall exercise any inspection and supervision, and to that effect its officers and employees are vested enough to inspect premises, facilities or specific areas or to demand to the appropriate authority, information to verify compliance with the relevant legal provisions.

The municipalities shall comply inspection and surveillance activities in the areas of its competence and jurisdiction. The regulation will develop this disposition.

2.2.2.3 Regulation of the National System of Environmental Impact Assessment

Article 1: In accordance with Articles 5, 9, and letter ch and 11 d, of the General Environmental Law mandating the creation and development of the "National System of Environmental Impact Assessment", this regulation is issued.

Article 2: The objectives of this Regulation are:

- a) Organize, coordinate and regulate the National System of Environmental Impact Assessment (SINEIA), establishing the connections between the Secretariat of Environment; public institutions, private and international sectors.
- b) Ensure that plans, policies, programs and projects, industrial facilities or any other public or private activity may contaminate or degrade the environment, are subjected to an evaluation of environmental impact to avoid damage to the environment.
- d) Implement policies, standards, procedures to update the SINEIA in line with the economic, political, social, legal, cultural and environmental development of the country, always seeking the compatibility of development and the environment.

Article 18: The Environmental Units (UMAs) created on the municipalities and on the institutions of the executive branch that dictate over natural resources or sectors with a strong environmental component (UGAs), will receive technical assistance from SERNA for their organization, and they will aid this Secretariat on matters relative to the National Environmental Impact System (known as SINEIA).

Article 19: The Natural Resources and Environment Secretariat (known in Spanish as SERNA), through an agreement or serving a term of law, could delegate some of its functions within the National Environmental Impact System (SINEIA), on the municipalities or on other institutions of the Executive Branch, through their respective environmental units if they have a good organizational and operational level. Among the functions that can be delegate are the following: revision of Environmental Impact Evaluation documentation, grant environmental permits, monitoring and control, and complains verification.

Article 24: Any project, work or public or private activity must have an environmental permit before starting execution.

Article 29: The projects, Works or activities are ordered in an Environmental Categorization Table exhaustively, that draws on the International Standard System ISIC, International Standard Industrial Code of all productive activities. With this, a standardized system that provides information to users of the system, guidance on procedures to follow environmental assessment, allows better coordination with other state authorities and makes possible a better and more effective statistical control of the management processes.

Article 30 -. Projects, Works or activities are categorized into four different categories 1, 2, 3 and 4 taking into account the factors or conditions that are relevant in terms of their characteristics, nature, potential environmental impacts or environmental risk.

- Category 1 corresponds to projects, Works or activities considered of low potential environmental impact or environmental risk.
- Category 2 corresponds to projects, Works or activities of moderate potential environmental impact or environmental risk.
- Category 3 corresponds to projects, Works or activities with high potential environmental impact or environmental risk.
- Category 4 corresponds to projects, Works or activities considered high potential environmental impact or environmental risk. Mega development projects are considered part of this category.

All the projects, Works or activities that by their nature, are below those of Category 1, are classified as very low environmental impact or environmental risk. As such, not subject to meet proceedings of Environmental License, however, will be subject to comply with current environmental legislation and also in all that applies in the Code of Good Environmental Practices of Honduras.

2.2.2.4 Act of Municipalities

Article 13: Municipalities have the following attributions:

5. Construction and maintenance of public roads on its own or in collaboration with other entities;
7. Protection of ecology, the environment and promotion of reforestation;
8. Control on public roads, sidewalks, parks and beaches, including their ordering, occupation, road signs, urban and interurban transport terminals and will be responsible for care of those goods;
15. Conclusion of contracts for construction, maintenance or management of local public services or Works with other public or private entities, at their convenience, pursuant to the Act

When the Municipalities granted the Concession Agreement for the construction of Works or provision of municipal services to private companies with resources from these, they may authorize them to recover their costs and earn a reasonable profit by means of the most appropriate charge system, without prejudice to the rights corresponding to the municipality: of public roads, in collaboration with the National Electricity Company (ENEE).

2.2.2.4.1 Regulation of the Municipalities Act

Article 132: Institutions that have the responsibility to control and manage the natural resources of the country, as COHDEFOR, the Secretariat of Natural Resources, etc., should establish agreements of mutual cooperation and responsibility with the municipalities within whose jurisdiction these natural resources are located , whether in individual, community owned, national, etc. in order to obtain optimum benefits for the Municipality in palliation of this Act and its Regulations.

To this purpose the Municipality may Concession the permit exploitation of renewable and non-renewable natural resources, after developing a technical study approved by the corresponding secretariat or institution.

3. Achieving social and material welfare of the Municipality, performing public Works programs and services;
4. Preserving cultural heritage and civic traditions of the municipality; disseminate and promote them if or in collaboration with other public or private entities
6. Protect the environment and local ecosystem;...
8. Rationalize the use and operation of municipal resources according to the priorities and programs of national development.

2.2.2.5 Forestry Law, Protected Areas and Wildlife

This law states in Article 1 that "... the legal regime to which shall be subject the administration and management of Forest Resources, Protected Areas and Wildlife, including protection, restoration, utilization, conservation and development, fostering sustainable development, according to the social, economic, environmental and cultural interest of the country".

And resolves objectives, outlined in Article 3:

- b) Ensure the protection of Forest Areas, Protected Areas and Wildlife and improving them and rationalize the exploitation, industrialization and commercialization of forest products.
- e) Declare and manage protected areas and wildlife;
- f) Preventing the illegal occupation or fragmentation of public forest areas.
- p) Promoting co-management as a basic mechanism to incorporate the participation of civil society in the management of protected areas and improve the quality of life of communities; and,
- q) Promote reforestation.

As to the Fauna and wild Flora the following items of interest are mentioned:

Article 115: Protection Management and Administration of the wild Flora and Fauna. Corresponds to the National Institute of Forest Conservation and Development, Protected Areas and Wildlife (ICF), the protection, management and administration of wildlife from around the Country.

Article 117: Hunting Or Capture of wild Fauna. Hunting or capture of threatened or endangered species is prohibited.

The National Institute of Forest Conservation and Development, Protected Areas and Wildlife (ICF), previous to a study involving the Municipal Corporations and communities make the declaration of a species as threatened or endangered, also taking into account the Conventions and International Treaties.

Hunting or catching species of wild fauna for commercial and sports means, not included in the above category shall be subject to the provisions of the corresponding Municipal Corporations and the hunting license issued by the National Institute of Forest Conservation and Development Areas, Protected Areas and Wildlife (ICF). The National Institute of Forest Conservation and Development, Protected Areas and Wildlife (ICF), also declare closed seasons, times of hunting or capture allowed, and other technical regulations that correspond. On use of marine, river and lake species is regulated by the Fisheries Act.

Article 118: Endangered Flora. Managing exploitation of endangered flora shall be in accordance with the policies and strategies issued by the National Institute of Forest Conservation and Development, Protected Areas and Wildlife (ICF), which will be in accordance with International Conventions and Treaties signed and ratified by Honduras.

The National Institute of Forest Conservation and Development, Protected Areas and Wildlife (WILDLIFE) (ICF), make the declaration of endangered species of flora; to declare that end seasons and other technical regulations that apply.

In **conservation and protection of land and water**, in Chapter IV of this Act, the following items are highlighted:

Article 120: Handling Watershed. The National Institute of Forest Conservation and Development, Protected Areas and Wildlife (ICF) is responsible to lead the processes to develop and implement management plans and integrated management of river basins, watersheds and micro sub-basins, with emphasis on conservation of resources, soils, forests and water.

Article 123: Protection of water Sources and flows. The villages Adjacent to watercourses areas shall be subject to a special regime of protection; however, in all circumstances the following regulations must be observed:

- a) The high hydrological recharge or watershed areas are exclusive protection areas, all activity is prohibited in these areas when these basins are legally declared as water supplying areas. These areas will be determined by the area of the basin covered by fifty meters (50mts) below the river birth until water part coming within the upper part of the basin.
- b) When there is a water birth in hydrological recharge areas upstream or within an area that has no legal declaration of water suppliers zone, an area will be protected within two hundred fifty meters (250 meters) from the center of the water birth or watershed;
- c) Shelterbelts of hundred fifty (150 meters) will be established in rivers and streams, measured in horizontal projection from the shore line, if the slope of the basin is equal to or greater than thirty percent (30%); and fifty meters (50 meters) if the slope is less than thirty percent (30%); within forest areas of the urban perimeters, regulations of the Municipalities Act will apply; and,

- d) The marine and lacustrine coastal forest areas shall be protected by a strip no less than one hundred meters (100 m) wide from the highest tide line or the highest level or to reach the Lagoon or Lake.

In these buffer zones it is prohibited to cut, damage, burn or destroy trees, shrubs and forests in general. Similarly, the construction of any type of infrastructure prohibits the execution of agricultural and livestock activities and all others that endanger the purpose intended. Except hydric infrastructure management and water management and road infrastructure, not withstanding the environmental impact study. Agricultural activities existing at the effective date of this Act shall be respected, but simultaneously will encourage and support agroforestry projects aimed at the protection and proper management of natural resources and the environment.

This law has its corresponding regulations, this being the General Regulation of the Forestry Law, Protected Areas and Wildlife. Executive Decision No. 031-2010.

2.2.2.6 General Water Law

General Water Law. Decree No. 181-2009, "This law aims to establish the principles and regulations applicable to the proper management of water resources for the protection, conservation, enhancement and utilization of water resources to promote the integrated management of the resource at the national level" .

Article 36: Conservation: The conservation actions of waters are intended to conserve or increase the volumes of water intervening ecosystems that generate it or influencing the activities that diminish or affect its biodiversity through the instruments established by this Act .

Article 43: Protection of Water Resources: The protective actions are aimed to preserve or increase levels of water quality and quantity, before the destructive effects of natural phenomena and human actions of resource degradation and pollution.

Article 44: Discharge of sewage: The Water Authority or Municipality may authorize, in accordance with the active environmental and technical regulations and only in the allowed spaces, the direct or indirect discharge of wastewater into a body of water, provided that these discharges do not contain pesticides, fertilizers and any other product or substance toxic or pollutant.

Except for what is established in the previous paragraph, the treatment of wastewater discharges resulting from domestic, agricultural, livestock and industrial activities is mandatory. Reuse or recycling of discharged water will be authorized under the same conditions.

Article 45: The protection in the Construction of Works: During execution of Works duly authorized, shall include measures to prevent the discharge of sediment to the stream and bodies of water in rivers, reservoirs, lakes, lagoons and coastal areas; such

Works shall be on account of the promoter and/or executor of the work, who also shall indemnify for damages that might be caused.

Rule 46: Removal of Aggregates of Rivers, Lakes and other water spaces: No extractions are allowed within five hundred (500) meters upstream and five hundred (500) meters under bridges, levees, dams or any other urban hydric infrastructure .

Article 59.-Use Rights: The use of water for private benefit or by any public entity may only be made pursuant to a right of use Granted under concession under this Act, provided it is of beneficial used and does not harm third party rights.

Article 61.-Principles for Utilization: The use of hydric resources shall be governed by the principles of:

- Optimal human, social and economic benefit;
- Durability and resource protection; and,
- Generation of minimal environmental impacts;

These criteria will be applied at the basin level, sub-basins and micro-basins and pointed out in the organization and planning instruments under this Act

Article 62.-Types of Concessions for the management and use: The Concessions of rights of water use will be in accordance with the following classifications:

Depending on the type of use:

- Consumptive, not obliged to return the water after being used; and,
- No consumptive, forcing to return the water after use or used without removing it from its source in the conditions that determines its title.

According to the continued use:

- Permanent, allows to obtain water whenever resources are available at the source; and,
- Eventually, allows to obtain water only after having satisfied the Concessions of the permanent exercise, excess resources exist in the source

Article 63.-Use of underground waters: The use of underground waters is subject to studies and research, regulating plans and hydric zoning maps in order to maintain proper hydric balance and quality in these aquifers. Its commercial and industrial use shall be described in the Regulation of this Law.

Relevant studies for exploitation or drilling of wells will be conducted to determine its potential and use, it shall have a permit issued by the Water Authority, prior authorization from the corresponding Municipality.

Article 66 Instruments to document usage rights: All right is Granted under concession through permits, licenses and Concessions the request of an interested party or by tender, in accordance with the provisions of this Act and the rules of ordering and hydric planning. No right can be given that prejudices uses legitimately Granted under concession, affecting the balance between recharge and extractions of surface and underwater waters, aquifers or restricts the use of water for drinking.

2.2.2.7 General Mining Law. Decree 283-2012

The objective of the law is to regulate mining and metallurgical activities in the country; therefore it is of public order, general interest and of mandatory application. Article 1.

In case of mining activities they will be safeguarded under the Concession Figure of the Mining Permit or in case of small-scale and artisanal mining, commercialization is made through a registration system. Article 6.

The Classification of Mining Rights defined in the Articles 8 to 11; the exploitation activities are regulated in Articles 18 to 23 and the close activities from Articles 28 to 31. Similarly, article 32 states that the competent authority must verify restoration activities.

The commercialization is regulated by Articles 37 and 38 and the obligations of the Concessionaire are regulated in Article 54. Transfer of mining rights by articles 60 and 61 is regulated.

The requirements for the Awarding of Concessions are defined in Article 69 and 70. Cutting activities, filling and leveling are standard in Article 95, which stipulates that the permits will be Granted under concession by the relevant municipalities also that surplus should not be commercialized and intended only for public purposes.

The creation of the Honduran Institute of Geology and Mines (INHGEOMIN) under defined Article 96.

1.1.1.1 Traffic law 205-2005

Article 1. This Law aims to preservation of public order, protection of life, physical integrity of persons, protection of goods and the promotion of social welfare by the legal regulation of the use and circulation of land motor vehicles and the mandatory police registration thereof.

All persons who drive any type of vehicle and its passengers are subject to its provisions when driving on roads, streets and other public or private in all of the national territory included in all the national territory, and pedestrians; and, where appropriate, the owners of such vehicles, livestock owners or others that also make use of such roads public or private.

These regulations include in regards to what is applicable, car parking lots, public or private, buildings built for car parking lots, campuses and terminals for transporting of people and cargo, gas stations, sports tracks, road courses and other similar analog sites where services are provided or vehicles can circulate.

This Act and Regulations are public and of social interest.

Article 2.- The material scope of validity of this Act, includes:

1) The ordering and referent road signs:

- a) Design the ordering; and,
- b) The installation of road signals on the road system

2) The control of vehicular traffic that includes:

- a) Control of road traffic;
- b) Patrol and control operations;
- c) Electronic surveillance and detection of committed offenses;
- d) Investigation of accidents;
- e) Actions relating to the vehicular property crimes; and;
- f) Emergency plans.

Article 25. Shall be the functions of the Transit Engineering section:

1) Conduct feasibility studies in both urban and rural areas, aimed at developing design of Works and traffic regulations for the safety and flow of vehicular and pedestrian traffic, coordinating these features with the competent authorities;

2) Collaborate with the municipalities and the State Secretariats in the Offices of: Public Works, Transport and Housing (SOPTRAVI); and Natural Resources and Environment, to establish the criteria and / or recommendations for the placement of signs, traffic regulating devices on the location of the passenger and cargo transport terminals , as well as in the development of plans for the management of circulation, in order to achieve maximum performance of the existing road network;

- 3) Assist the municipalities in developing studies in speeds, parking, user behavior, census and installation of traffic lights;
- 4) Conduct studies and submit recommendations to the competent authorities in relation to sanitation of the rights of way;
- 5) Conduct studies and scientific research, developed from models aimed at finding workable solutions to the problems of road ways; and,
- 6) Establishing the technical capacity criteria, specific uses, for private vehicles, public transport of passengers and cargo and industrial uses.

Article 82. The road signs to order, facilitate and make easy and safe movement of vehicles and pedestrians, consists in:

- 1) Warning signs or danger;
- 2) Regulatory Signs;
- 3) Informative signs;
- 4) Route or destination signs;
- 5) Markings on the roadway; and,
- 6) Traffic signals and other intersection signs.

The installation of road signals indicated in paragraphs 1), 2), 5) and 6) is strictly enforced and will be designed as provided in the Act and its Regulations.

Article 83. It is corresponding to the municipal authorities in the area of its jurisdiction, the installation and maintenance of the road signs in urban areas; the Secretariat of State in the offices of Public Works, Transport and Housing (SOPTRAVI) , in the highways and rural area.

1.1.2 3.2.2 Legislation relevant to the project (environmental and sector regulation for environmental relevance)

There is some legislation pertaining to different sectors of the public administration, whose policy is relevant to the components of the environment, this sectorial legislation, of environmentally relevance encompasses a broad spectrum. Sets of rules presented below are attached to the vital regulations of compliance for the Project development.

1.1.2.1 Health Code

The following general provisions are set out in the Code of Health:

Article 1: Health is considered as an integral, biological, psychological, social and ecological state of wellbeing, well-being it is an inalienable human right and it corresponds to the State as well as to all natural or legal persons, promoting their protection, recovery and rehabilitation.

Article 3: Corresponding to the Secretariat for State for Public Health, which for the purposes of this Act shall be called "The Secretariat", the definition of national health policy, standardization, planning and coordination of all activities public and private in the health field. In the departmental and municipal levels it will act through regional headquarters and sanitary areas, correspondingly, under a rational principle of coordination and administrative decentralization.

Article 9: Everyone has the right to live in a healthy environment, in accordance with this Code and the other regulations, and the general duty to protect and improve the surrounding environment.

The secretariat is responsible for ensuring the environmental conditions in order to comply with the provisions of this Article.

Meanwhile, in Book II, of the Promotion and Protection of Health, Title - Sanitation of Environment, states that: "For purposes of the application of this Code and other health regulations, the term environment, is set of natural resources, which preservation and renewal by the State and of all the inhabitants, are necessary to ensure the health and general welfare." (art. 25).

Article 26: Water usages are classified as follows:

- a) For human consumption;
- b) For home use;
- c) For the preservation of flora and fauna;
- d) For agricultural and livestock use; and,
- e) For industrial use

1.1.2.1.1 Potable and waste water

Article 34: It is prohibited to use water as a site for disposal of solid waste, having to strictly adjust the regulations set to be established.

Article 41: The excreta, sewage, and storm water shall be disposed properly and sanitarly, in order to prevent contamination of soil, air and water sources for human consumption as well as the formation of breeding disease vectors.

Article 43: Any building, concentration of buildings or any other work of urban development, located outside the range of the public sewage system, prior to construction, should develop a proper system of waste disposal, to abide standards established in the regulations of this Act, and shall be approved by the municipal authority where the system is located.

1.1.2.1.2 From air and its contamination

Article 46: The term air pollution is defined as deterioration of its purity, by the presence in excess of the permitted concentrations of agents such as solid particles, dust, smoke, radioactive material, spread sound waves and others that the Secretariat defines as pollutants, as well as the presence or emanation of odors which jeopardize the welfare of people.

Article 47: The secretariat defines the conditions in accordance with regulations on air quality.

Article 48: When the emissions from a fixed or mobile source of pollutants, pass or may exceed the limits set in standards we shall proceed to apply treatment systems set for that purpose by the Secretariat.

Article 48: When the emissions from a fixed or mobile source of pollutants, pass or may exceed the limits set in standards we shall proceed to apply treatment systems set for that purpose by the Secretariat.

Article. 50 The use of fuels that contain substances or additives in a grade of concentration which resulting atmospheric emissions overpass the fixed security limits, will not be allowed.

1.1.2.1.3 Of Solid wastes

Article 52: Garbage of any kind should be eliminated sanitarly -. is up to the municipalities to organize, recruit and take responsibility for the cleaning services, collection, treatment and disposal of waste in compliance with the regulatory standards.

Article 53: The properties previously authorized by the municipalities with the assent of the secretariat may be used as high garbage disposal.

Article 57: If because of the location or volume of waste produced, the responsible entity for cleaning cannot make the pickup, it will be up to the individual or producer establishment, to transport and final disposal in the authorized sites by the Municipalities in accordance with the provisions of Article 53 of this Code.

1.1.2.1.4 Of occupational health

Article 101: The health of workers is an indispensable condition for the socio-economic development of the country. Its preservation, conservation and restoration are declared as social and health interest activities, in which the government, the private sector, workers and the community in general should be involved.

Article 114: In all workplaces the necessary steps are taken to avoid the presence of chemical, physical and biological agents in the air, in such concentrations and levels that they pose risks to the health and welfare of workers or the general population .

Article 115: THE SECRETARIAT will require companies to disclose among staff potentially exposed to risk, the measures to prevent accidents, as well as the adoption of the necessary measures in case of emergency

1.1.2.1.5 Of industrial safety

Article 120: In every workplace there should be an available trained staff member, equipment and devices for firefighting, that can be used immediately and with maximum efficiency. Such equipment and devices shall be subject to inspection by the specialized governmental entity .

Article 121: The manufacture, storage, handling, transport and trade of flammable or explosive substances will be regulated.

Article 122: All equipment, tools, facilities and electricity netWorks must be designed, constructed, installed, maintained, operated and marked in such a way to prevent risk of fire and avoid contact with the elements under tension.

1.1.2.2 *Regulation of Environmental Health*

This regulation includes regulations for:

- The final disposal of black, sewage and excreta storm water (Article 28 to Article 50)
- Of air its contamination and control (Article 51 to Article 60)
- Of Solid Waste (Garbage) (Art. 61 to 84)
- Disaster and emergency (Article 135 to Article 146)

1.1.2.3 *Territorial Ordinance Plan Act*

"This Act establishes the Territorial Ordinance Plan it constitutes a state policy that incorporated into national planning, promotes comprehensive, strategic and efficient management of all national resources, human, natural and technical, by implementation of policies, strategies and plans that ensure effective human development in dynamic, homogeneous, equal in opportunities and sustainable, in a process that reaffirms the human person as the supreme end of society and at the same time its most precious resource. "(Art. 1)

Article 8: The organization for the LAND MANAGEMENT (PLAN LAND ORDINANCE) constitute the set of government institutions and instances of citizen participation that by designation, delegation or integration will assume under the provisions of this Act, the functions of rectory, coordination, operation and monitoring of the process of land management generally promoting standards, arranging policies, designing strategies and implementing tools that makes it viable and permanent.

Article 46: Are technical instruments of the territorial planning, which were subordinate instruments that contain guidelines of the land management indicated in article 40 of this Act, and are the following:

- National land ordinance plan: technical and political instrument that contains general rules governing land use, management of natural resources and the integral occupation of the territory. For its long-term nature orients activities of the economic, environmental and social sectors at national, regional, municipal areas and areas under special regime, serving as a frame of reference for the various sectorial plans and strategies, and is constituted by the plans of use and occupation of the territory in the corresponding levels;;
- Regional plan of land management: it is a technical instrument that guides the activities of the economic, environmental and social sectors at the regional level and provides a reference to the various sector plans and strategies, and is constituted by use plans and land occupation to a regional level. The system of regions will be established by the Central Government;
- Municipal plan of land management: it is a technical instrument that guides activities of economic, environmental and social sectors at a municipal level and provides a reference to the various sector plans and strategies and consists of plans of use and territorial occupancy at a municipal level;
- Land ordinance plan of areas under special arrangements: Technical Instrument of territorial regulation of these spaces; and,
- Other ordinance plans: Required for managing the land management in circumstances justifying the judgment of the Executive Committee of land management, particularized ordinances.

1.1.3 Standards on environmental issues

1.1.3.1 Air quality

In this section we expose the technical regulations relative to air quality, with the following existing regulations:

- Regulations for Control of Emissions of Toxic Gases, Fumes and dust from motor vehicles and
- Regulations for the control of emissions from stationary sources.

1.1.3.2 Water quality

For the water topic the reference to the following standards is:

- • Technical standards for wastewater discharges to the sanitary sewage system. Agreement No. 058, which aims to:
 - a) To regulate wastewater discharges to receiving bodies and sanitary sewage system,
 - b) Encourage the development of waste minimization programs, installing treatment systems and wastewater disposal, to reduce the production and concentration of pollutants discharged into the environment.

1.1.3.3 Rules for the Integral Management of Solid Waste (Resolution No. 1567-2010)

Whose objective is to (Art. 1) regulate the integral management of solid waste, including the operations of prevention, reduction, storage and conditioning, transport, treatment and final disposition of such residues, encouraging its use in order to avoid health and environmental risks.

Article 3 stipulates that the present law will be of national implementation and of obligatory compliance to the Municipalities and to every natural and legal person, public or private, that as a consequence of its activities, generates or manages solid waste, be it as a producer, importer, distributor or user of a good.

The classification and composition of the waste is define on the articles 16 through 19, and its hazard characteristics are defined on article 20; on the Articles 21 and 22 the phases for management of special solid waste are defined. Regarding storage and treatment of special waste 28-32 and 33. Final dispositions are indicated in articles 34-43.

Solid waste are regulated on articles 44 through 65, while articles 72 and 73 regulate the management of inert solid waste.

1.1.3.4 GENERAL REGULATIONS OF PREVENTIVE MEASURES OF OCCUPATIONAL INJURIES AND DISEASES - REFORMED

This Regulation applies to the entire territory of the Republic, aims to establish, develop and provide legal, technical and administrative mechanisms for the prevention of occupational accidents and diseases in the workplace.

The provisions of this Regulation shall apply in everywhere and in any kind of work, whatever its legal form of its organization and benefit; They shall also govern the actions to promote and protect the health of workers.

All public and private employers, contractors, subcontractors and workers and their organizations, and public and private entities are subject to the provisions laid down in this Regulation.

Article 4

Additionally, this regulation defines the guidelines for Safety and Health Programs at Work, in articles 44 to 49. Personal Protective Equipment articles 107, 108 and 392.; Noise and Vibration Articles, articles 351-366 377-381 Chemical products.; First Aid 424-428.

1.1.4 MUNICIPAL TAXATION FRAMEWORK

BELOW ARE PRESENTED THE TAXATION FRAMEWORK OF THE MAIN MUNICIPALITIES IN THIS TRANCHE:

1.1.4.1 Municipality of Tela

The taxation framework of the Municipality of Tela is presented as follows:

Table 2.2. Taxation framework of the municipality of Tela

Environmental Aspect	Articles	Observations
Resource extraction or use.	30, 31,84,85,86	Extract or use of stone quarry or pits, minerals, hydrocarbons, forests and fisheries and their derivatives.
Potable Water.	39 clause 4, 21	Use of underground waters. Collection for performing physical and chemical analysis to industries and water boards.
Sanitary sewage system service	40-43	Charges and facilities.
Solid wastes	44-54	Service charge for solid waste collection and use of the sanitary filling
Environmental permits	78-80	Permissions, registrations, authorizations, judgments and environmental records. Here are some collections that are made: - Inspection and preparation of records. -Permission to use coconut.

Environmental Aspect	Articles	Observations
		<ul style="list-style-type: none"> - Registry of chainsaws. - Permission for cutting, grading and filling of urban and rural land areas. - Environmental Inspection of projects that have an environmental license in any category.
Cutting, Pruning and stripping trees and/or vegetation change.	81	Description of the amount payable according to the diameter of the tree. Mitigation activities for the cut and pruning of trees.
Authorization for Audio Publicity.	82	Authorization of audio publicity and its corresponding collection.
Fines and Penalties of the Municipal Environmental Unit.	153-177	<ul style="list-style-type: none"> -Contamination of drinking water for human consumption. -Contamination of inland and marine waters. - Damage to the forest to nearby water sources. - Cuts of trees, damage to green areas and forests. - Use of land resources. - Air pollution. - Visual pollution. - Sonic pollution. - Penalties and fines.
Discharges to the public sanitary sewage system.	178-183	<ul style="list-style-type: none"> - Prohibitions on discharges to the sanitation sewage system. - Prohibitions on construction of latrines or septic tanks where the sanitary sewage system exists. - Fines and penalties. - Prohibited on connections of discharge of wastewater and any liquids and/or solid wastes to the storm water network system.
Solid waste pollution.	184-188	Prohibition and penalties of dumpster in unauthorized sites.
Other Environmental Violations.	189	<p>Imposition of penalty for the following activities:</p> <ul style="list-style-type: none"> - Performing unauthorized fillings in environmental susceptible areas, wetlands, natural water courses, winter streams etc.). - Implementation of activities in protected areas. - Prohibition of beach activities.

Environmental Aspect	Articles	Observations
		-Prohibition of construction. - Penalties and fines.
Control and Monitoring of Mitigation Measures Contracts.	190-192	- The Governments' private and mixed projects established within the municipality who has their Mitigation Measures Contract, shall comply with all the recommendations described by the Natural Resources & Environment Secretariat (hereinafter called SERNA). - Penalties and fines.

Source: Municipality of Tela. Own compilation.

Figure 2-1. Tax Plan of the Municipality of La Ceiba

Environmental Aspect	Articles	Observations
Resource extraction or exploitation	32	<p>The Resource Extraction or Exploitation Tax, is the burden that natural and legal persons must pay for the extraction or exploitation of renewable and non-renewable natural resources, within the limits of the territory of the Municipality, whether temporary or permanent operation.</p> <p>As a consequence the following operations will be subject to this tax, regardless of the location of their transformation, storage, processing or collecting center or any other provision agreed by the State:</p> <p>a) The extraction or exploitation of quarries, minerals, hydrocarbons, forests, or their products:</p> <p>Hunting, fishing or species extraction from seas, lakes, lagoons and rivers. On the sea and lakes, the extraction must be within two hundred (200) meters of depth.</p> <p>ARTICLE No. 32: To determine the tax referred to in this chapter, the following rates will be applied:</p> <p>One percent (1%) of the commercial value of the natural resources extracted and exploited in the Municipality;</p> <p>The amount equivalent in Lempiras to fifty cents (0.50) of a dollar of the United States of America, according to the Customs Valuation Factor, for every ton of material or metallic mineral brush. This tax is in addition to the Industry, Trade and Services Tax.</p> <p>One percent (1%) of the commercial value of common salt and lime. In this case, the tax shall be paid starting after the two thousand (2,000) metric tons regardless of the duration of the exploitation.</p> <p>For purposes of application of this Article, commercial value of the exploited natural resources must be understood as the value</p>

Environmental Aspect	Articles	Observations
		<p>prevailing in the domestic merchant market for the resource as raw material.</p> <p>The payment of this tax must be performed within ten days following the month in which the extraction or exploitation operations were performed.</p>
	34	<p>The natural or legal person engaged in the extraction or exploitation of these resources is obliged to submit in January the statement of production, income or sales to the Municipality, for the purpose of payment of the corresponding tax, in conformity with the established fee.</p> <p>Non-compliance of this obligation on behalf of the tax payer, will subject him to a fine of ten percent (10%) on the payable tax, plus an annual interest equal to the annual interest rate that banks use on their commercial active operations, plus a two percent (2%) annual surcharge calculated on the remaining unpaid balance. (Article #109, Decree 127-2000).</p>
	35	<p>Everything concerning the extraction and commercialization is regulated by the rules of Material Extraction approved by the Municipal Corporation.</p> <p>Fines credited in the development of this activity without the corresponding permit, shall be entered in PART IV, CHAPTER II Administrative Penalties and Fines, Clause 5.</p>
Solid Waste	45	<p>The services of cleaning, collection and final disposal of solid waste, firemen, maintenance of indirect services, as well as final treatment of liquid waste; will be charged only to those who receive the service, and are classified as:</p> <p>a) Non-residential or exploitative, which are charged according to the economic activity perform by the Taxpayer, and the payment shall be made within the indicated period (Industry, Commerce and Services).</p> <p>b) Residential or housing, which will be charged according to the value of the property, residence).</p> <p>The Municipality will collect toxic and hazardous waste from Hospitals and chemical products factories, and other establishments that generate this type of waste, the fees for this service will be charged according to the study that will be performed for this purpose.</p> <p>It is a duty of the Environmental Management to identify, and regulate the toxic and hazardous waste from Hospitals and chemical products factories, and other establishments that generate this type of waste, the fees for this service will be charged according to the study that will be performed for this purpose and will bear the additional costs of transport through the aforementioned establishments as well as the deposit to the Final Treatment Destination.</p>
Use of Forest Resources	64	When somebody needs to cut a tree or bush inside his property, and

Environmental Aspect	Articles	Observations
		<p>when the property this is located within the municipal limit, he must submit a duly substantiated request to the Municipal Environment Management Unit, who will determine whether or not to authorize the request:</p> <p>Tree cutting Fee – Non Commercial Wood</p> <p>1. Within the municipal limit the following species:</p> <p>Round Mahogany, Cedar, are valued:</p> <p>Lps. 660.00 per cubic meter (M3)</p> <p>Other species Lps. 230.00 per cubic meter (M3)</p>
<p>Environmental Regulations</p>	<p>70</p>	<p>It is a duty of the Municipality of La Ceiba, through the Municipal Environment Management Unit, to monitor and regulate the activities performed within the municipal limits, aiming to minimize the environmental impacts generated, promoting the wise use and the sustainable management of the natural resources, allowing their preservation and economic exploitation.</p>
<p>Water Resource Utilization</p>	<p>71</p>	<p>Whoever plans the drilling of a new water well, be it for commercial and industrial use, must make arrangements with the Municipality of La Ceiba, through the Municipal Secretary, for the Honorable Municipal Council to authorize the Management and use License.</p>

Environmental Aspect	Articles	Observations
	<p style="text-align: center;">91-92</p>	<p>Every person natural or legal, that has drilled a water well in his property located within the limits of the Municipality of La Ceiba, must present an affidavit to the Secretary of the Honorable Municipal Council, specifying for each well, its characteristics of location, depth, infrastructure built, installed equipment, time in which the well was drilled, measurement equipment, last physical, chemical, bacteriological analysis and any other characteristic in order for his License for the management and use of water to be granted.</p> <p>Whoever plans to drill a water well, be it for commercial and industrial use, must perform the necessary actions before the Municipality of La Ceiba, through the Municipal Secretary, in order for the Honorable Municipal Council to authorize the LICENSE OF USE, in compliance with the following requirements:</p> <ol style="list-style-type: none"> 1. Fill in the application form for the License for Use of Water. 2. Deed or lease of where the he is planning to drill the water well. 3. Applicant's affidavit by which he ensures that all the information submitted is true. 4. Technical report from the Municipal Office of Water and Sanitation (known is Spanish as OMASAN, Oficina Municipal de Agua y Saneamiento).
<p style="text-align: center;">Administrative Infringement</p>	<p style="text-align: center;">73-76</p>	<p>Administrative penalties shall mean the actions or omissions that violate the laws, provisions and administrative resolutions in environmental and natural resources matters, as long as they are not criminalized. Administrative penalties will be divided en mild, misdemeanors and felonies; and they shall be applied by the Municipal Environmental Unit in coordination with the Municipal Inter-institutional Commission for the Environment (CIMA)</p>

1.1.1 3.2.1 ENVIRONMENTAL GUIDE FOR SOPTRAVI ROAD PROJECTS

THE CONCESSIONAIRE SHOULD ALSO COMPLY WITH THE PROVISIONS OF THE ENVIRONMENTAL GUIDE FOR ROAD PROJECTS OF SOPTRAVI:

Table 2.3. ENVIRONMENTAL GUIDE FOR SOPTRAVI ROAD PROJECTS

Environmental Aspect applied to the design, construction and rehabilitation and maintenance of road projects	Numeral	Observations
Provisions during the design phase	11.1	<ul style="list-style-type: none"> - Selection of the best route of the new road or highway. - Environmental criteria for the selection of the route that should be considered. - Road Marking - Stop booths - Crosswalks
Provisions during the construction phase	11.2	<ul style="list-style-type: none"> - Prevent erosion during the progress of the work - Set the exploitation of sites of detected borrows. - Train staff
Description of typical activities in construction projects, rehabilitation and maintenance of roads and highways	11.3	Generals
	11.3.1	Removal of plant material and stripping
	11.3.2	Scarification and conformation of the
	11.3.3	Extraction of stone material
	11.3.4	Blasting
	11.3.5	Removal and disposal of waste material
	11.3.6	Filling with coarse rock material
	11.3.7	paving
	11.3.8	Conformation of ditches
	11.3.9	Cleaning of box and tubular culverts
	11.3.10	Cleaning and conformation of the riverbed
	11.3.11	Drainage Works
11.3.12	Rehabilitation of bridges	

Environmental Aspect applied to the design, construction and rehabilitation and maintenance of road projects	Numeral	Observations
	11.3.13	Installation of road signals
	11.3.14	Transportation of hazardous materials
	11.3.15	Installation of camps
	11.3.19	geotextiles
Control procedures, monitoring and environmental audits of Works	12	- Environmental Compliance and Supervision
Environmental considerations and criteria for typical activities in construction projects, rehabilitation and maintenance	Annex 6 File 1	Criteria and environmental considerations on the construction of ditches.
	Annex 6 File 2	Criteria and environmental considerations about building counter ditches
	Annex 6 File 3	Criteria and environmental considerations on building slopes and landslide rehabilitation.
	Annex 6 File 4	Criteria and environmental considerations on the construction of sewers.
	Annex 6 File 5	Criteria and environmental considerations about stripping and pruning
	Annex 6 File 6	Criteria and environmental considerations on bridge rehabilitation
	Annex 6 File 7	Criteria and environmental considerations on scarification and conformation of the
	Annex 6 File 8	Criteria and environmental considerations on extraction of disposable material
Environmental considerations and criteria for typical activities in construction projects, rehabilitation and maintenance	Annex 6 File 10	Criteria and environmental considerations on pavement (asphalt treatment)
	Annex 6	Criteria and environmental considerations on transport of hazardous materials

Environmental Aspect applied to the design, construction and rehabilitation and maintenance of road projects	Numeral	Observations
	File 11	
	Annex 6 File 13	Criteria and environmental considerations on Paving (lining)
	Annex 6 File 14	Criteria and environmental considerations on cleaning and shaping of the riverbed
	Annex 6 File 15	Criteria and environmental considerations on installation of stone quarries or pits, asphalt plants, landfills and other temporary sites
	Annex 6 File 16	Criteria and environmental considerations on drainage structure cleaning
	Annex 6 File 17	Criteria and environmental considerations on installation of road signals
	Annex 6 File 18	Criteria and environmental considerations on extraction of stone material.

SOURCE: OWN COMPILATION.

2 PROJECT DESCRIPTION

2.1 Project Area

Total area of the project (Apt) in m²

The total project area is 3,885,000 m². Within this area, 40 meters of the existing road easements are included, one area for the provisional facilities with 5,000m² (0.5ha), throughout the length of the alignment Tela – La Ceiba, with 97.0 km.

Net area of the project (Apn) in m²

The net project area is 3,885,000 m². Within this area, 40 meters of the existing road easements are included, one area for the provisional facilities with 5,000m² (0.5ha), throughout the length of the alignment Tela – La Ceiba, with 97.0 km.

Total area to build in m²

Since this is selective rehabilitation and maintenance project, there will be no works being built, existing works will be repaired and preserved.

Area of influence of the project

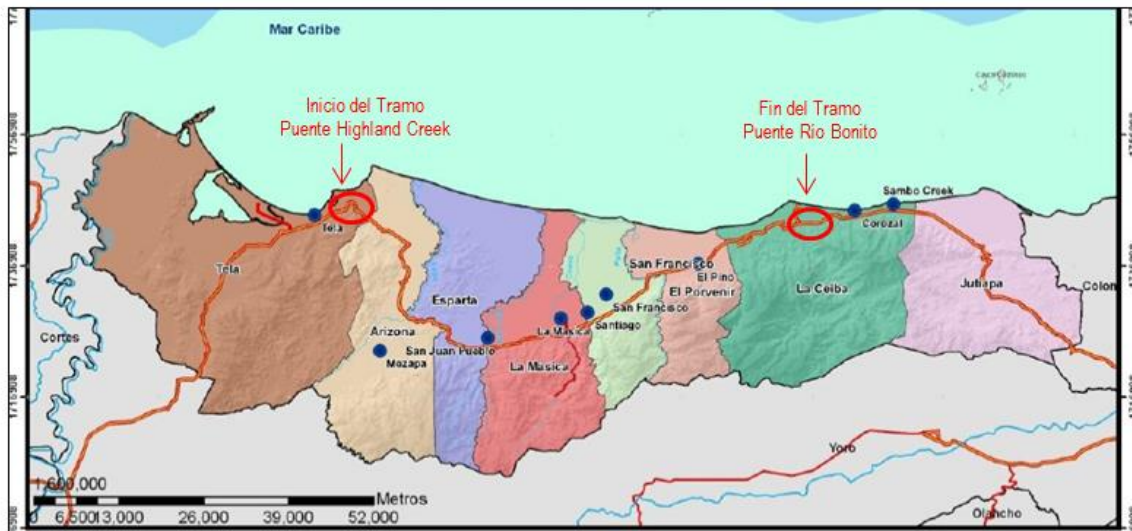
In order to determine the area of direct influence, the definition established in the “Environmental Evaluation and Control Guidebook” (SERNA, 2009), which is considered as the surrounding of the project located outside the total area of the project and goes from the borders up to a distance of 500 meters.

Based on this definition the area of direct influence for this project is defined as the 500 mts, of the existing easement (40 mts) throughout 97.0 km.

2.1.1 Geographical Location and Limits

The selective rehabilitation and maintenance works of Tela – La Ceiba tranche is part of the CA-13 route from the main road network in the country specifically linking the municipalities of Tela, Arizona, Esparta, La Másica, San Francisco, El Provenir and La Ceiba on the department of Atlantida. This tranche begins on the bridge over Highland Creek (15°46'55.10" - 87°26'2.44") and ends on the bridge over river Rio Bonito (15°44'41.73" - 86°52'7.57") on La Ceiba Municipality. See Figure 4-1.

Figure 2.1. Geographic Location of the Project



Source: <http://www.sinit.hn/index.php>

2.2 Components of the project and its phases

The activities that will be carried out in each one of the phases of the project are described below:

PLANNING PHASE

At this phase the following activities will be undertaken:

- Dissemination of the project through the Citizen Participation Plan. The awarded project is presented in the media and outreach meetings begin with all stakeholders, both representatives of civil society, institutions and the community in general.
- Preparation of technical environmental Documents and Application for the Environmental License. Parallel with the aforementioned, and with the proposal in hand, the preparation of the Technical Environmental Documents begins, as per the instrument indicated for each category, for later submission to SERNA, to obtain the corresponding environmental license. (Regulation of the National System of Environmental Impact Assessment SINEIA - Agreement No. 189-2009).
- Processing of the corresponding permits. The CONCESSIONAIRE must take the steps required by the UGA (Environmental Management Unit) - SOPTRAVI for all the activities to be performed, for example, tree pruning permit, use of water resources from SERNA, use of authorized sites by the municipal authorities (UMA's) for the disposal of solid waste and construction waste, among others.
- Preparation of work program. The Concessionaire shall prepare or update a detailed work program and present it to SOPTRAVI for its approval.
- Development of Traffic Detours Plan during the construction, including traffic studies and Works for the adequacy of minor roads, as required.
- Within his work plan, the Concessionaire must include the locations for the disposal of residue; the locations must be authorized by the environmental authority.
- Location of construction materials supply sources. Similarly, the Concessionaire should find the best construction materials supply sources and provide in its work schedule a continued provision to decrease the quantities and storage areas. For borrow pits that have a Concession, documentation containing a mining Concession must be provided, along with the corresponding license issued by the Natural Resources & Environment Secretariat (Hereinafter called SERNA) and make the implementation of the stipulated measures. Otherwise, the material pit that does not have a Concession for exploitation issued by the Transportation & Civil Works Secretariat (hereinafter called SOPTRAVI), shall request the corresponding permit before the Honduran Mining and Geology Institute (hereinafter called INHGEOMIN) for the Concession of the pits to be exploited.

At this phase, the Concessionaire Company should begin to train workers so that an appropriate training for health protection and the environment of persons is ensured and at the same time, the preparation of the terms of reference for the firms to be outsourced should initiate, in order to ensure compliance with environmental regulations in-force in that moment.

SELECTIVE REHABILITATION AND MAINTENANCE UNDERTAKINGS

The term selective rehabilitation and maintenance are the activities of selective rehabilitation with a tendency to renew the initial condition of the road, so that they meet the service levels specified in the Concession Agreement.

The phase of selective rehabilitation and maintenance will last 12 months. The activities included in this phase are described as follows:

- **Location and Operation of Temporary Facilities:** This activity includes site selection for the installation, construction and/or purchase or rental of temporary facilities next to the worksite and the operation of these during the time provided under the work plan (they can be temporary or semi-permanent, during the construction phase). These facilities will at least be the following:
 - Field Offices for engineers and for the administrative sector.
 - Provisional repair Shops.
 - Rest areas, food and sanitary services for workers.
 - Storage area for materials and equipment

Similarly, the following aspects have been included in the plan: the change in land use, land leveling, removal of vegetation, construction of offices, sanitary infrastructure (water and sanitary drainage) including septic tanks to handle gray waters, enabling and implementing machinery parking sites in which storages of fuel, lubricants and other supplies will be included, petty (formwork and masons), mechanical repair shops, construction or rehabilitation of access roads, parking area adequacy and whatever is necessary for security (perimeter fencing) and comfort of workers.

Three areas to allocate temporary facilities are proposed, only expecting to occupy an area of approximately 0.5 ha.

- **Paving of the roadway:** This activity involves the placement, distribution and compacting of the base (usually a crushed granular base), transport and placement of the pavement layer, of the material (asphalt) and thickness defined in the design, from the site of preparation (asphalt concrete plant) to the site of placement. For this case operating asphalt plants located in San Pedro Sula will be used, and the Concessionaire will have to request the owner thereof the corresponding environmental license issued by SERNA.
- **Preparation of the worksite:** Planned actions include: cleaning, cutting and removal of grasslands on both sides of the roadway and central strips along the alignment. Cutting of grass and shrubs will be performed on both sides of the road, up to a length of 1.0 meters from the outside of the gutter (concrete, stone or formed in the natural soil). Priority will be given to the curves, bridge access, intersections and areas of poor visibility. It also includes pruning of trees that are located in the central strip that have now reached high altitudes, thereby interfering with power lines and preventing visibility of users.
- **Maintenance of the drainage Works:** it consists of cleaning and removal of debris, dirt, residue, sand or any other material from the gutters, inlets and culverts, minor repairs to gutters, drains, sewers, discharge heads or any other work of drainage that may require it.

- Bridge maintenance:** This activity is more specific and is based on the structural inspection that makes up bridges (e.g. brackets, stirrups, beams, etc.) as well as the cleaning and repair of joints, guardrails, drainage, pavement layer, etc.

The purpose of this activity is to keep the bridge under good condition, repairing damaged secondary members, keeping the channel free of obstructions for the free flow of water and keeping clean the superior and inferior areas of the bridge.
- Installation of road signals and illumination:** Consists on the repair or replacement of signage, both vertical and horizontal and light poles; and verification of the operation and programming of traffic lights and luminaries.

 - brush from the surroundings is cleaned.
 - The installation of horizontal road signals or painting the dashed centerline on the pavement and the continuous line that runs along the edges with white paint. The edges of the islands in the central part of the road should be painted with a yellow line. The purpose of this activity is to define the traffic lanes for drivers to stay within them and have a guide or reference.
 - The vertical signals that are deteriorated will be restored and replaced.
- Use of water sources:** This activity consists on obtaining and transporting water resources from surface water bodies within the area of influence of the project to where it is required for those Works that require it, compaction, concrete casts, irrigation , etc.). This resource is usually obtained by pumping from the providing body (river with permanent or semi-permanent flow) to a temporary storage tank from where it will be transported to the worksite.

Table 2.1. List of surface water bodies

Cuerpos superficiales en el Tramo	
Nombre	Nombre
Río Highland Creek	Qda. Alegre
Río Nutria	Qda. Agua Tibia
Río San Antonio	Río San Juan
Río Santiago	Qda. El Oro
Río Plátano	Qda. Agua Caliente
Qda. De Arena	Qda. Bijagualosa
Río Hicaque	Qda. San Antonio
Río de Saco	Qda. Colinas
Río Coloradito	Qda. Montenegro
Río de Arizona	Río Cuero
Río Leán	Qda. La Presa
Río Chiquito	Río Jimerito
Qda. Grande	Río Cuyamel

Cuerpos superficiales en el Tramo	
Nombre	Nombre
Qda. Lombardía	Río Las Camelias
Qda. El Espinoso	Qda. Del Trapiche
Río Perla	Río Coloradito
Río Zacate	Río Porvenir
Qda. Seca	Río Bonito

Source: Concessionaire

Exploitation and transportation of materials from borrow pits: This activity involves cutting (exploitation) and transport of stone material to be used for the construction of fillings or embankments from its borrow source (pit, dry or alluvial) to the Worksite. This activity requires greater mobilization of trucks, equipment and construction machinery, and will initiate securing the area with protective barriers that will limit traffic through the internal roads of the Worksite. This action will ensure the safety of pedestrians and workers. Depending on the type of pit, dry or rainwater sourced, the technical guidelines must be followed. The borrow pits that have been identified, and their locations are shown in Table 4.1. If the Concessionaire decides to use another borrow pit for the selective rehabilitation and maintenance activities, he will have to follow all of the necessary procedures established for borrow pits exploitation by INHGEOMIN. The corresponding exploitation permits shall be processed by the Concessionaire through SOPTRAVI's Environmental Management Unit.

Table 4.1. Identifies Borrow Pits List

N°	Location	Suggested use	Verified Use	Borrow Pit Capacity	Proprietary	Observations
1	Borrow pit La Citranela, La Citranela Village, San Alejo sector, 2.1km from the detour to the San Alejo community, right side of the central line of the road El Progreso – Tela, 15 km from Tela city . The pit is in the river San Alejo. UTM Coordinates (438689; 1735748)	<ul style="list-style-type: none"> Gravel for concrete Sand for concrete Crushed base Filler Rocks beds Causeways 	<ul style="list-style-type: none"> Gravel for concrete Sand for concrete Crushed base Filler Pedraplenes Camas drenantes 	Enough	<p>COMTEL, Mixed Cooperative Limited Teleña.</p> <p>Representative: Mr. Marco Obdulio Carranza</p> <p>The cooperative has the concession for the exploitation.</p>	<p>The borrow pit is on the riverbed, upstream. Materials are boulders, basalt, gray colored and very resistant. Upstream the materials are thicker. By crushing and screening the different materials required may be obtained.</p> <p>It currently own the concession authorized by INHGEOMIN. See figure 4.2.</p>
2	Borrow Pit El Naranjo, on El Naranjo community, road to Mezapa, 1.8 km left	<ul style="list-style-type: none"> Earthworks, possibly require chemical 	<ul style="list-style-type: none"> Terracerías 	Enough	<p>Mr. Eduardo, Representative: Mr. Amadeo</p>	<p>Material yellowish-brown, very fine and possibly plastic, but with a CBR > 10</p>

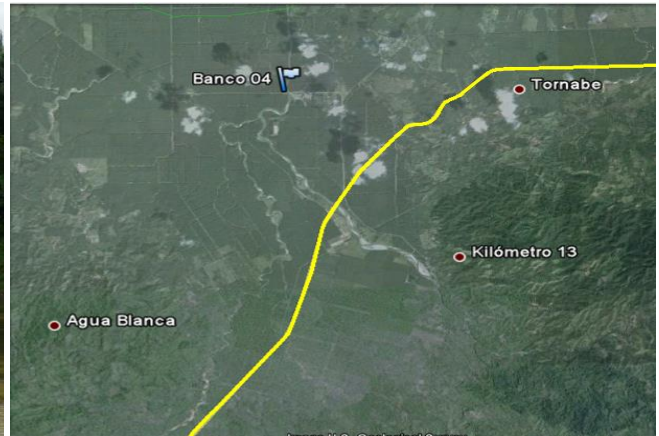
N°	Location	Suggested use	Verified Use	Borrow Pit Capacity	Proprietary	Observations
	side of the road El Progreso – Tela, UTM Coordinates (429659 ; 1721084)	stabilization			Galdámez Tel: 32116590	possibly requires to be stabilized with lime, Sand-silt-clay material. See Figure 4.3.
3	Borrow Pit El Naranjo, on El Naranjo community, road to Mezapa, 2.7 km left side of the road El Progreso – Tela, next to “Licores Hernandez”, UTM Coordinates (429281; 1721789)	<ul style="list-style-type: none"> • Terracerias, possibly require chemical stabilization 	<ul style="list-style-type: none"> • Terracerías 	Enough	Ms. Martha Lazo. Tel: 98 47 90 80	Material yellowish-brown, very fine and possibly plastic, but with a CBR > 10 possibly requires to be stabilized with lime, Sand-silt-clay material. See Figure 4.3.
4	Borrow pit Guaymon river, at both sides of the bridge, UTM Coordinates (428459; 1715832)	<ul style="list-style-type: none"> • Gravel for concrete • Crushed base • Filler • Pedraplenes • Camas • drenantes 	<ul style="list-style-type: none"> • Gravel for concrete • Concrete • Crushed base • Filler • Pedraplenes • Camas 	Enough	Concession to Transportes Juárez	The borrow pit is upstream on the riverbed, material are boulders, basalt, gray colored and very resistant. Upstream the materials are thicker. By crushing and screening the different materials required may be obtained. See Figure 4.4

Note: Only the borrow pits on this list have been identified, en case the Concessionaire decides to use other source for the necessary materials, it must comply with all the procedures established by the INHGEOMIN for its exploitation. To apply for the exploitation permits, the Concessionaire must make the application through SOPTRAVI's UGA.

Figure 2-2. Pit - La Citranela



Source: LB, field visit, April 2013



Source: Google Earth

Figure 2-3. Pit at El Naranjo



Source: LB, field visit, April, 2013

Figure 2-4. Pit Río Guaymón



- **Removal of temporary facilities and equipment:** This activity refers to the removal or restoration or decommissioning of temporary facilities. The key actions include the cleaning and restoration of the area (within restoration we can include soil scarification, removal of any structure that is to be discarded, placing topsoil, replanting and reforestation, if applicable).
- **Management of construction waste and solid waste:** This activity involves the collection, separation, transportation, and disposal of surplus materials or construction waste generated during the construction of the work in any of the activities mentioned above (including the restoration or removal of temporary facilities), as well as solid and domestic waste and the construction activities generated by the operation of the temporary facilities.

OPERATION PHASE

In order for the road to be kept in operational safe conditions within the design horizon, maintenance activities must be performed.

For this tranche specifically, maintenance will be carried out by SOPTRAVI.

The following activities are executed during the operation phase:

- **Maintenance of the roadway.**
- **Maintenance of the drainage Works**
- **Maintenance of bridges:**
- **Maintenance of road signals and lighting**
- **Patching and covering of potholes**

RESTORATION PHASE

One of the main measures to be adopted as part of the policy during the execution of the Works, in view of the environmental aspects, is an adequate restoration of each of the sites intervened during the execution of the Works.

However, during the restoration phases, of each of the sites, including: location of sewers, drainage Works, support roads, camps, sites of borrow pits, etc...should undergo a thorough review of the area in order to remove all contaminated soil.

All sites intervened by the Concessionaire shall be thoroughly cleaned upon leaving each one of them.

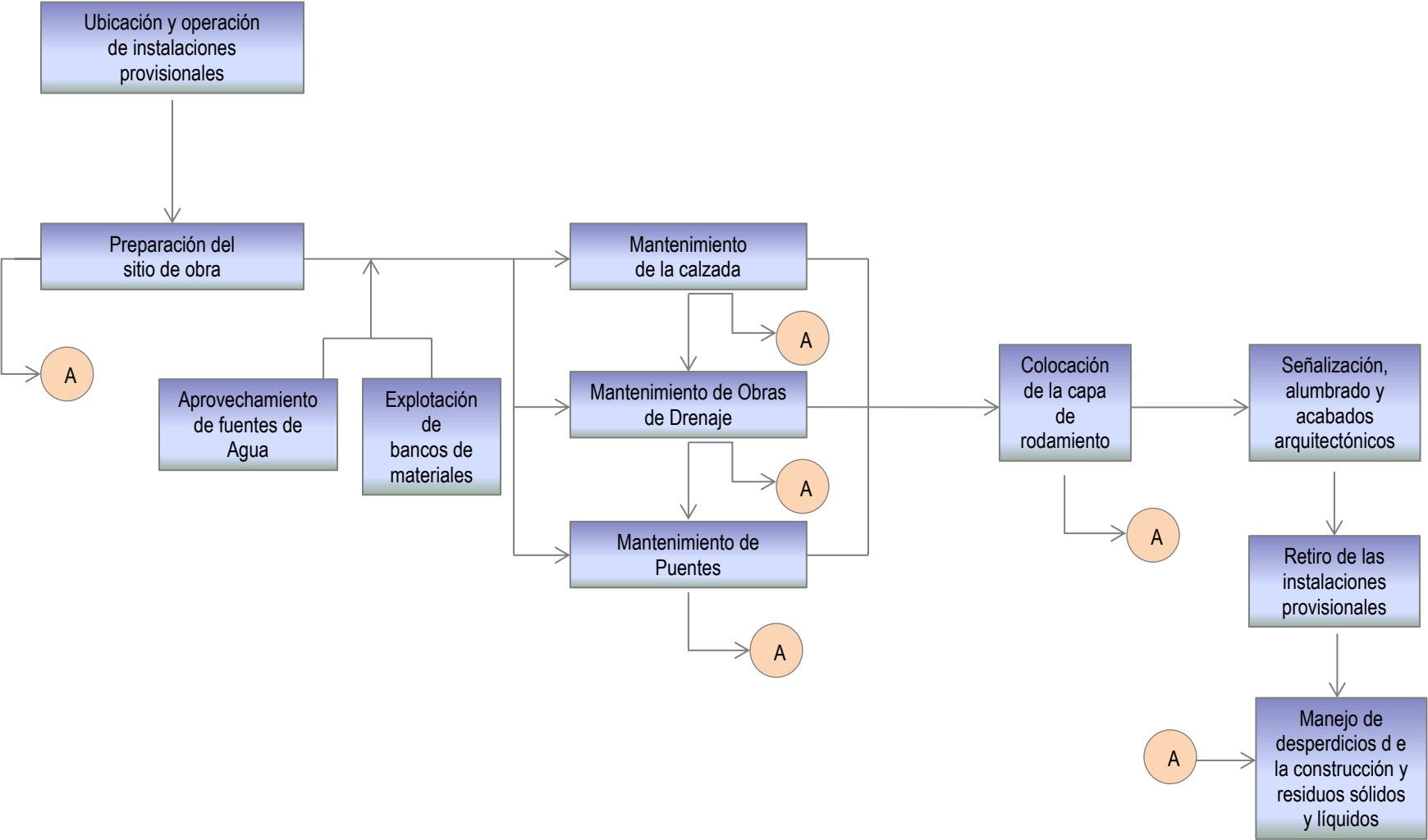
In order to facilitate cleaning tasks during the restoration phase of each site, it is recommended that the Concessionaire perform all of his work in a clean environment with techniques to avoid contaminating the resources located in the vicinity of the intervention.

The Concessionaire shall take into account the measure issued by UGA/SOPTRAVI, for the closing and restoration phase.

2.2.1 **Flowchart of activities**

A flow chart is presented under figure 4.13, showing the Selective Rehabilitation and maintenance Undertakings of the tranche Tranche Tela-La Ceiba.

Figure 2.5. Activity flowchart of the project



Source: The Concessionaire

2.3 Infrastructure to be developed

No new infrastructure will be developed, during the 12 month period of the selective rehabilitation and maintenance; only maintenance will be given to the existing structures. After the selective rehabilitation and maintenance, SOPTRAVI will be in charge of this tranche's maintenance.

2.4 Equipment and machinery to be used

With regards to equipment used during construction, operation and maintenance of the Project we have the following (see Table 4.5):

Table 2.2 Equipment list – Construction Phase

Phase	Activity	Machinery and Equipment
Selective Rehabilitation and Maintenance	Maintenance of drainage Works and bridges	Excavator, dump trucks, others
	Maintenance of road signals and Illumination	Crane Truck
	Transportation and placement of rock material	Moto bulldozer, compacting roller, front loader, dump trucks, backhoe, flatbed, tanker
	Placement of Roadway layer	Moto bulldozer, double drum roller, pneumatic compactor, asphalt setter, dump trucks, flatbed

Source: The Concessionaire

2.4.1 Vehicular Equipment

The traffic flow, resulting from the activities of the project will consist mainly on moving raw material needed for Works and waste disposal, truck fuel dispenser or asphalt distributors. It also includes inspections, operation personnel and field supervisors transport.

2.5 Labor force in the selective rehabilitation and maintenance undertakings, Construction and Operation

2.5.1 Selective rehabilitation and maintenance undertakings

The jobs that are expected to be needed during the selective rehabilitation and maintenance undertakings of the Project are shown under Table 4.6. The list refers to 49 jobs, not including administrative staff:

Table 2.3. Jobs during the Construction

AMOUNT	DESCRIPTION
--------	-------------

AMOUNT	DESCRIPTION
1	Master of Paving Work
1	Master of Mechanical Works
1	Work Master of the Crushing Plant
1	Topographer
2	Prism holder
1	Assistant of the Topographer
1	Tractor operator
1	Front loader operator
5	Dump truck operator
1	Finisher Operator
1	Sweeper - Blow Operator
1	Asphalt tank driver
1	Asphalt tank driver
1	Crushing Plant Operator
1	Horizontal Signal Equipment Operator
4	Bricklayers
10	Construction Assistants
2	Mechanic
1	Electrician
1	Welder
2	Greasers
1	Lube truck driver
3	Light Vehicle Drivers
4	Flag assistants
1	Environmental Specialist Assistant
1	Manager of workplace safety

AMOUNT	DESCRIPTION
50	Total

Source: Own compilation.

2.6 Disposal of solid waste in the construction, operation and restoration phases

Waste generation from the various activities that make up the project throughout the different phases will be handled as shown below.

2.6.1 Selective rehabilitation and maintenance undertakings and Construction

Solid waste will be generated during the rehabilitation, refinement and construction undertakings, due to the development of activities related to the removal of vegetation and of existing infrastructure, as well as due to the reduction of activity, which will be sorted out to be used as filler material along with the rest of the waste. For safety reasons, this will be taken directly to authorized sites for the landfill project. (See SINEIA, section 8.2)

Table 2.4, shows a general characterization of the waste that will be deposited directly into these authorized dumps:

Table 2.4. General Characterization of non-toxic waste to be disposed in authorized landfills

Non-toxic solids
Scrap wood
Empty water containers
Demolition debris
Metal and plastic waste
Domestic solid waste
Remains of sand, cement and gravel

Source: Own compilation.

All the remains from the demolition of concrete slabs of Portland Cement or other material may be reused/recycled.

The temporary storage of debris shall be set up for a proper drainage so that no pools of water are generated, to avoid affecting the movement of equipment and staff. This will also avoid the invasion of lands or properties outside the areas authorized for the Works and will avoid causing damage to the surrounding vegetation.

The remaining solid waste coming from human activities necessary for the implementation of the construction Works will be arranged conventionally, subcontracting a garbage collection service for its daily removal either with a collection company or by the municipal authority's own means (UMA's) dump, selected for this work.

Waste that can be recycled: it is advised to contact the responsible recycling companies and proceed to sale it.

2.6.2 Operation

The solid waste produced during the operation and maintenance phase will be of a domestic type (food waste, paper, glass and plastics), produced by road users and workers of the company in charge of the maintenance activities. These wastes will be collected and disposed of in the authorized landfill site.

Periodically metal waste, concrete (slabs), wood or plastic (replacement parts), paint cans, among others, from maintenance operations, will be handled by companies specializing in these tasks (they must have their corresponding permits).

Final disposal in this phase will be a responsibility of SOPTRAVI.

2.6.3 Restoration

During the phase of restoration, of each of the sites, like sewers, drainage Works, support roads, camps, industrial plants, etc.. should undergo a thorough review of the area in order to remove all contaminated soil.

All the fixed and dismountable installations that were installed for the execution of the work must be dismantled, and then the scrap, debris, and fences must be removed and buried in the dump sites authorized by the UMA's, Municipality.

At this phase, the measures issued by the UGA / SOPTRAVI for those cases in which there is a closure or restoration of Works.

2.7 Description of the liquid waste generated in the construction, operation and restoration phases

2.7.1 Rehabilitation, refinement and construction

During the rehabilitation, refinement and construction phase liquid waste will be generated mainly from oils and lubricants used for the maintenance of machinery. These will be stored temporarily in the site properly destined for this, until their recollection by an authorized manager, who will have the responsibility to treat and dispose them in an authorized disposal site.

A toilet must be installed for every 10 persons or workers of the same sex, plus one more if a lady is part of the team. Toilets must be reasonable accessible and all work sites and they must not exceed a distance of 60 m from the work site. In these provisional installation areas, the installation of a septic tank will be necessary for the management of grey waters, deriving from washing of machines and camp area cleaning.

Toilets must be properly maintained and cleaned, serviced by specialized companies which must have all of the permits required by the national legislation for this activity and (the same applies to the septic tank).

2.7.2 **Operation**

During the operation phase, liquid waste will be generated mainly from oils and lubricants used for the maintenance of machinery. Final disposal in this phase will be a responsibility of SOPTRAVI.

2.7.3 **Restoration**

In the dismantling of provisional installations, work sites, and borrow pits, special care will be given to the collection of hazardous liquid residue that might have been left as a result of the development of activities during the execution of the Work.

The transport of materials, specially those with potential contamination, like grease, oils, fuel, asphaltic mixtures, among others; must be done with the proper precaution measures, from the site of origin to the site of disposal. They will be managed, collected, transported, and placed on the final disposal site by an authorized manager (must have the corresponding permit).

3 IDENTIFICATION, CHARACTERIZATION AND ASSESSMENT OF ENVIRONMENTAL IMPACTS

The objective of this identification process is to provide an initial indicative information base for further quantitative evaluation. A matrix was prepared which allowed us to contrast the different activities of the project with the resources and natural processes that could be affected by the activities. The likely impacts were identified by each consultant depending on their area of expertise.

For the Impact Identification Matrix, the environment used was divided into seven (7) components or means in which the potential impacts associated with the project are presented, as indicated below:

1. Aquatic (water):
 - 1a. Alterations of the hydric regime (courses and drainage of water)
 - 1b. Alterations of the water table
 - 1c. Deterioration in the quality or water pollution.
2. Atmospheric (air):
 - 2a. Deterioration in the quality or air pollution
 - 2b. Dust generation and / or foul odors
 - 2c. Increased noise levels.
3. Terrestrial (land):
 - 3a. Effect on soil compacting or leveling
 - 3b. Quality deterioration or contamination of soil
 - 3c. Extraction or soil loss
 - 3d. Increase in soil erosion
 - 3e. Decreased fertility and suitability of land use
4. Biotic (flora and fauna):
 - 4a. Loss of vegetation cover
 - 4b. Disturbance or alteration of terrestrial or aquatic fauna
 - 4c. Increased risk of abuse of wild animals
 - 4d. Increased risk of abuse of wild animals
5. Socioeconomic:
 - 5b. Modifications to the local vehicular traffic
 - 5c. Increased local and regional economy
 - 5e. Increased risk of disease transmission
 - 5f. Increased risk of occupational accidents
 - 5g. Employment generation (+)
 - 5h. Increased public health issue because of the generation of solid and liquid waste
 - 5i. Nuisance to the surrounding communities by the project Works
 - 5j. Changes in land use
 - 5k. Alteration of public services
 - 5l. Savings in travel time
 - 5m. Decreased concentrations of toxic gases from mobile sources
 - 5n. Savings in fuel costs
 - 5o. Reducing the risk of road accidents and increase road safety
6. Historical and cultural:
 - 6e. Impact on historic and archaeological sites
7. Landscape related:
 - 7e. Alterations or changes in the landscape and aesthetics of the environment

Furthermore, the activities and sub-activities contemplated for this work are listed by phases:

A. PLANNING PHASE

At this phase the following activities will be undertaken:

- Processing of the corresponding permits. For example, tree pruning permit, use of water resources
- Dissemination of the project through the Citizen Participation Plan.
- Location of the places for the disposal of residue and remaining material (debris).
- Location of construction materials supply sources.
- Preparation of work program.
- Preparation of the traffic management program to control and detour traffic during construction activities.

These activities don't generate an environmental impact, they only define and limit the areas that will be affected (for example the area of influence), and the natural, social and cultural, infrastructures and services that will be affected by the works. However, it is important to note that all of these activities will be necessary to continue with the execution of the next two stages, the construction stage, and the operation and maintenance stage.

B. Selective rehabilitation and maintenance undertakings

A.1 Installation and Operation of Temporary Facilities (site selection, installation and / or purchase or lease, operation of facilities).

A.2 Preparation of the Worksite (cleaning, clearing)

A.3 Use of water sources (collection and transport of water resources)

A.4 Maintenance of drainage Works

A.5 Substitution and placement of the pavement layer (placement, distribution, base compacting and transportation, and placement of the roadway).

A.6 Bridge maintenance. Paint, guardrail repair.

A.7 Operating and transport of borrow pits(cut and transport the material). This activity consists in the exploitation and transportation of the material that will be used for the selective rehabilitation and maintenance and construction (where required) phases, from its source to the work site.

A.8 Installation of road signals. Lighting and landscape finishes (barriers installation, signs and light poles).

A.9 Removal of temporary facilities and equipment (removal or restoration or decommissioning of temporary facilities).

A.10 Waste Management of construction and solid waste (collection, separation, transportation, and disposal of materials).

C. Operation and Maintenance Phase

C.1 Commissioning of the Project (operation of the road and complementary Works)

C.2 Periodic and routine road maintenance (maintenance of the , drainage, bridges, installation of road signals and Lighting.

C.3 Night lighting

Methodolgy

For the identification of environmental impacts, a matrix of interaction between "Actions or activities of the project" and "environmental factors" was developed. This impact identification was performed following the Leopold Matrix model (modified).

Table 3.1. Impact Identification by Leopold Matrix modified – selective rehabilitation and maintenance undertakings

Impacts		Selective rehabilitation and maintenance undertakings activities							
Id	Manifestation of Impact	A1-Location and Operation of Temporary Facilities	A2- Preparation of Worksite	A3-Use of Water Sources	A4- Maintenance of drainage Works	A5-Placement of the pavement layer	A6- Maintenance of bridges	A8-Usage and transportation of materials pits A9 - Installation of road signs, lighting and finishes	A10-Waste Management Construction
1	Aquatic (water)								
1a	Alterations of the water regime (courses and drainage of water)	• B (-)		• B (-)	• B (-)			• M (-)	
1b	Deterioration in the quality or water pollution	• B (-)	• B (-)	• B (-)	• B (-)		• B (-)	• M (-)	• B (-)

Impacts		Selective rehabilitation and maintenance undertakings activities								
Id	Manifestation of Impact	A1-Location and Operation of Temporary Facilities	A2- Preparation of Worksite	A3-Use of Water Sources	A4- Maintenance of drainage Works	A5-Placement of the pavement layer	A6- Maintenance of bridges	A8-Usage and transportation of materials pits	A9 - Installation of road signs, lighting and finishes	A10-Waste Management Construction
5l	Savings in travel time (+)									
5m	Decreased concentrations of toxic gases produced by mobile sources (+)									
5n	Savings in fuel costs (+)									
5o	Reducing accidents and improving road safety (+)									
6	Historical and cultural									
6a	Impact on historic and archaeological sites									
7	Landscape related									
7a	Alterations or changes in the landscape and aesthetics of the environment	• B (-)						• B (-)		

Observation: • B = Low, • M = Medium, • A= High Source: The Consultant

The final objective of this Leopold Matrix is to obtain a forecasted list of significant environmental impacts that could occur during the different phases of the Project.

A description of the involvement or impact the project will generate in different media and environmental variables is presented. This description is derived from the identification of impacts previously presented under Tables Table 5.1 and Table 5.2, using modified Leopold Matrix.

3.1 Air Emissions - Atmospheric Environment

In general terms, it can be said that the air quality along the road tranche is good. This tranche crosses both rural areas and urban areas with presence of some industries and population centers and fluid traffic. Similarly, the project is developed in a completely open area, thus allowing the dispersion of particles.

Rehabilitation, refinement and Construction phase

The major impacts on quality or air pollution are associated with the rehabilitation, refinement and construction phase. All vehicle equipment and construction equipment of the work produce emissions.

Contribution of particulate matter (dust)

Significant amounts of particulate matter (dust), deriving from archaeological excavations and earthworks both in the areas of extension of the road as in the borrow pits will be generated, as well as by activities in dirt roads and by the operation of equipment on bare soil, and the increase of heavy traffic (machinery).

The implications that can bring significant increase in particulate matter (dust) in the areas of work are those that cause effects on the health of workers, specially when they do not count with the necessary protective equipment. Another effect is that it can harm the health of the residents of the neighboring towns close to the road work.

- **Emission of particles generated in combustion engines of the equipment**

Emissions of gases and particles from the combustion engines of the equipment and machinery represent an additional contribution of pollutants to the air quality of existing agents, although this additional contribution does not significantly affect air quality if the mitigation measures specified in this EMP are used, specially those which refer to good conditions and maintenance of construction machinery.

- **Increased noise levels**

-

The placement of the pavement layer and the exploitation and transportation of materials from borrow pits, requires the use of heavy equipment and machinery, so noise levels will increase in the site where the activity takes place. This will directly affect staff who is involved in the job, but this impact can be mitigated using the corresponding protective equipment.

Operation and Maintenance Phase

After the expansion of the road, the air quality is affected by emissions from vehicles. There is no data available on the levels of contamination by combustion engines of vehicles on this road tranche as to identify how affected the air quality is due to this type of pollution; however, due to the characteristics of the area described in the previous paragraph, no significant alteration on air quality from combustion engines of vehicles that circulate daily on the tranche is being considered.

During the maintenance work, air pollution will be generated by the emissions from equipment, vehicles and maintenance work equipment.

3.2 Production of common toxic, hazardous solid waste,

Many of the activities to be undertaken through the Project, include the generation of common solid waste and in some cases hazardous waste, that is why a Management Program for Solid Waste is established in this EMP.

Rehabilitation, refinement and construction phase

During the construction phase, solid waste will be generated during the rehabilitation, refinement and construction undertakings, due to the development of activities related to the removal of vegetation and of existing infrastructure, as well as due to the reduction of activity, which will be sorted out to be used as filler material along with the rest of the waste. For safety reasons, this will be taken directly to authorized sites for the landfill project.

In the operation phase

The solid waste produced during the operation and maintenance phase will be of a domestic type (food waste, paper, glass and plastics), produced by road users and workers of the company in charge of the maintenance activities. These wastes will be collected managed, collected, transported and placed on the final disposal sites by an authorized manager (must have the corresponding permit from the competent authority by the municipal authority (UMA's) for the project.

3.3 Production of storm water, wastewater, domestic and industrial

3.3.1 Storm water

The cuts and excavation Works must move in coordination with the drainage of the project, such as sewers, drains and construction of underdrains. During the construction work, the corresponding tranche, must be kept properly drained to prevent damage to both the environment and the construction itself.

The Concessionaire shall ensure the proper management of surface water and infiltration before and during the execution of any surface excavation or excavation area or filling, as well as temporary storage areas and in general, all of the work areas where runoffs of surface water can be generated specially during the rainy season that drag sediment material, so it is important to prevent this from being deposited in bodies of water, sewers or drains. For this the channels, pipes, ditches and any other means of drainage shall be kept clean or have equipment needed to divert or remove water from these areas of work.

3.3.2 Wastewater

As for wastewater, it is generally expected to come from these camps and machine yards (mainly from washing machinery and equipment) and portable toilets that will be placed on work fronts and camps. For camps and machinery parking, there are mitigation measures for the management of these liquid wastes consisting mainly of sedimentation tanks or sand traps and grease traps; the final discharge will be monitored to comply with environmental regulations of Honduras, anticipating that final discharge will be some superficial body by direct discharge.

During the construction phase, liquid wastes are generated primarily in the areas of work and / or temporary facilities. They shall have a septic tank for handling of gray water and for the disposal of sewage portable toilets are to be provided (1 toilet for every 10 workers of the same sex) or discharge them on the septic tank of the camp. The sanitary facilities shall be serviced with proper maintenance by specialized companies, provided they have all the required national legislation permits for this activity.

3.4 Regarding the management of raw materials and supplies

Regarding the management of raw materials and other materials, this work contemplates the cut (exploitation) and transport of material from borrow pits used for building the fillings or embankment from its borrow source stone quarry to the Worksite.

The main environmental impacts to be prevented are associated with the alteration of the hydric regime drainage or runoff of waters, the deterioration of the quality of air by the elision of contaminant gases coming from equipment and construction machinery, the generation of dust and noise, the impact on soil for compacting and leveling, the extraction or loss of soil, the increase of the erosion processes of soil, the decrease in fertility and land use limitations, the disturbance or alteration of

terrestrial fauna by the presence of the Works and its equipment and construction machinery, the modification of local vehicular traffic for extraction material transport, increase of occupational accidents, change of land use and the alteration or change of landscape. Among the positive impacts that are perceived in the generation of jobs and the increase of the local and regional economy.

In order to face the impacts related to the management of raw construction materials, this EMP poses the Surveillance and Control Program that includes the delimitation of the areas of influence to avoid damages and the Program for Camp Management and provisional installations. A Local Provider Management Plan is defined to mitigate the impact deriving from the increase of the local and regional economy.

3.5 Regarding natural hazards

3.5.1 FLOODING

The areas close to the tranche having flood risk are:

On the Arizona municipality, the following communities are vulnerable to floods: Arizona (Dakota, Arizona), San Francisco de Saco, Atenas de San Cristobal or kilometer 16, Hicaque (Col. 16), la Leona or kilometer 12.

On the Esparta municipality, the following communities are vulnerable to floods: Las Américas No 1 and Lombardia or La Curva.

The communities vulnerable to flood in the municipality of La Masica are: San Juan Pueblo (Hacienda Pineda, Agua Tibia), El Oro (El Oro, Hda. Fidel Martínez), Agua Caliente, San Antonio, Monte Negro (Hda. Villalobos), El Desvio, El Naranjal (El Japón, Colonia El Paraiso, El Naranjal).

The communities vulnerable to flood in the municipality of San Francisco are: Santa Ana (Las Delicias and Santa Ana) and Saladito.

The communities vulnerable to flood in the municipality of El Porvenir are: La Ruidosa, Caracas (Perlas y Caracas), La Union (Curva), El Pino (El Playón), López Bonito.

No communities vulnerable to flood are found near the alignment of the road in the municipality of La Ceiba

3.5.2 Landslides

The areas near to the alignment that present risk of land slides are:

Tela Municipality: landslides risks are minor and its impact is indirect. The risk of landslides prevails on the slopes of the mountains close to the city of Tela; specifically in the area of La Esperanza, south of the city.

Arizona Municipality: unstable slopes found on the tranche of the main road leading from Arizona to Tela at the height of the village Rio Chiquito, Arizona, Atenas de San Cristobal and Hicaque.

Esparta Municipality: The sensitivity analysis of the slopes movements on this municipality show characteristics of landslides on the communities of Siempre Viva, Lombardia and Las Delicias, due to the conditions of extended slopes over 45 degrees and the geological conformation of hills and mountains around.

La Masica Municipality: The sensitivity analysis of slope movement on this municipality presents landslide characteristics due to extended slopes on the following communities San Marcos Centro, El Manchon, El Recreo, Nueva Esperanza, Las Minas, Suyapa, Cerro Azul, Los Laureles, Betania, and El Zapote.

San Francisco Municipality presents areas of high flood risk near the beach, including the municipal capital, this risk decreases to a low level as you move away from the coast. The landslide is present in moderate level on the foothills of the southern end of the municipality.

El Porvenir Municipality: Some areas on this municipality reach moderate risk levels to landslides; this has to do with the broken topography in the southern part of the municipality. Among the area of steep slopes, the Nombre de Dios mountain range stands out with slopes higher than 1000 meters above sea level.

La Ceiba Municipality: Cases of landslides occur due to the presence of heavy rains. Some of the most affected areas in the municipality are: La Ceiba (Low side of the Menonita colony), colony 26 de Junio Cerro, Colony 9 de Junio Cerros, Dantillo Búfalo, Las Delicias, Danto Col. D Antony, colony San Judas, Las Mangas Corozal. Sometimes, these effects are due to the lack of slope conservation works on road access routes.

Facing this type of treats, on this Environmental Management Plan a Contingency and Emergency Plan is presented, where measures are given for the moments when such natural phenomena occur.

3.6 Regarding soil and underground water

5.6.1 Soil

Only cleaning of the grassy areas will be performed along the alignments, but never felling or vegetation removal, where exposed soil will be left.

Regarding activities of borrow pits exploitation, an impact will be produced on the loss of soil due to the extraction of the material, for which a Monitoring and Control Plan is proposed aiming to delimit these areas in order to prevent damaging other areas, besides following INHGEOMIN's technical guidelines for the exploitation of dry banks.

Regarding the potential for contamination of soils, due to accidental spill of fuels and/or lubricants, and asphalt residue and products, the adoptions of good engineering practices and equipment maintenance, will derive in a soils contamination, which is considered minimum.

ii. Underground waters

The use of water sources will be made only from superficial bodies crossing alignment. This activity will not generate any impact in terms of the effect on underground water from the bodies that are going to be used.

iii. Regarding local biodiversity and protected areas

During the realization of the biological diagnostic for this tranche, no species, habitats or ecosystems, which could be affected directly by the selective rehabilitation and maintenance activities to be performed, were observed. On the tranche, certain species with economic value were identified, among which the following can be mentioned: Pine (*Pinus caribaea*), Cedar (*Cedrela odorata*), Laurel (*Cordia alliodora*) and mahogany (*Swietenia macrophylla*), among the exotic, the Teak (*Tectona grandis*), and before reaching the city of La Ceiba, the most abundant specie is the *Racosperma mangium*, an Australian native plant.

During the maintenance or selective rehabilitation and maintenance phase, only trees pruning and maintenance of green areas will be performed.

1.6.4 Regarding the socio-economic and cultural environment in the project area and surrounding communities

For analysis of the socio-economic component we have considered those communities that could be influenced and benefited by the implementation of the Project Tourism Corridor of Honduras: Tela – La Ceiba in what has been called socioeconomic area of influence (AISE in Spanish). Thus, the socioeconomic study area is limited to the municipalities of Tela, Arizona, Esparta, La Masica, San Francisco, El Porvenir and La Ceiba.

In the construction phase

One of the positive impacts in the construction phase, is the creation of jobs. The activities of this project will employ much local labor, mainly in the area of socio-economic influence of the Project (Municipalities of Tela, Arizona, Esparta, La Masica, San Francisco, El Porvenir and La Ceiba), for which purpose this EMP proposes education and training plans for a better performance of the staff and to achieve environmental conservation in the workplace and in all activities performed. It is noteworthy that the Concession Agreement establishes the requirement for the Concessionaire to employ local labor in the areas of influence.

Moreover, with the development of the project, a high demand for products and services necessary for the work is created, increasing in this way the local and regional economy by implementing a program of selection of local and regional suppliers.

As socioeconomic impacts of the project, the alteration of traffic is proposed, along with the an increase in the risk of accidents, the increase of transmission of diseases and the increase of public health problems due to the generation of liquid and solid waste.

As negative socioeconomic impacts of the project environment, we have: traffic disturbance, increased risk of occupational accidents, increased risk of disease transmission and increase public health problems due the generation of liquid waste and solids. But these will have a magnitude considered either low or medium (depending on the assessed activity) and its duration is limited to the selective rehabilitation and maintenance phase.

Inconvenience to road users by the Works of the project, is also a negative socioeconomic impact that has been identified for this project. Many of the activities contemplated by this work, generate discomfort to the users and the communities near the project alignment, that is why the Concessionaire will have to implement a work plan, where the schedules are set to avoid damages to the daily activities of the communities in the area of socio-economic influence of the Project. Furthermore, permanent communication with the community is proposed, through the Communication Plan and the Disclosure Campaign Project.

In the Operation Phase

In the operation phase, certain benefits or positive impacts to users with the commissioning of the project are observed:

The project will generate a reduction in travel time and fuel costs for users, with the maintenance of the roadway.

In addition to this, both the decrease in travel time and fuel savings, will significantly decrease the concentrations of toxic gases produced by mobile sources.

As a positive impact from project implementation, a reduction of road accidents is expected along with an increased safety on the road.

a. Regarding landscape aspects

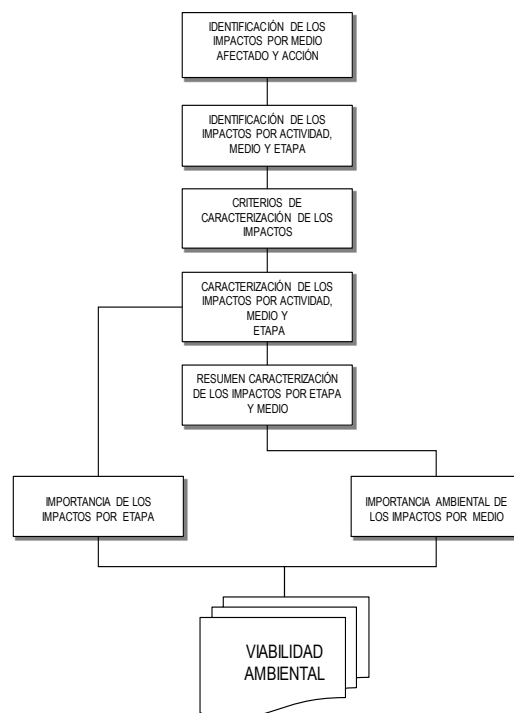
The area where the Tourism Corridor of Honduras tranche Tela-La Ceiba will be developed, is an area that was previously intervened when the construction of the road occurred. The selective rehabilitation and maintenance works to be done, and the expansion of lanes, will concentrate within the existing road easements.

Some activities that will affected the landscape have been planned: the installation and operation of temporary facilities, preparation of the Worksites, excavation and shaping of fillings, exploitation of borrowing sites, installation of road signals and night lighting.

4. ASSESSMENT OF IMPACTS AND SYNTHESIS

The methodology used for the categorization and evaluation of impacts is explained through the process of Figure 6.1. The results are embodied in an interactive matrix that allows the evaluator clearly discriminate the most affected and environmental factors over which more attention should be paid to during the implementation of mitigation measures and environmental management that prevents, reduces, controls, compensates or encourages such impacts; and to determine the level of these measures.

Figure 4.1. Flowchart of the impact assessment process



The identification of impacts in an Environmental Study is to determine which of the activities associated with the project cause changes to the characteristics of the factors / components and environmental attributes.

The objective of the identification is to provide a first indicative information as a basis for further qualitative and quantitative impact assessment. This section will evaluate global impacts from the Project Tourism Corridor. The methodology for the identification of impacts and subsequent evaluation consists of the following elements:

- Review of existing documentary information and consultation with specialists who have conducted some type of evaluation in the project area.

- Baseline Surveys, depending on the fieldwork conducted by each of the consultants.
- Identification of environmental variables that will be affected by the Project.
- Development of an Impact Identification Matrix, taking as a base the Leopold Matrix, which will contrast the different activities of the project with the resources and natural processes that could be affected by the activities performed. The likely impacts were identified by each consultant depending on your area of interest and submitted at the beginning of the studies for further verification at the end of fieldwork.

For the identification of the impacts we will consider that the project will be developed in three phases (same as described in section 4.2):

- Planning
- Selective Rehabilitation and Maintenance
- Operation and maintenance

The categories used for the categorization of impacts are the following (see Table 4.1):

Table 4.1. Characterization of Impacts

Classification	Typology	Description
Nature of the Impact		The nature of the impact that indicates how the impact acts on its environment; can be positive (+) or negative (-).
Sign	+/-	The sign refers to the beneficial impact character (+) or detrimental (-) of the various actions that will act on the various factors considered.
Intensity	I	This term refers to the degree of impact of the action on the factor in the particular field in which it operates. The valuation range will be between 1 and 12, in which 12 expressed a total destruction of the factor in the area in which the effect occurs, and 1 minimal involvement. Values between these two terms reflect intermediate situations.
Extension	EX	Refers to the area of theoretical influence of impact in relation to the project environment (area%, relative to the environment, in which the effect manifests). If the action produces a very localized effect, it is considered that the impact has a punctual character. If, however, the effect does not allow a precise location within the project environment, having a pervasive influence on all of it, the impact will be Total; considering the intermediate situations, by gradation, such as Partial and Comprehensive impact. For the effect to be punctual but occurs at a critical spot, you are confer worth four units higher than it should be based on the manifested percentage extension.

Classification	Typology	Description
Moment	MO	The term impact manifestation refers to the of time between the onset of action and early effect on the factor of the considered medium . When the time is null, the time will be Immediate, and if lit is less than one year, Short Term. If a period of time ranging from 1 to 5 years, medium-term, and if the effect takes to manifest more than five years, Long Term.
Persistence	PE	Refers the time in which the effect remains since its inception and until the affected factor would return to the pre-action conditions, by natural means or by introducing corrective measures . If it lasts less than a year, we believe that the action produces a Fleeting effect. If it lasts between 1 and 10 years, Temporal; and if the effect is longer than 10 years in duration, we consider the effect as permanent.
Reversibility	RV	It refers to the possibility of restoration / regeneration of the factor affected by the project; that is, the possibility of returning to the initial conditions set to action, by natural means, once that fails to act on the medium. May be Short Term, Medium Term or Irreversible.
Recoverability	MC	It refers to the possibility of reconstruction, total or partial, of the affected factor resulting from the project. In this case, the possibility of returning to the pre-action initial conditions, through human intervention (introduction of mitigation or corrective measures). The effect is fully recoverable, as it is immediate (> 1 year) and medium term (between 1 and 10 years), if it is partial, i.e. not fully recovered, the effect is mitigated. Finally, the effect cannot be recovered, when the impossible alteration of repair, both by natural action and human. In case of being unrecoverable, but there is the possibility of introducing compensatory measures, the effect behaves as mitigated.
Synergy	SI	This attribute provides the reinforcement of two or more simple effects. The total component of the demonstration of simple effects, caused by actions acting simultaneously is higher than would be expected from the manifestation of effects when actions that provoke act independently not simultaneous.
Accumulation	AC	This attribute gives an idea of the progressive increase of the demonstration effect, when it persists continuously or repeated the action that generates it.
Effect	EF	This attribute refers to the cause-effect relationship, i.e. the form of manifestation of the effect of a factor as a result of an action. The effect may be direct or primary, being in this case the impact of the direct result of this action. In the event that the effect is indirect or secondary manifestation is not a direct as a result of the action, but occurs from a primary effect, acting as a second order action.

Classification	Typology	Description
Periodicity	PR	The frequency refers to the regular manifestation effect either constant in time (Continuous effect) cyclic or recurrent (periodic effect) so unpredictably over time (Irregular effect), or constant over time (continuous effect).

Source: Conesa, 2003

To assess the significance of impacts of the project, the methodology established in the "Document 07 - Methodology for the assessment of environmental impacts" of the Guidebook of Environmental Evaluation and Control Natural Resources & Environment Secretariat (hereinafter called SERNA), Honduras, 2009), has been taken into account, as presented below (see Table 6.2):

Table 4.2. Valuation of Impacts

Classification		Values	Classification		Values
Nature			Intensity (I)		
Beneficial Impact (Positive)	Harmful Impact (Negative)	+	-	Low	1
				Medium	2
				High	4
				Very High	8
				Total	12
Extension (EX)		Moment (MO)			
Punctual		1	Long Term		1
Partial		2	Medium Term		2
Extensive		4	Immediate		4
Total		8	Critical		(+4)
Critical (International)		(+4)			
Persistence (PE)		Reversibility (RV)			

Classification	Values	Classification	Values
Fleeting	1	Short Term	1
Temporary	2	Medium Term	2
Permanent	4	Irreversible	4
Synergy (SI)		Accumulation (AC)	
No Synergism (Simple)	1	Simple	1
Synergistic	2	Accumulative	4
Very Synergistic	4		
Effect (EF)		Periodicity (PR)	
Indirect (Secondary)	1	Irregular Or Discontinuous	1
Direct	4	Periodic	2
		Continuous	4
Recoverability (MC)		Importance (I)	
Immediately Recoverable	1	$I = \pm (3 I + 2 EX + MO + PE + RV + SI + AC + EF + PR + MC)$	
Recoverable In The Medium Term	2		
Mitigated	4		
Irrecoverable	8		

Source: Conesa, 2003

The major impact is represented by a number that is derived by the proposed model in the above Table. Impacts identified are grouped taking its environmental importance, according to the following pattern (see Table 6.3):

Table 4.3. Hierarchization of Impacts

Environmental importance	Score
Impacts with irrelevant environmental importance	<25

Environmental Impacts with moderate importance	25 a 50
Impacts with severe environmental importance	50 a 75
Important critical environmental impacts	>75

Source: Conesa, 2003

a. Evaluation of environmental impacts

The Importance Matrices of Environmental Impact Assessment (MIIA) are presented in the following tables, for each significant impact on the (middle and high importance) both positive and negative, identified by the modified Leopold Matrix developed for the Project Tourism Corridor of Honduras: tranche El Progreso - Tela. These MIIA are presented by phases, selective rehabilitation and maintenance, Construction and Operation / Maintenance.

Table 4.4. MIIA Quality deterioration or air contamination and dust and foul odor generation

STAGE/ACTIVITY		Selective rehabilitation and maintenance/Placement of Bearing Layer / Exploitation and transport of material from borrow pits							
IMPACTED MEDIUM		Physical							
IMPACTED FACTOR		Air							
POTENTIAL IMPACT		Quality Deterioration or Air Contamination/ Dust and Foul Odor Generation (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	2	4	1	1	1	1	4	1	1

Importance I	24
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate

≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.5. MIIA Increase in noise levels

STAGE/ACTIVITY		CONSTRUCTION STAGE Rehabilitation and Refinement Placement of Bearing Layer / Exploitation and transport of material from borrow pits							
IMPACTED MEDIUM		Physical							
IMPACTED FACTOR		Air							
POTENTIAL IMPACT		Increase in Noise Levels (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, sporadic or aperiodic y discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	2	4	1	1	1	1	4	1	1

Importance I	22
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.4. MIIA Modification to Traffic

STAGE/ACTIVITY		Selective rehabilitation and maintenance/Bridge Construction/Placement of Bearing Layer							
IMPACTED MEDIUM		Socioeconomic							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Modification to Local Traffic (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									

2	2	4	2	1	1	1	4	2	1
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Importance I	26
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.7 MIIA Disruptions to Surrounding Communities due to Project Activities

STAGE/ACTIVITY		Placement of Bearing Layer / Selective rehabilitation and maintenance							
IMPACTED MEDIUM		Socioeconomic							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Disruptions to Surrounding Communities due to Project Activities (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
• Low 1	• Punctual 1	• Long-term 1	• Fleeting 1	• Short term 1	•No Synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1
• Medium 2	• Partial 2	• Medium-term 2	• Temporary 2	• Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term recoverable term 2
• High 4	• Extended 4	• Immediate 4	•Permanent 4	• Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or

									Compensable 4
• Very High 8	• Total 8	• Critical (+4)							• Irrecoverable 8
• Total 12	• Critical (+4)								
Chosen Value									
4	2	4	2	1	1	1	4	2	1

Importance I	36
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.8. MIIA Increased Risk of Workplace Accidents

STAGE/ACTIVITY		Placement of Bearing Layer / Selective rehabilitation and maintenance							
IMPACTED MEDIUM		Socioeconomic							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Increased Risk of Workplace Accidents (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1

•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	1	4	1	1	1	1	4	1	1

Importance I	33
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.9 MIIA Hydrological Regime Alteration

STAGE/ACTIVITY	SELECTIVE REHABILITATION AND MAINTENANCE STAGE									
IMPACTED MEDIUM	Exploitation and transport of material from borrow pits									
IMPACTED FACTOR	Physical									
POTENTIAL IMPACTS	Water									
	Hydrological Regime Alteration (water course and drainage)									
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability	

IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
Low 1	• Punctual 1	• Long term 1	• Fleeting 1	• Short term 1	• No synergy (simple) 1	• Simple 1	• Indirect (secondary) 1	• Irregular, sporadic or aperiodic and discontinuous 1	• Immediately recoverable 1
• Middle 2	• Partial 2	• Medium term 2	• Temporary 2	• Medium term 2	• Synergistic 2	Cumulative 4	• Direct 4	• Periodic 2	• Medium term recoverable 2
• High 4	• Extended 4	• Immediate 4	• Permanent 4	• Irreversible 4	• Very synergistic 4			• Continuous 4	• Partially recoverable, Mitigated and/or compensable 4
• Very High 8	• Total 8	• Critical (+4)							• Irrecoverable 8
• Total 12	• Critical (+4)								
Chosen Value									
2	2	4	2	1	1	1	4	4	4

Importance I	31
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.10 . MIIA Quality deterioration or water contamination (-)

STAGE/ACTIVITY		SELECTIVE REHABILITATION AND MAINTENANCE STAGE Exploitation and transport of material from borrow pits							
IMPACTED MEDIUM		Physical							
IMPACTED FACTOR		Water							
POTENTIAL IMPACT		Quality deterioration or water contamination							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
Low 1	• Punctual 1	• Long-term 1	• Fleeting 1	• Short term 1	• No synergy (simple) 1	• Simple 1	• Indirect (secondary) 1	• Irregular, sporadic aperiodic and discontinuous 1	• Immediately Recoverable 1
• Medium 2	• Partial 2	• Medium-term 2	• Temporary 2	• Medium term 2	• Synergistic 2	Cumulative 4	• Direct 4	• Periodic 2	• Medium-term recoverable term 2
• High 4	• Extended 4	• Immediate 4	• Permanent 4	• Irreversible 4	• Very Synergistic 4			• Continuous 4	• Partially recoverable, Mitigated and/or compensable 4
• Very High 8	• Total 8	• Critical (+4)							• Irrecoverable 8
• Total 12	• Critical (+4)								
Chosen Value									
2	2	4	2	1	1	1	4	4	4

Importance I	31
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.11. Effects on Soil due to Compacting or Leveling (-)

STAGE/ACTIVITY		SELECTIVE REHABILITATION AND MAINTENANCE STAGE							
		Exploitation and transport of material from borrow pits							
IMPACTED MEDIUM		Physical							
IMPACTED FACTOR		Ground							
POTENTIAL IMPACT		Effects on Soil due to Compaction or Leveling (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, sporadic or aperiodic y discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
2	1	4	4	4	1	1	4	4	4

Importance I	34
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design

≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.12 MIIA Extraction or loss of soil (-)

STAGE/ACTIVITY		SELECTIVE REHABILITATION AND MAINTENANCE STAGE							
IMPACTED MEDIUM		Exploitation and transport of material from borrow pits							
IMPACTED FACTOR		Physical							
POTENTIAL IMPACT		Ground							
		Extraction or Loss of Soil (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, sporadic or aperiodic and discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially recoverable, Mitigated and/or compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	1	4	4	4	1	1	4	4	8

Importance I	44
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.13. MIIA Modifying the Local Vehicular Traffic (+)

STAGE/ACTIVITY		SELECTIVE REHABILITATION AND MAINTENANCE STAGE							
IMPACTED MEDIUM		Operation and Maintenance							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Modifying the Local Vehicular Traffic (-)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
* Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, sporadic or aperiodic and discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	2	4	1	1	1	1	4	4	1

Importance I	39
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.14 MIIA Increased local and regional economy

STAGE/ACTIVITY		Selective rehabilitation and maintenance Location and Operation of Provisional Facilities / Placement of Bearing Layer / Bridge Construction / Exploitation and transport of material from borrow pits							
IMPACTED MEDIUM		Socioeconomic							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Increased Local and Regional Economy (+)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8

•Total 12	•Critical (+4)								
Chosen Value									
4	8	4	2	1	1	1	4	4	1

Importance I	38
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.15. MIIA Increased Local and Regional Economy (+)

STAGE/ACTIVITY		OPERATION AND MAINTENANCE STAGE							
IMPACTED MEDIUM		Maintenance Activities							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Socioeconomic							
		Increased Local and Regional Economy (+)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
•Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and Discontinuous 1	•Immediately Recoverable 1
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2

•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
2	2	4	2	1	1	1	4	2	1

Importance I	36
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

Table 4.16. MIIA Employment Generation (+)

STAGE/ACTIVITY		Selective rehabilitation and maintenance and Maintenance							
IMPACTED MEDIUM		Socioeconomic							
IMPACTED FACTOR		Socioeconomic							
POTENTIAL IMPACT		Employment Generation (+)							
Intensity	Extension	Moment	Persistence	Reversibility	Synergy	Accumulation	Effect	Periodicity	Recoverability
IN	EX	MO	PE	RV	SI	AC	EF	PR	RC
Degree of Destruction	Area of Influence	Term of Manifestation	Permanence of the Effect	Change in the Alteration	Enhancing the Manifestation	Progressive Increase	Cause-Effect Relationship	Regularity of the Manifestation	Human Reconstruction
*Low 1	•Punctual 1	•Long-term 1	•Fleeting 1	•Short term 1	•No Synergy (simple) 1	•Simple 1	•Indirect (secondary) 1	•Irregular, Sporadic or Aperiodic and	•Immediately Recoverable 1

								Discontinuous 1	
•Medium 2	•Partial 2	•Medium-term 2	•Temporary 2	•Medium term 2	•Synergistic 2	Cumulative 4	•Direct 4	•Periodic 2	•Medium-term Recoverable term 2
•High 4	•Extended 4	•Immediate 4	•Permanent 4	•Irreversible 4	•Very Synergistic 4			•Continuous 4	•Partially Recoverable, Mitigated and/or Compensable 4
•Very High 8	•Total 8	•Critical (+4)							•Irrecoverable 8
•Total 12	•Critical (+4)								
Chosen Value									
4	8	4	2	1	1	1	4	4	1

Importance I	58
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Points	Type
< 25	Irrelevant or matching or environmental measures were contemplated in the design
≥ 25 , < 50	Moderate
≥ 50 , < 75	Severe
≥ 75	Critical

6.2 Synthesis of Environmental and Social Impacts Associated with the Project

This is a synthesis of the environmental and social impacts associated with the project:

6.2.1 Air contamination and dust and foul odor generation (-)

The impacts on air quality due to the generation of vehicular emissions, dust and foul odors are considered of irrelevant importance (I=24), it is a medium intensity impact with partial extension and can be immediately recoverable with mitigation measures focused on periodic sprinkling and the use of canvas tarps for transport of materials. Vehicle and machinery maintenance are the responsibility of the concessionaire.

In the specific case of the bearing layer replacement and exploitation of borrow pits is where this impact is manifested due to activities of machinery movement that generates contaminating dust and gas particles to the atmosphere.

Currently air quality in the tranche is good, since there are trees in the alignment and gas concentrations are quickly dispersed.

6.2.2 Increase in noise levels (-)

Noise levels along the road are not currently significant, traffic conditions and the road's characteristics do not permit the concentration of vehicles which increases noise levels in roads. Anyhow, the highest noise levels are not continuous enough to become a nuisance for the communities.

The Selective rehabilitation and maintenance stage will produce an increase in sound levels as a consequence of traffic and the operation of machinery and vehicles. This impact is considered as irrelevant or incompatible (I=22) because it is of medium intensity, punctual, with fleeting occurrence and of immediate recovery.

During Selective rehabilitation and maintenance the noise generated by Project activities will happen only from 6:00 am to 6:00 pm which is the Schedule for this type of Project. Noise levels depend on the kind of machinery in operation; the disturbances are conditioned by the distance of affected houses or Project employees.

Due to the difficulty of measuring noise levels on site during the Selective rehabilitation and maintenance and Construction Stage, the following chart establishes noise levels that OSHA has estimated for equipment similar to the one used for this activity:

Table 4.17. Noise Levels in dBA Produced by Construction Equipment

<i>Origin</i>	<i>Intensity(approximate)</i>
Truck	83-93 dBA
Tractor	73-93 dBA
Loader	72-85 dBA

Source: EPA, EUA, 1972

As can be seen, with the exception of the loader, both the trucks and the tractors to be used, are potential sources of noise above 85 dBA, which is the maximum value according to the General Regulation of Preventive Measures for Accidents and Professional Diseases of the Republic of Honduras that a person can be exposed to for a maximum of 8 hours.

Due to the previous information, all workers are required to have auditory protection equipment to minimize exposure risks.

During the operation stage, increases in noise levels are produced once rehabilitation of the road has been completed, will be the same that have been occurring currently due to vehicle transit on the road.

6.2.3 Modification to Traffic (I=30)

As negative socioeconomic impacts during selective rehabilitation and maintenance, the alteration of local traffic has been considered of medium importance (I=33) specifically for the bearing layer placement activities and bridge maintenance, because this requires partial lane closures. In this sense, all Traffic Management Program must be implemented and include the detours and temporary closures due to the installation of road signals, measure that must be applied in coordination to the National Transit Direction regulations to minimize nuisances to road users.

The operation stage presents this impact but positively, because the maintenance of the roadway and the rehabilitation of the bridge are expected to be positive for users.

6.2.4 Disruptions to Surrounding Communities due to the Project (-)

The disturbance to communities surrounding the Project is a negative socioeconomic impact identified for the Project. As a mitigation measure, the project will implement a work plan that establishes the working schedule to avoid affecting daily community activities in the area of socioeconomic influence of the project, including the promotion and permanent communication with the community through the Communication Plan.

6.2.5 Increased risk of workplace accidents

All of the activities to be executed during the selective rehabilitation and maintenance stage convey the risk of workplace accidents, impact that has been considered of moderate importance (I=32)

To reduce the risk of workplace accidents there will be training sessions for the workers and machinery operators, about safety and the use of personal protection equipment amongst other measures outlined in the Accident Prevention Plan.

There will be First Aid Kits in all areas of the project including heavy machineries and project vehicles, in case of an accident there will be contact with local hospitals or ambulance services.

6.2.6 Hydrological Regime Alteration (courses or waterways)

During the activity of exploitation and transport of material from borrow pits; there is a possible minor alteration to the hydrological regime, due to the activities of riverbed material extraction, causing the formation of pools that must be leveled once activities are concluded. This impact has been evaluated as moderate (I=29), and is established as a mitigation measure, in compliance by the concessionaire to the technical requirements established by INHGEOMIN for the extraction of floodplain soils

6.2.7 Quality Deterioration or Water Contamination

The deterioration of quality or water contamination impact is presented during the exploitation of borrow pits which will increase turbidity, due to the suspension of riverbed material and possible oil spills from the machinery's engines.

6.2.1 Effects on soil due to compacting or leveling

In the material extraction borrow pits is possible that a moderate importance impact is generated (I=34) on the soil, due to the constant transit of machinery used for material extraction. This impact has been values of medium intensity, punctual nature and completely mitigable, for which a Surveillance and Control Program must be implemented to delimit exclusive work areas and reduce the transit of machinery in affected zones.

6.2.3 Extraction or loss of soil

The extraction or loss of soil is specifically presented during the exploitation of borrow pits with a moderate importance (I=44) because the intensity of this impact is high and of partial extension. The river is expected to recover by natural means because it is a permanent flow river that always has reposition material. To curb this impact, exploitation is meant to be sustainable and consider the technical guidelines for the exploitation of floodplain soils with the same machinery for extraction.

6.2.3 Employment Generation (+)

This impact has been given severe positive importance (I=58) since during all selective rehabilitation activities employment will be generated given the high intensity and total extension of the Project.

One of the direct effects is that there must be personnel hired for the different selective rehabilitation and maintenance activities, these Jobs might be for skilled or non-skilled labor including engineers, architects, masons, carpenters, machinery operators etc. The hired staff will receive direct benefits during 12 months as a consequence of the multiplying effects of indirect employment. This impact is valued as positive during all activities.

6.2.4 Increase in local and regional economy (+)

Due to the characteristics and type of project, the project will require labor for the diverse activities of the project. The project will generate indirect sources of employment with the companies that supply goods and services to the project thus increasing local and regional economy. Considering this impact of moderate importance in certain project activities such as the installation of provisional facilities the replacement in the bearing layer, bridge construction and exploitation and transport from material to borrow pits, due to the grist demand of products and raw materials that the development of these activities require. This impact has been assigned high intensity in the total area and influence of the project with a moderate importance (I=38)

7 MITIGATION MEASURES

This section details the environmental programs that will be implemented to prevent, mitigate and compensate the negative environmental impacts identified in sections **Error! Reference source not found.**, and boosting the positive impacts.

The Mitigation Plan includes a series of actions that have been grouped according to nature and specific objectives, in a series of programs detailed in **Table 0.1**:

Table 0.1. Description of Impacts and specific mitigation measures for each environmental impact

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
Water	Use of Hydrological Resources	1a. Hydrological Regime Alteration	Low to High	General Environment Law General Water Law	General Water Law: Art. 59, 61, 62, 63. Guidelines for the Exploitation of Floodplain Soils (INHGEOMIN)	<ul style="list-style-type: none"> Extraction activities must be done in adequate and specific sites not along the river bed. 7. Enforce a Surveillance and Control Program, to avoid damaging other areas. 8. Proper water usage in accordance to the Water Usage Permit	1. Daily field verification 2. Record worker's training on environmental issues	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
		1b. Phreatic Level Alteration	Low to Moderate	General Environment Law General Water Law	General Water Law: Art. 59, 61, 62, 63. Guidelines for the Exploitation of Floodplain Soils (INHGEOMIN)	<ul style="list-style-type: none"> Enforce a Surveillance and Control Program, to avoid damaging other areas. 9. Proper water usage in accordance to the Water Usage Permit 10. Follow the technical guidelines of INHGEOMIN for floodplain soils.	<ul style="list-style-type: none"> Daily field verification a) Keep water consumption records	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Generation of wastes and hazardous substances	1c. Quality deterioration or water contamination	Moderate	General Environment Law General Water Law Health Code Regulation for Integral management of Solid Wastes	General Environment Law: Art. 32, 54, 66. General Water Law: Art. 36, 43, 44. Health Code Art, 34, 35, 41.	<ul style="list-style-type: none"> Management Program for Liquid and Solid Wastes Contingency program: Prevention and Control of Hazardous Substance Spills (oils, fuels, paints, etc.) 	b) Daily field supervision c) Separation of wastes at source, deposit placement. d) Final waste disposal record e) Record of the amount of substances disposed of in authorized containers. f) Record of worker's training on water contamination issues.	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security Supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
AIR	Contaminating gas emissions	2a. Quality deterioration or air contamination	Low to Moderate (Placement of Bearing Layer)	General Environment Law Health Code Regulation for Control of Contaminating Gases and Smoke Emissions from motor vehicles	General Environment Law : Art 60 Health Code : Art. 46, 48, 50 y 114. Parameters established by the Regulation for Control of Contaminating Gases and Smoke Emissions from motor vehicles	<ul style="list-style-type: none"> Construction Equipment and Vehicles Preventive Maintenance Plan Vehicular Emissions Compliance Control Program 	a) Monthly maintenance record b) Vehicular Emissions Maintenance Record (opacity %) c) Workers training record on air contamination.	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security Supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Dust Emissions	2b. Dust and foul odor emission	Low to Moderate (Placement of Bearing Layer)	General Environment Law Health Code Municipal Taxation Plan	General Environment Law : Art 59, 61 Health Code : Art. 46, 48 y 50.	<ul style="list-style-type: none"> Dust and Foul Odor Emission control Program 	1. Daily water sprinkling on the road 2. Photographic record of activities 3. Cleaning of the street if necessary 4. Inspection of canvas tarps for cargo trucks 5. Disposal of wastes in designated areas	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security Supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Noise	2c. Increase in noise levels	Low to Moderate (Placement of Bearing Layer)	General Environment Law General Regulation of Preventive Measures for Accidents and Professional Diseases	General Environment Law : Art 61 Maximum noise levels established by the General Regulation of Preventive Measures for Accidents and Professional Diseases	<ul style="list-style-type: none"> Preventive Maintenance Program for vehicles and construction equipment Work Schedule: avoid as much as possible work during night hours or rest periods; if unavoidable notify affected populations in advance Provide auditory protection equipment for workers exposed to levels higher than 80 dBA. 	1. Record of monthly maintenance 2. Compliance to work schedules established in the work plan. 3. EPP review and measurement of noise and vibration levels workers are exposed to.	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security Supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
SOIL	Structural Alteration of the Soil	3a. Effects on soil due to compacting or leveling	Moderate	General Environment Law	General Environment Law : Art. 48.	<ul style="list-style-type: none"> • Surveillance and Control Program: delimit the area of direct influence to avoid damage to other areas. • If required at the end of operations, soil that has been compacted by the transit of heavy machinery or temporary facilities must be loosened and covered with topsoil for later revegetation. 	<ol style="list-style-type: none"> 1. Daily field supervision 2. Worker's training records on environmental issues. 3. Identification of areas compacted by the transit of heavy machinery and/or temporary facilities and their readequation. 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Generation of wastes and hazardous substances.	3b. Quality deterioration or soil contamination	Low	General Environment Law	General Environment Law : Art. 48, 66.	<ul style="list-style-type: none"> • Contingency Program: Prevention and Control of Hazardous Substance Spills (oils, fuels, paints, etc.) • Liquid and Solid Wastes Management Program 	<ol style="list-style-type: none"> 1. Monthly record of incidents or spills in project area. 2. Waste separation at source, storage in tanks 3. Final waste disposal record 4. Record of amounts of waste disposed of in authorized sites 5. Worker's training record on soil compacting issues 6. Daily field supervision 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Use of Material	3c. Extraction or loss of soil	Moderate	General Environment Law General Mining Law	Guidelines for the Exploitation of Borrow Pits (INHGEOMIN)	Surveillance and Control Program: delimit the area of direct influence to avoid damage to other areas.	<ol style="list-style-type: none"> 1. Daily field supervision 2. Execute exploitation activities within the area stipulated by the concession 3. Request Environmental and Concession License 4. For new exploitation of borrow pits request corresponding permit to the SOPTRAVI Environmental Management Unit in INHGEOMIN 5. Follow the technical guidelines of INHGEOMIN for floodplain soils. 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
		3d. Increase in erosion processes	Low to Moderate	General Environment Law	General Environment Law	Measures for erosion control and slope stabilization	6. Daily field supervision 7. Compliance with construction specifications 8. Execute cutting and shaping of filling activities in dry seasons. 9. Protect bare soil at the end of activities.	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
FAUNA AND FLORA	Pruning and vegetation removal	4a. Loss of vegetation cover	Low	General Environment Law	General Environment Law : Art. 41, 60	Surveillance and Control Program: delimit the area of direct influence to avoid damage to other areas.	1. Daily field supervision 2. Worker's training record on flora and fauna issues	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Installation of camps/poaching	4b. Disturbance of terrestrial and aquatic fauna	Baja	General Environment Law	General Environment Law : Art. 41, 60	Surveillance And Control Program: Avoid predation and/or altering species' habitats	1. Daily field supervision 2. Worker's training record on flora and fauna issues	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
SOCIO ECONOMIC	Road rehabilitation and maintenance	5b. Modification to local traffic	Moderate	Transit Law General Regulation of Preventive Measures for Accidents and Professional Diseases	Installation Of Road Signals according to the General Regulation of Preventive Measures for Accidents and Professional Diseases SOPTRAVI Road Manual	<ul style="list-style-type: none"> Work Schedule: execute installation of road signals as planned in the Traffic Management Program Coordinate with the National Transit direction for the permanent Information Campaign: Inform communities of planned activities 	1. Regulation of speeds, daily field supervision 2. Necessary road signals required for activities 3. Record of worker's training on transit regulations 4. Presence of flagmen and safety cones when lanes are closed	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
	Camp installation	5e. Increase in the risk of disease transmission	Low	Health Code	Health Code: Art. 101, 114 y 115.	<ul style="list-style-type: none"> Health and Hygiene Program for the Prevention of Diseases 	<ul style="list-style-type: none"> Hold health fairs and vaccination campaigns Record of worker's training on contagious diseases 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security Supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Worksite accidents	5f. Increased risk of accidents	Low to moderate	Health Code General Regulation of Preventive Measures for Accidents and Professional Diseases	Health Code Art. 120 a 122. General Regulation of Preventive Measures for Accidents and Professional Diseases, Art 44 al 49, 107, 108 y, 392, 424 a 428.	<ul style="list-style-type: none"> 6. Risk and Accident Prevention Program 7. Keep first aid kits and ambulance services available 	<ul style="list-style-type: none"> a. Maintain PPE inventory b. Field inspections by the security supervisor c. Record of worker's training on accident prevention measures and hazardous material management d. Have first-aid kits, extinguishers, and necessary emergency equipment. 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist Security supervisor	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Liquid and solid Waste generation	5h. Increase in public sanitation issues due to the generation of solid and liquid wastes	Low	General Environment Law Health Code Regulation for the Integral Management of Liquid and Solid Wastes	General Environment Law: Art 6, 32, 54, 60. Health Code Art 52 y 53.	<ul style="list-style-type: none"> Liquid and Solid Waste Management Program 	<ul style="list-style-type: none"> Separate wastes at source, installation of tanks Final disposal waste record Worker's training records on waste management issues. 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
	Road maintenance and rehabilitation	5i. Disturbances to surrounding communities	Low to moderate	Transit Law General Regulation of Preventive Measures for Accidents and Professional Diseases		<ul style="list-style-type: none"> Work plan: establish a work Schedule to avoid disturbing nearby communities <ul style="list-style-type: none"> Permanent Information Campaign: Inform communities of planned activities 	<ul style="list-style-type: none"> Compliance with established work schedules Communication evidence (meetings, flyers, radio) Periodic supervision and implementation evidence for plans and programs 	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation

ISSUE	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT	DEGREE OF IMPACT	LEGAL FRAMEWORK	GUIDELINE	ENVIRONMENTAL MEASURES	OBLIGATION	RESOURCES	RESPONSIBLE	TERM
	Location of temporary camps and facilities	5j. Changes in the use of soil	Moderate	General Environment Law. Territorial Ordinance Plan	General Environment Law: Art 1, 48, 51. Territorial Ordinance Plan): Art. 46	<ul style="list-style-type: none"> Revise the territorial Ordinance Plan Request change in the use of soil to the municipality 	1. Develop activities planned in the Territorial Ordinance Plan	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation
Landscape	Modifications to landscape	7a. Alterations or changes in the landscape and aesthetics of the environment	Low	Transit Law	Installation Of Road Signals according to the Transit Law and RGMPATEP	<ul style="list-style-type: none"> Work Schedule: Execute the installation of road signals <p>Surveillance And Control Program: Delimit the area of influence to avoid damage to other areas.</p>	1. Daily field supervision 2. Necessary road signals for the Selective rehabilitation and maintenance for the road operation phase.	See Section 10 Environmental Management Program Implementation Costs	Concessionaire Environmental Specialist	Permanent Selective rehabilitation and maintenance Stage Construction Operation

Source: The Consultant

Each program proposed as a mitigation measure is detailed as follows.

- **Activities to Comply to Each Mitigation Measure**
 - **Temporary Facilities Management Program**

The construction and operation of temporary or provisional facilities will generate low importance impacts, and to mitigate the effects of this project activity, besides complying to the road manual, volume 8 of the environmental guide for road projects of SOPTRAVI (Transportation & Civil Works Secretariat) and any other program detailed in this section of mitigation measures in the applicable construction stage (e.g. Dust Control Program, preventive vehicle and construction equipment maintenance) the following mitigation measures must be applied:

- The construction and operation of temporary or provisional facilities will generate low importance impacts, and to mitigate the effects of this project activity, besides complying to the road manual, volume 8 of the environmental guide for road projects of SOPTRAVI (Transportation & Civil Works Secretariat) and any other program detailed in this section of mitigation measures in the applicable construction stage (i.e. Dust Control Program, preventive vehicle and construction equipment maintenance) the following mitigation measures must be applied:
 - Strict compliance in the use of the areas designated for temporary facilities in the chosen areas. The location of small facilities or camps close to the service areas established for construction logistics shall not be authorized.
 - The construction company must request to the competent authorities, owners or legal representatives of the area to be occupied (when these temporary facilities are located in private land), the permits for these temporary facilities.
 - Before placing these temporary facilities the concessionaire must present a design that includes corresponding preventive and treatment measures in compliance to besides complying with the road manual, volume 8 of the environmental guide for road projects of SOPTRAVI (Transportation & Civil Works Secretariat). As a minimum it must contemplate the description of the characteristics of water proof surfaces, roofing, effluent treatment systems, runoff channeling, installation of road signals, distribution and orientation of the storage sites, solid waste management systems, etc.
 - Before the operation of the temporary facilities these must be subjected to a process of risk analysis. The recommendations of the risk study must be implemented before occupying these temporary facilities.
 - The camp must have an emergency response plan that must include as a minimum, the use of fire extinguishers and all fire protection equipment specified in the contract, located in strategic places and correctly marked to indicate the type of fire in which they can be used.
 - Whenever possible, no tree shall be cut or any other plant species of special value, whether generic or landscape related. These facilities will preferable be located in previously intervened areas and away from water courses or water bodies. If it is necessary to cut down trees the required permit must be requested to the municipality, according to its local tax regulation.
 - If necessary to remove vegetable material, it must be moved to other impact free zones and it must be adequately stored through conservation processes in order to place it again during the restoration of the area, as specified in the Environmental Recovery Abandoned Plan for each Area. The tree pruning residues must not be placed in water currents, it must be stacked in such a way it does not cost loss of equilibrium in the area and it must finally be transported and deposited in the site for final disposal of construction material. The incineration of these residues is not allowed.

- It is strictly forbidden to hunt; set traps, commercialize or disturb fauna. In the case of rescue and relocation of animal species they must be reported to SERNA (Natural Resources & Environment Secretariat) to comply with procedures established by this authority.
- The temporary facilities must have independent water sources, including deposits or cisterns, which will be filled with water from non-intermittent sources with proper authorization from SERNA.
- If there is no nearby connection to the public sanitation drainage system, a septic tank must be installed, complemented, if necessary, with mobile sanitation units. It is forbidden under any circumstance to discharge sewage or throw solids wastes to any body of water.
- Skid resistant material will be placed wherever the ground is moistened. (E.g. in bathrooms and open corridors)
- The construction of temporary facilities must have crossed ventilation so air currents pass freely through them.
- For larger fueling operations (i.e. the warehouse area), besides having a system and procedure for safe dispatch, there must be fire extinguishers according to the Risk Prevention Plan, which contemplated the capacity of the warehouse.
- The temporary facilities must have signals indicating evacuation routes and meeting points according to the Risk Prevention Plan.
- The ratio of portable toilets to people is one for every 10 persons or workers of the same sex and one more if there is a lady. The toilets must be reasonably accessible in all work fronts and not exceed 60 mts distance from each work station.
- A formally established company must be hired to provide maintenance and cleaning of the septic tank. The same applies for a toilet maintenance service that includes but is not limited to the removal of wastes, chemical recharge; cleaning and disinfection, and toilet paper supply. This company must keep offer receipts for their cleaning activities and disposal of organic wastes and the construction company must keep records of this activity. The service must be supplied at least three times per week or depending on the recommendations of the company hired for cleaning. The toilets will be removed at the end of the project.
- The temporary facilities must have public services (water energy, phone service, waste collectors etc.). There must be water for hand washing and fresh water for consumption by the workers.
- A procedure for electrical safety at the facilities must be developed and executed in compliance to general Honduran technical requirements or the guidelines established by the electric energy company.
- If cafeterias or dining rooms are established, they must be located inside the temporary facilities and comply with necessary hygiene guidelines.

- Water proof waste containers must be installed in different areas. To promote recycling and reuse of residues, color differentiation will be used in the containers to classify wastes according to origin or source, and later evacuated by the providers of these services for recycle or reuse.
- In the temporary facilities area an Environmental Recovery Abandon Plan must be implemented at the end of the construction stage to include, as a minimum, the removal of all signs, notifications, and billboards that may have been placed temporarily during the execution of the process temporary connections and services, and reestablishing natural landscape conditions.
- If the temporary facility has provisional storage of material these materials will be organized by type, covering those that generate particles to avoid dispersion through wind and/or water erosion and, the design of access routes for trucks coming and going with material.
- With the exception of authorized security personnel, the use and carrying of firearms is prohibited within the Project Area. It should be avoided that workers move out of project areas without authorization from the temporary facility manager.
- The machinery cleaning operations must take place away from water bodies or there must be a treatment system for the effluents (i.e. water and oil separators, sedimentary, etc.)
- If the temporary camp zone is located where there is no rainwater drainage system, and the activities take place during the rainy season, a channel to intercept rainwater and runoff must be built and directed to the nearest natural drainage to avoid erosive processes and/or stagnant water.
- If there are workshops near the camps where fuel, oil, and lubricant residues are produced, the floors must be waterproofed and temporary collection measures must be implemented. The recovered hydrocarbons must be regenerated and reused for other activities not harmful to the environment, to avoid water and soil pollution and the destruction of vegetation.

- **Construction Equipment and Vehicles Preventive Maintenance Plan**

The most important impacts on the quality or air pollution are associated with the construction stage. All vehicles and construction equipment produce atmospheric emissions. To minimize the negative impacts the following measures must be observed:

Initial Activities:

- The staff chosen to operate the machinery, tools, or driving the vehicles must be trained before starting operations.
- The concessionaire will check that each of the vehicles have been subject to a technical and mechanical revision, which ensures perfect functioning of brakes, direction, suspension, permitted visual and auditory signals, and the exhaust system. The same applies for the condition of the tires and checking that the gas certificate for each vehicle has been updated.

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- The concessionaire will provide SOPTRAVI (Transportation & Civil Works Secretariat) (one month before starting the construction stage) with a list with the description of each piece of equipment, vehicle, or machinery used for construction and the process for transport to the worksite specifying the routes for each transport.

The concessionaire will provide, before the construction stage, a monthly maintenance plan for the machinery and equipment used during Project construction; this plan must follow the specifications indicated in the manual or the requirements of the suppliers and distributors.

- If the maintenance of the equipment, machinery, or vehicles used during project construction must be done away from the temporary facilities, the concessionaire will provide a list of sites (shops, diagnostic centers) where the maintenance will take place.
- The maximum speed within the temporary facilities and workshops is 10 km/hr and a maximum of 45 km/hr in the supply roads.

Operation of Machinery and Equipment:

- The concessionaire, prior to starting the project, will check that all vehicles have the necessary road safety elements established by the National Transit Authority guidelines (DNT).
- The concessionaire will check that each one of the vehicles to be used has been subjected to a technical-mechanical revision, foreseen in the initial activities.
- The machinery will have proper identifications in a visible place indicating method of operation, load capacity, max speed, and danger warnings.
- In order to avoid excessive noise generation and non-compliance to maximum established limits according to national regulation, the concessionaire must consider noise levels, including the inspection of the mufflers of the machinery and occupational monitoring in compliance to the Environmental Monitoring Plan.
- Heavy machinery must have a preventive and corrective maintenance plan, specific to each piece of equipment or machine, indicating the date, the activities to be conducted, and the site where maintenance will take place, and the persons or departments responsible for this activity. The equipment maintenance will take place in the temporary facilities or in authorized diagnostic centers (in case of requiring a specialized center). There must be a record of the maintenance plan execution.
- Heavy equipment operators must inspect their machines daily, at the start and end of each workday, to ensure safe operating conditions.
- The vehicles used in the project must preferably include recent models, to avoid emissions that exceed the norm.
- The unnecessary operation of engines must be avoided to reduce disruptions to the environment produced by noise, exhaust gases, smoke, dust, and any other nuisance.

▪ **Vehicular Emission Control Compliance Program**

In compliance to the Regulation for the control of toxic gas, smoke, and particle emission from motor vehicles, article 4 of this Regulation states, "In order for the motor vehicles not to emit pollution levels that exceed levels allowed by this regulation, each vehicle must have an Emissions Control Card, issued by an authorized Emissions Control Center"

The use of the Emissions Control Card is not currently enforced; instead, a specialized company is hired once a year to monitor the vehicular fleet for each project.

▪ **Foul Odors and Dust Emission Control Program**

Air quality and consequently, worker's health may be affected during construction by dust emissions, due to cutting and filling, handling and transport of materials, or machinery, vehicle, and heavy equipment circulation.

The most relevant impacts regarding foul odors during the construction phase consist mainly on smoke discharges and foul odors that can be produced during the use of vehicles, equipment, and machinery; as well as the generation and accumulation of solid and liquid residues and organic wastes.

To mitigate the negative effects of the Project during the construction phase the following mitigation measures must be applied:

- Prepare a Dust Control Program, which contemplates activities prior and during execution. The Dust Control Program must contemplate a permanent water source for sprinkling. The project ground must be kept moist, sprinkling with water the road and areas more prone to accumulating dirt and dust, this activity must be done mainly in the road tranches within populated areas.
- If the work is subcontracted it must be ensured to comply with the Dust Control Program
- Prior to the execution to this activity, the concessionaire must present a loading procedure according to the type of equipment to avoid overloading supply lanes and material transport roads.
- Any truck that carries stone material must be covered with tarp or plastic and circulation speed must be limited.
- When executing loading operations, the transport equipment must be completely stopped with the parking brake on to avoid accidental movements.
- When vehicles circulate through the areas of indirect influence of the construction they must do so at moderate speeds to avoid producing excessive dust particles.
- The excavation areas must be kept free of solid wastes and dirt to avoid air contamination due to passing vehicles. Any construction wastes that can be easily transported by the wind have to be picked up immediately.
- There must be an adequate system for waste and organic material disposal. The concessionaire will promote the use of solid residue containers and sanitary services to avoid the dispersion of solid and organic residues.
- Open pit burning or burying of wastes in worksites is forbidden.

▪ **Traffic Management Program**

The Traffic Management Program will include the following mitigation measures:

- Regulate the speed of the vehicles and machinery along the road, especially when transiting in populated areas
- Comply to the corresponding regulations of weights and dimensions, to avoid excessive loads that damage the roads
- Organize maintenance brigades for periodic maintenance to access roads, reducing further damage to the roads, and the risk of accidents.
- Inform with at least 3 days anticipation, road users, specially community leaders municipal and transit authorities, school directors, local business managers, about the constant presence of large vehicles during the construction phase and in particular of peak equipment and machinery and material movements along the affected roads. Notice must be given through written press releases, flyers, radio ads, newspaper ads, etc.
- The necessary road signals will be placed to alert drivers and pedestrians about provisional detours. Transit control elements (traffic cones, vertical posts, informative signals, plastic barriers, etc.) will be used to direct road users to ensure safety and flow of vehicles.
- Give training and build awareness in vehicles and equipment drivers and operators about the National Honduran Transit Direction (DNT) regulations, as well as the particular Project regulations and sanctions regarding road safety. (E.g. transit speeds inside and outside the project sites, installation of road signals, etc.)
- Monitor internal Project speeds and apply sanctions in case of noncompliance.
- Limit Access and work areas to minimize circulation in these zones and avoid compacting of soils due to machinery and transit.

The traffic control devices, the signals, and symbols will be made to comply with the requirements of the DNT, and comply as well with the Highway Manual, of the General Highway Direction of SOPTRAVI.

The following measures must also be considered:

- It is important to highlight that the measures of preventive installation of road signals and detours must be in place before start of operations, specifically in the current road system intersections. The state of the road signals must be verified during its use to foresee timely maintenance and/or replacement.
6. Specific personnel (“flagmen”) for transit control in work areas, such as entry and exit control for heavy equipment, transport of equipment that exceeds regular width dimensions, worker’s crossing etc.
 7. When there are partial traffic closures or during material transport activities, “flagmen” will be used to guide traffic using “flags” or signals, to maintain organized traffic in the project’s area. Before any activities that modify traffic routes there must be an information campaign through press, radio, and television. This campaign will inform the community of the date of activities that affect motor and pedestrian circulation and the corresponding alternate routes that are implemented.

▪ **Work Schedule to Regulate Construction Machinery and Equipment Operation Times**

The objective of this program is to establish a work plan that clearly outlines working schedules, of equipment located with the temporary facilities, as well as machinery operating in the different work areas.

If due to unforeseen conditions during project execution (e.g. delays due to unfavorable weather conditions), there are times when the construction company must work out of this schedule, and the company must present a work plan for specific nighttime operations, which considers, at least, the following:

Restricting the use of heavy equipment and machinery to the day shift (6:00 am – 6:00 pm). When activities must be done at night, with permission from the municipal authorities, the work must be limited to low-noise activities.

- Any work done outside the regular work schedule requires approval by the supervisor.
- The affected communities must be informed, in anticipation through flyers, ads in newspapers and/or use of audio equipment, of the date and time of activities executed outside of regular operation times. There must be one or several written notifications, posters or banners, along the area affected by work outside of regular operation times.
- Design a Lighting Plan according to safety measures for the executed activities.
- Monitor the levels of environmental noise during these work schedules to avoid exceeding max limits established by local regulations.

▪ **Surveillance and Control Program**

The Surveillance and Control Program will allow periodic, integrated and permanent evaluation of the environmental variables, both biophysical and socioeconomic and cultural in nature, during the project's execution. The implementation of this program must be organized in collaboration with the environmental specialist of the construction company, the project supervisor, and SOPTRAVI's Environmental Management Unit.

In this sense, the construction company will present to the SOPTRAVI Environmental Management Unit a detailed plan that includes the different activities to be executed during the construction phase. This program must be evaluated and approved by the SOPTRAVI Environmental Management Unit technicians who are able to suggest additional measures they consider convenient.

Protection Measures for the Control of Vegetation Cover Loss

This section refers to all intrusive project activities that have a negative impact on terrestrial and aquatic biological wildlife resources found in the area of influence.

The measures proposed here are based on Decree No 98-2007, established by Forestry Law, Protected Areas and Wildlife and its Regulation based on Executive Agreement No. 031-2009. In addition to these measures, the project must comply with the Highway Manual, Volume 8 Environmental Guide for Road Projects of the SOPTRAVI General Highway Direction.

These are the recommended measures:

- The limits of the total project area must be clearly marked with stakes, tape or flags.
- If it is necessary to affect an area beyond the total Project area, there must be a report describing the affected area; this report must be authorized by the environmental coordinator of the construction company and must be presented for approval to the SOPTRAVI Environmental Management Unit.
- During construction mobile equipment must be operated to cause minimum damage to vegetation and soil. To this effect operators need to be trained and informed so all the staff is qualified.
- Choose adequate sites for the final disposal of vegetable biomass pruned or logged during clearing.
- Avoid the accumulation of vegetable biomass in non-authorized sites.
- Vegetation must not be removed with controlled fire. Removed vegetation must not be burned; it should also not be retired from the site immediately. Removed vegetation must be placed in piles, no greater than 60 mts. in length and separated from non-intervened trees by a fire proof barrier at a minimum distance of 8 mts.
- Potentially useful timber can be used for other project activities once the corresponding permits have been received.
- Vegetable waste must not be placed in sites where it obstructs the flow of water and it can finally be dragged towards superficial waterways.
- Under no circumstances will removed vegetation be placed in areas where it obstructs drainage channels. However, in some cases vegetation may be used as dead barriers to control erosion.
- The debris and waste materials product of pruning or cutting, must be temporarily disposed away from standing trees (at least 10 mts.), in piles no greater than 60 mts. in length and which have fire barriers. It must be transported to an authorized site for final disposal.
- Extracting wildlife species from their natural habitat is forbidden.
- The elimination of vegetation using herbicides is not allowed. Herbicides can only be used in exceptional cases and under justified requests due to the impossibility of using mechanical means; in any case, herbicides can only be used with expressed authorization by the authorities.
- When tree pruning is necessary, it must be done by qualified personnel in such a way that:
 - The cuts must be made at a correct angle and treated with healing agents to avoid decay organisms; pruning must be done during the optimal season and with adequate equipment.
 - The cuts must be done immediately after the neck branch.
 - Large and heavy branches must be pruned with weight discharge cuts to avoid tearing the cortex and accidents.
 - Part of the biomass (logs and stakes) must be used as energy dissipaters to reduce the effects of water erosion.
- When cutting or stripping trees the following must be considered:
 - Trees must be cut with chainsaws and delimbed before logging.
 - Check trees for any kind of animal nest.

- Obtain necessary permits from environmental units or the ICF before cutting trees for project activities.
- If the trees are located near the roads safety cones and traffic control personnel must be deployed during the activity
- The machinery must only circulate through the construction area to avoid damaging vegetation.
- The cutting of trees must be done as the project advances since there might be last minute changes to the alignment, and at the same time the visual impact that massive vegetation cuts creates is reduced.
- Areas affected by bridge construction, borrow pits, and disposal areas and facilities must be reforested.

Protection Measures for the Control of Direct Impacts to Fauna

- Before opening the roads the environmental specialists must evaluate the area to avoid destruction of paths, nests and dens.
- In case of encountering wildlife species the project's environmental specialists must be notified for him, in turn, to notify corresponding authorities.
- Execute intrusion activities preferably during the day shift because noise is amplified during the night.
- In case of night time activities, lights must be focused towards specific work sites avoiding the illumination of wildlife habitats and minimizing the intensity of light as much as possible.
- Avoid the unnecessary noise created by whistles, horns, sirens, running engines, etc.
- Install and maintain mufflers in optimum conditions in all motor equipment (vehicles, general equipment and heavy machinery).
- Maintain all vehicles in optimum conditions and provide adequate and effective escape routes. Periodical maintenance must be given to all heavy machinery and motor equipment used during the project.
- Hunting, capture, setting traps, commercializing and voluntarily disturbing wildlife and fishing is totally prohibited.
- Keeping wildlife specimens as pets is forbidden in all campsites, working areas or living quarters.
- The acquisition of hunting and fishing products offered by the people living in the projects area of influence must have proper permissions issued by competent authorities for the use of wildlife and fishing resources. The acquisition of food products based on wildlife terrestrial or aquatic specimens is forbidden without the corresponding permits.
- If a wild animal is run over, mistreated or hurt by machinery or employees of the concessionaire or the supervising company it will be their responsibility to provide the animal with necessary medical care.

These are other measures that must be adopted within the surveillance and control program:

- Develop a Program for Civic Participation and Promotion
- Maintain a permanent Dissemination and Communication Plan regarding the advance of the Project and collateral activities.
- Maintain a high level of coordination with SERNA, SOPTRAVI (Transportation & Civil Works Secretariat) and the National Transit Direction (DNT).
- Ensure the prompt repair of any damage caused to the access roads caused by trucks, heavy machinery and equipment used in the project.
- Guarantee the installation of road signals to reduce the risk of accidents for road users and pedestrians. This measure includes the installation of permanent road signals throughout the area of influence of the project.

- Guarantee compliance to sanitation, safety, and industrial hygiene regulations for worker's conditions.

Based on this Surveillance and Control Program, the construction company will present periodic reports on the different activities during the construction and operation of camps and temporary facilities, personnel status, land movements, generation of solid and liquid residues, the use of the stone quarry, and waste material disposal, among others, as well as any collateral problems that might arise. It is recommended that these reports conform what is designated as the Environmental Project Book, which records that main project incidents on the subject.

The aforementioned activities must be verified by the environmental specialist, who must inform regarding compliance with environmental legislation and the measures proposed in the Environmental Management Plan. The environmental specialist will report to the SOPTRAVI (Transportation & Civil Works Secretariat) Environmental Management Unit regarding the evaluation's results, in order to apply corrective actions for measures that do not produce expected results, to control that activities executed during the construction stage do not cause significant unforeseen environmental alterations.

▪ **Technical Requirements for the Use of Dry Borrow pits**

As a mitigation measure for the exploitation of dry borrow pits, the concessionaire or subcontractor must comply with the following technical requirements established by INHGEOMIN:

- The extraction of non-metallic mining material will only be done by the company within established points in the INHGEOMIN map.
 - Before starting exploitation activities the company must have authorization to cut trees from the responsible entity
 - In case the company uses explosives:
 1. The company must have the permits required by law and a Plan for Transport, handling, storage and use of explosives drafted by an expert.
 2. A mining Plan must be presented.
 3. Controlled explosions must be prepared in such a way to not affect private or public physical structures with a safety margin of at least 200 lineal meters between the site of the explosion and such structures.
 4. The explosions must preferably be done at noon; all site neighbors must be notified about the activities to avoid speculations.
 5. As a cautionary measure, qualified personnel must carry out an evaluation of the living quarters located near the stone quarry to have data regarding their conditions (structures, walls, roofs, etc.) Before starting the explosions and also monitoring their behavior during the process and the end of the activities.
 6. The explosions must be permanently monitored using a seismograph.
 - All organic matter resulting from stripping must be quantified, piled and properly conserved to be used during the closure of the intervened area. Any activity that involves closure or restoration of the site must write and present a report to INHGEOMIN regarding the scope and cost of activities, the equipment to be used, and the staff and execution time table.
 - A Project supervisor who knows the terms of the agreements with the Republic of Honduras must be present in the Stone Quarry.
 - Extraction activities should not affect phreatic levels in the area.
 - No unstable slopes must remain at the end of the project.
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- Stabilization work must include engineering activities such as deviation channels, material compacting, and terraced walls that result in stable slopes.
- During and after extraction, the transport of slope sediment or accumulated material must be prevented, building necessary structures to control sediment transport.
- Revegetation must be done with species native to the area.
- The extraction zone must be fenced off and permanently guarded to avoid trespassing.
- All areas where dust occurs must be sprinkled with water, especially those located near living quarters.
- Workers must be provided with all safety implements and to comply with the General Regulation of Preventive Accident Measures and Professional Diseases of the Labor Ministry (Republic of Honduras)
- The whole Project area and the equipment exits must have adequate signals.
- Any truck that transports material must be covered with a canvas tarp.
- All activities must happen during the day shift, extraction, trituration, and transport are not allowed during the night.
- If necessary, an area must be designated to wash the machinery.
- The machinery must receive preventive maintenance to avoid oil spills in the area.
- If the machinery is given maintenance in the area, there must be an adequate area for this activity.
- If the project stores material there must be an adequate area for this purpose.
- The company must provide georeferenced maps of the worksite and activity areas.
- Adequate maintenance must be given to motor vehicles to reduce emissions and comply with pertinent regulation.
- If rocks with sulfurs are found, INHGEOMIN must be notified immediately.
- All solid waste generated by the worker's activities must be properly disposed.
- In case of oil spills on the ground from machinery, the soil must be given appropriate treatment.
- The company must find an adequate location to dispose of soils contaminated with oil products.
- The company must have an Accident Prevention and Contingency Management Plan.
- There must be a latrine (bathroom) for every 10 workers.
- If the latrine is not connected to the Waste Water Collection System it must have a septic tank that complies with all technical specifications.
- Under no circumstance shall the extraction activities endanger the freshwater conduction systems or the terrains adjacent to the project.
- If the project triturates and washes extracted material, the resulting effluent must not be directly discharged to any receiving body, a structure or system (sediment capture boxes, precipitation dam, sediment transport barriers, etc.) to capture sediment must be built; the system must be kept clean by the company, and the resulting residue must be adequately disposed.
- Maintenance must be given to the area's access roads.
- All solid wastes generated by the worker's activities must be properly disposed.
- On-site inspection controls must be done to verify compliance by the company to Environmental Mining Control Measures, the number of these inspections will depend on the activity timeline, recommending that an inspection is

carried out every two months at cost to the executing company. If considered necessary and depending on the compliance to the norms. These inspections may increase or decrease with time.

- As a result of the inspections, if new technical requirements are needed these will be provided by the mining authority based on field reports and must be observed by the executing company.
- The executing company must report any abnormality immediately within the Project's area.
- Once extraction of the material pit has ended, the company must close off and abandon the area, and notify, in writing, to the Executive Directorate.

▪ **Technical Requirements for the Use of Floodplain soils**

As a mitigation measure for the exploitation of floodplain soils, the concessionaire or the subcontractor must comply with the following technical requirements established by INHGEOMIN:

- The Company cannot execute humid material extraction without the respective authorization.
- Exploitation activities may only be executed within the area inspected during the field evaluations prior to issuing the respective permit.
- Extraction can only be done in the points established by the INHGEOMIN maps.
- There must always be a Project Supervisor in the extraction zone; he/she must know the environmental control measures dictated by INHGEOMIN and SERNA.

- The company must provide workers with all safety implements and to comply with the General Regulation of Preventive Accident Measures and Professional Diseases of the Labor Ministry (Republic of Honduras)
- The entire Project area and the machinery exits must have adequate signals.
- Any truck that transports material must be covered with a canvas tarp.

- Adequate maintenance must be given to motor vehicles to reduce emissions and comply with pertinent regulation.

- All solid waste generated by the worker's activities must be properly disposed. Trash bags and disposal containers must be placed in all work areas.

- Solid residues must be transported for final disposal to a site authorized by the municipal authority of the area of influence. The corresponding authorization must be presented to the Executive Directorate.
- In case of oil spills on the ground from machinery, the soil must be given appropriate treatment.
- The activity execution timeline for extraction and transport of non-metallic mining material must be established in writing.
- Bimonthly on-site inspections must take place to verify compliance with the recommended measures.
- Extraction activities should not affect phreatic levels in the area.
- No mounds must be left in the riverbed.
- If the project triturates and washes extracted material, the resulting effluent must not be directly discharged to any receiving body, a structure or system (sediment capture boxes, precipitation dam, sediment transport barriers, etc.) to capture sediment must be built; the system must be kept clean by the company, and the resulting residue must be adequately disposed.
- The extraction of sediment banks not within the riverbed must not exceed the surface level of the river, during the month of maximum discharge, considering a level of up to 1.5 meters below the current level.
- Extraction of sand banks must be done with even and leveled cuts, preventing the formation of ditches that generate stagnant waters.
- The machinery's engines must never come in contact with the live river channel.
- During and after extraction, the transport of slope sediment or accumulated material must be prevented, building necessary structures to control sediment transport.
- All activities must happen during the day shift, extraction and transport are not allowed during the night.
- Any solid wastes generated by the worker's activities must adequately disposed of as established in guideline 12

- The company must have an Accident Prevention and Contingency Management Plan.
- The Company must have portable toilets for waste disposal in the locations authorized by the municipality.
- On-site inspection controls must be done to verify compliance by the company to environmental mining control measures, the number of these inspections will depend on the activity timeline, recommending that an inspection is carried out every two months at cost to the executing company. If considered necessary and depending on the compliance to the norms. These inspections may increase or decrease with time.

- As a result of the inspections, if new technical requirements are needed these will be provided by the mining authority based on field reports and must be observed by the executing company.
 - The Project executioner must immediately notify any irregularity in the area of influence.
29. Once extraction of the material pit has ended, the company must close off and abandon the area, and notify, in writing, to the Executive Directorate.

▪ **Dissemination and Communication Plan**

This Dissemination and Communication Plan aims to strengthen communication channels among the relevant project participants and integrate the community to the work environment. To this end, there will be a permanent effort to concentrate actions with local authorities, community groups and civil society organizations; the project also aims to establish permanent communication channels with the general public, which will not interact directly with the construction and the nuisance it creates, despite the mitigation measures adopted in this EMP Plan, however, the public will enjoy the direct and indirect benefits the Tourism Corridor will generate. This plan also considers communication with the general population, which will not be directly impacted by the construction, but is expecting to see the finished project.

To achieve these objectives, the design strategy is divided into main themes: specific strategies according to the project's target audience, for example:

- Authorities: SOPTRAVI, as Project developer, SERNA (NATURAL RESOURCES & ENVIRONMENT SECRETARIAT), and DNT (National Transit Direction) as national regulating entities, as well as other institutions that might provide some kind of collaboration such as the Fire Department.
- Target audience or public within the area of socioeconomic influence: Citizens who will enjoy the new Tourism Corridor Tela – La Ceiba.
- The General Public: Citizens who have some interest or expectation regarding the finished Project.

Strategy and actions by the concessionaire, to achieve community integration to the project's environment:

- The establishment of individualized channels for contact with this target audience or general public will allow transmitting the information they need.
- The responsibility to communicate and inform of the project activities will be the concessionaire's responsibility, for which it must present a Dissemination and Communication Plan that identifies information and communication needs, as well as the proposed means for approval and supervision by SOPTRAVI.
- The Dissemination and Communication Plan presented by the construction company must include, at least, strategies, mechanisms, and resources focused on the following areas:
 - Institutional
 - Media
 - Internet users
 - Communities within the area of Socioeconomic influence
 - Tela – La Ceiba road users

- Inform affected local businesses and communities about the activities to be executed, through media (newspaper and/or radio) and/or communication workshops (focusing on schools with the project area of influence), at least two weeks before the project starts. If the effects are minimal, distribute an information pamphlet to each business and house in the same term. The minimum information to be relayed is:
 1. Owner's name.
 2. Name of the Project.
 3. Affected zone.
 4. Name of the builder.
 5. Construction terms (estimated start and end dates).
 6. Project characteristics.
 7. Phone number and address for community communications.

- Install a sign in front of each activity containing the minimum information relayed through newspapers, radio, workshops or pamphlets.

- In the case of expected interference with public services, communication must take place at least three days before the event and implement a Contingency Plan, to minimize nuisances.

▪ **Environmental Education Plan**

One of the most important measures contemplated to correct or attenuate negative environmental impacts is the Environmental Education Plan, which is considered as a strategic instrument for the implementation of the Environmental Management Plan.

Environmental Education is conceived as a permanent process in which individuals and the community gain conscience of the surrounding environment and acquire knowledge, values, experiences and the will to act individually or collectively, to resolve current and future environmental problems. The Environmental Education Plan is an important mitigation measure to weaken negative environmental impacts that affect the population's life-quality due to the project's activities.

This plan is mostly directed to project staff, school teachers, community representatives and leaders from the main population centers in the project's indirect area of influence (which represent the project labor supply) because it is considered that the message will achieve a greater broadcast and multiplying effect through these leaders, increasing sensitivity and the ability to respond the environmental and natural resource deterioration situations.

The aforementioned leaders will be summoned in the neighborhoods or communities of the project's area of influence, to participate in informative sessions and interactive workshops, receiving printed material (posters, bulletins, etc.) to distribute among each citizen's co-workers (in schools, churches or community centers, in the project etc.)

The following issues are proposed as the content for informative sessions and workshops:

- Rational use of water.
- Deforestation and its influence on the water cycle.
- Soil conservation practices.
- Proper fuel manipulation and equipment and machinery maintenance.
- Environmental contamination (water, air and soil).
- Ecology and relation between water-soil-vegetation).
- Health, respect, and public area maintenance.
- Life-quality and natural resource conservation.
- Road safety
- Tourism

The staff must also be trained on the following flora and fauna protection issues:

- Types of dangerous reptiles, mammals, and insects
- Types of dangerous or stinging local plants
- Importance of natural resources
- Effects of forest fires
- Purchase of wild animals
- Bonfire prohibition

Training Records

The concessionaire must keep an updated record of the training given to project staff. This record must include the date of training and the general information of attendees (name, id number, and occupation in the project) and their signature, and the information of the trainer and his/her signature.

A similar record must be kept for the monthly informative sessions. Every worker is required to attend any training activities and achieve a clear understanding and familiarity of the different special environmental management requirements for the whole project.

It is recommended that seminars and/or workshops are given periodically and continuously (every four months), at least during the project's Selective rehabilitation and maintenance Stage. The concessionaire and the project's supervision must logistically support this program, with SOPTRAVI being the development coordinator. The concessionaire must fund the program with own resources and provide continuity to the implementation process, to guarantee the adoption of concepts and values by the staff during the project duration.

As logistic program coordinator, SOPTRAVI may look for support from diverse government institutions to find willing participating panelist who wish to contribute. Given its affinity with the proposed issues, the institutions might be SERNA, Public Health Secretariat, National Transit Direction, Ministry of Labor, and the IHAH, among others.

Environmental Education Plan for Authorities and Organized Groups

The program will be developed through a Seminar-Workshop directed to interested authorities and civil society representatives from each of the municipalities affected in the area of indirect influence. SOPTRAVI will be responsible for holding these seminars.

The objectives of each seminar-workshop are the following:

- Explain the technical characteristics of the project
- Explain the impacts of the project
- Explain the mitigation and compensation measures that will be adopted
- Channel the concerns of civil society

Each community workshop will have no more than 50 people including representatives from SERNA, the Municipal Environmental Units, local authorities and civil society members.

- Conceptual framework of the Honduras Tourism Corridor Project.
- Project and complementary activities description.

- Main negative and positive impacts produced by the project.
- The role of the SOPTRAVI Environmental Management Unit.
- Contamination prevention systems in the context of project road activities.
- Project Road Safety System

At the end of the seminar, there must be a plenary in which the coordinator will present his/her table's conclusions. Representatives from SOPTRAVI (TRANSPORTATION & CIVIL WORKS SECRETARIAT) and SERNA (NATURAL RESOURCES & ENVIRONMENT SECRETARIAT) will gather the documents presented in the plenary session and draft a final document that must be delivered, in no more than 30 days, to authorities and organized groups that participate in the seminar-workshop for its due dissemination.

Project Disclosure

To achieve this objective, the concessionaire will distribute flyers in the affected areas with the following objectives:

- Inform the population about the project's impacts
- Inform the population about mitigation and compensation measures to be adopted
- Inform the population about the dangers associated to the presence of the project

Flyers with the required information will be made and distributed freely among the affected population.

The flyers must contain at least the following information:

- Project plan diagram
- List of human health and environmental impacts
- List of mitigation and compensation measures
- Environmental risks

All costs associated to the Environmental Education Plan including sessions, seminars, and workshops must be covered by the concessionaire; all the material used for the training sessions must be approved by SOPTRAVI. All activities must be approved by SOPTRAVI.

- **Health and Hygiene Program for the prevention of Contagious Diseases**

The construction phase increases the risk of disease transmission due to the presence of workers throughout the project, and especially, during the location and installation of temporary facilities which will concentrate a great number of workers, the concessionaire must implement a Health and Hygiene Program for the prevention of Contagious Diseases STDs, HIV, and AIDS.

Contagious diseases are those that can be passed on from one person (animal) to another. There can be direct transmission from an infected person or animal to a healthy person, or there can be indirect transmission; sometimes through an intermediate animal host (mosquitoes, rat) and others through the environment (air, water, food)

The organisms that produce diseases in humans, called infectious agents, belong to different groups: bacteria, virus, fungi and can penetrate the organism through different means mechanisms, digestive, respiratory, skin, and mucous.

The chain of infection includes the following links: sick humans or animals; contaminating products (vomit, feces, urine, and blood)

- 1 **Source of infection:** sick humans or animals; contaminating products (vomit, feces, urine, blood)
- 2 **Means of disease transmission:** water, food, dust, air, insects, rodents, soil, objects
- 3 **Healthy humans:** the infectious agent can arrive through different ways; digestive, respiratory

Preventive measures aim to break this chain, by acting on each of the links:

- 4 On the source of infection: disinfection and deworming
 - 5 On the means of transmission: personal hygiene and work environment
- On healthy humans: vaccination and sanitary education.

Preventive Measures in work areas

- Keep work areas clean at all times
- Mosquitos are especially attracted by wastes and small puddles in work areas; for this reason, work areas must be inspected daily.
- Containers or solid wastes disposal tanks must be covered, to avoid accumulation of water.

Preventive measures for diseases spread by saliva

- The concessionaire must have a freshwater dispensing tank in all work areas. The tank must be washed and filled daily, to control this activity, a seal or tape with the date must be placed daily on the lid.
- Disposable glasses must be provided to the workers.
- Under no circumstance are workers allowed to drink water by placing their mouth directly on the tap.
- It is not recommended that workers share the same glass, as viral diseases like mononucleosis are passed on this way.

First aid measures to prevent the spread of HIV and AIDS

- Avoid contact with blood and other bodily fluids. Use gloves before providing first aid and cleaning blood or other bodily fluids. Wash or rinse gloves before removing them and discard in a plastic bag. Wash hands and other body surfaces immediately if you have been in contact with blood or bodily fluids, and after removing gloves.
- Make sure to avoid cuts when examining a wound or removing a sick patient's clothes, be careful when handling needles, scissors or other sharp instruments. If they are disposable, keep these instruments in a resistant, clearly-labeled container.
- **In case of an accident:** make the wound bleed freely, do not suck on it. Wash the area with soap and water (if eyes are affected, wash them with abundant soap and water. Do not forget to notify any accident and request appropriate medical assistance.

- If blood is spilled, wash with abundant common soap in a 1 to 10 proportion and dry with disposable towels. Use rubber gloves. If clothes become soiled, pick it up using gloves and soak in cold water before washing in the washing machine hot water cycle.
- **Mouth-to-Mouth resuscitation:** there is no evidence that mouth-to-mouth can cause HIV so there must be no hesitation to apply this procedure. If there is blood near the mouth, it will be necessary to clean before starting reanimation, which will be done using a clean handkerchief over the patient's mouth.

Preventive measures for sexually transmitted diseases

Clearly, the best preventive measure is not to engage in sexual relations with prostitutes, persons with promiscuous backgrounds, or strangers. If despite warning sexual relations occur, the use of condoms is recommended.

Condoms are currently the most effective methods to prevent most venereal diseases; however, they do not completely eliminate the risk of contagion.

Code of Conduct for workers in project areas

Besides applying the preventive measures outlined before, the most important aspect to prevent contagious diseases is the behavior of every worker in the project areas. The worker must:

- Observe good behavior and correct treatment of the community's members at all times.
- Restrict access to non-workers to the camps, facilities, and other service areas to prevent accidents, risk situations, and conflict opportunities. If this situation occurs, workers must kindly ask trespassers to leave the area for their own safety.
- There will be zero tolerance for the use of alcohol, drugs, or narcotics by the staff, especially within rest areas and other project facilities
- Respect and proper treatment of women and children of the surrounding communities must be guaranteed. In many cases, the most frequent cause of problems regarding personal conduct within project areas is improper treatment of local women.
- The labor, social, and commercial relations developed with the neighboring population as a result of company presence, must be based on mutual respect, avoiding conflicts that deteriorate the company's relationship with local communities or settlements.
- Maintain a cordial and respectful attitude with everybody, especially women, the elderly, and people with disabilities. Avoid inappropriate relations with minors- it is a crime punishable by jail.
- Use portable toilets for bodily functions. They have been installed for your comfort.

These norms of conduct and others that may be incorporated will be socialized extensively among all staff before the training and induction process regarding behavior patterns and relations with local staff.

Health issues and contagious disease prevention training

The Education Plan for the project's workers includes issues related to health, HIV, and the prevention of infectious diseases. The project will request the support of the Public Health Secretariat, through the nearest health center, to organize health fairs and vaccination campaigns for workers as necessary.

- **Mitigation measures execution and responsibility**

The concessionaire is responsible for the execution of mitigation measures through the environmental specialist designated for the project.

The entities responsible for the supervision of compliance by the concessionaire are SERNA, the Environmental Management Unit of Soptravi and the administrators of the Environmental Units of each municipality within the area of socioeconomic influence of the Project (Tela, Arizona, Esparta, La Masica, El Porvenir and La Ceiba).

Table 0.1. Mitigation measures execution and responsibility

Medium	Impact	Mitigation Measure	Institution Responsible for Execution	Regulating Entity * See note
Aquatic	1a. Hydrological Regime Alteration	<ul style="list-style-type: none"> No extraction activities should be done in the center of the riverbed, only in the sites marked by INHGEOMIN Surveillance and Control Program: delimiting the area of influence to avoid damage to other areas. Avoid the formation of pools and depositing material on the natural water runoff sources and avoid the stacking of materials higher than 2 meters 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision
	1b. Alteration of phreatic levels	<ul style="list-style-type: none"> Selection of water bodies with enough continuous flow to provide water to the project and not altering the aquifer recharge. 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision
	1c. Quality deterioration or water contamination	<ul style="list-style-type: none"> Liquid and Solid Waste Management Program Contingency Program: Prevention and Control of contaminating substance spills (oils, fuels, paints, etc.) 	The concessionaire and the Environmental Specialist and the Security Supervisor	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat
Atmospheric	2a. Quality deterioration or air contamination	<ul style="list-style-type: none"> Preventive vehicle and construction equipment maintenance program (adequate mechanical state is required) Vehicular Emissions Compliance Control Program 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat /National Transit Direction DNT

Medium	Impact	Mitigation Measure	Institution Responsible for Execution	Regulating Entity * See note
	2b. Dust and/or foul odor generation	<ul style="list-style-type: none"> • Program for dust emission control and foul odor prevention 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat
	2c. Increase in noise levels	<ul style="list-style-type: none"> • Preventive vehicle and construction equipment maintenance program (adequate mechanical state of mufflers is required for machinery) • Work Schedule: Avoid, if possible, working during the night or resting periods; if necessary notify the affected population in advance. • Provide auditory protection equipment to workers exposed to noise levels over 80 dBA. 	The concessionaire and the Environmental Specialist	
Terrestrial	3a. Effects on soil due to compacting or leveling	<ul style="list-style-type: none"> • Surveillance and Control Program: limiting of the direct area of influence to avoid damages to other areas. • If necessary upon project completion, soil compacted by heavy machinery or temporary facilities must be loosened and covered with topsoil for subsequent revegetation. 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision
	3b. Quality deterioration or soil contamination	<ul style="list-style-type: none"> • Contingency Program: avoid, if possible, the accidental spill of contaminating substances on the soil. • Contingency Program: Prevention and Control of contaminating substance spill (oils, fuels, paints, etc.) • Liquid and Solid Waste Management Program 	The concessionaire and the Environmental Specialist	

Medium	Impact	Mitigation Measure	Institution Responsible for Execution	Regulating Entity * See note
	3c. Extraction or loss of soil	<ul style="list-style-type: none"> Surveillance And Control Program: delimiting the area of influence to avoid damage to other areas 	The concessionaire and the Environmental Specialist	
	3d. Increase in erosion processes	<ul style="list-style-type: none"> Erosion control and slope stability measures 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision
	3e. Reduction in fertility and suitability of soil	<ul style="list-style-type: none"> Reforestation, arborization, and revegetation plan 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/ICF
Biotic	4a. Loss of vegetation cover	<ul style="list-style-type: none"> Surveillance and Control Program: delimiting the area of direct influence to avoid damage to other areas 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/ICF
	4b. Alteration or elimination of terrestrial and aquatic fauna	<ul style="list-style-type: none"> Surveillance and Control Program: Avoid poaching and/or species habitat disturbance. 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/ICF
	4c. Increased risk of running over wildlife	<ul style="list-style-type: none"> Place animal crossing signs Regulate speeds in road tranches 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat /National Transit Direction DNT

Medium	Impact	Mitigation Measure	Institution Responsible for Execution	Regulating Entity * See note
Socioeconomic	5b. Modification to local traffic	<ul style="list-style-type: none"> • Work Schedule: Execute planned installation of road signals in the Traffic Management Program • Coordinate activities with the National Transit Direction • Permanent disclosure campaign: Inform the communities about programmed activities 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat /National Transit Direction DNT
	5e. Increased risk of spreading disease	<ul style="list-style-type: none"> • Health and Hygiene program for the prevention of contagious diseases 	The concessionaire and the Environmental Specialist and the Security Supervisor	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat
	5f. Increased risk of workplace accidents	<ul style="list-style-type: none"> • Risk and Accident Prevention Program • Maintaining first-aid kits and ambulance services • Records of worker’s training on first-aid and emergency measures 	The concessionaire and the Environmental Specialist and the Security Supervisor	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat / Fire Department/ Red Cross/ COPECO/ Ministry of Labor
	5h. Increase in public sanitation problems due to the generation of solid and liquid wastes	<ul style="list-style-type: none"> • Solid residue collection and disposal program • Portable toilets must be installed for workers; the responsible company must clean the toilets at least twice a week 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat

Medium	Impact	Mitigation Measure	Institution Responsible for Execution	Regulating Entity * See note
	5i. Disturbances to surrounding communities due to project activities	<ul style="list-style-type: none"> • Work Plan: Establish a work schedule that avoids affecting daily community activities • Work Schedule: Execute installation of road signals proposed in Transit Management Program • Coordinate activities with the National Transit Direction DNT • Dissemination and Communication Plan: maintain a permanent disclosure campaign with the affected communities 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/Public Health Secretariat /National Transit Direction DNT
	5j. Changes in the use of soil	<ul style="list-style-type: none"> • Territorial ordinance plan review • Request a change in the use of soil to the Municipality 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision
	5k. Alteration of public services	<ul style="list-style-type: none"> • Public services relocation program 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision/ENEE/SANAA
Landscape related	7a. Alteration or changes to the landscape and environment aesthetics	<ul style="list-style-type: none"> • Work Schedule: Execute planned installation of road signals in the Traffic Control Program • Surveillance and Control Program: Delimit the area of direct influence to avoid intervention in other areas. 	The concessionaire and the Environmental Specialist	Environmental Management Units/SOPTRAVI / Tourism Corridor Supervision

Source: The Consultant

Note:

* **Art. 28-A (added through Decree 181-2007).** - The Natural Resources and Environment Secretariat (known in Spanish as SERNA) will delegate environmental evaluation for the execution of projects, industrial facilities and any other private or public activity that is meant to be developed within and follow-up of mitigation measures for the environmental impacts subject to licensing. This evaluation process will be concurrent with the application of permits, Article 68 of this law establishes exclusions to this delegation. Municipal Corporations will assume these responsibilities by issuing a Municipality License about its intention and operating capacity, and therefore, assume responsibility of actions derived from delegated functions.

The municipalities of Distrito Central, San Pedro Sula, Juticalpa, La Ceiba, Puerto Cortes, Roatán, Guanaja and El Progreso are able to do this in must submit to an evaluation and accreditation process by SERNA, who will issue a resolution in a period no greater than sixty (60) days upon present

1 SPECIFIC MANAGEMENT PLANS

1.1 Common Solid Residues Management Plan

The objective of residue management is to minimize any impact on the worker's health and the environment, as well as limiting risk exposure, by providing orientation regarding risk management. All aspects related to the management and administration of residues in the work site, must comply with national Honduran legislation and other international directives from the World Health Organization (WHO), the United Nations Environment Programme UNEP, and the World Bank, among others.

Plan Objectives

Residual waste management will achieve the following goals:

- Reduce risks to health and the environment (flora, fauna, water, underground water, and air)
- Identify and classify residues
- Minimize the residue generation
- Select appropriate alternatives for residue treatment
- Document all aspects of waste management and elimination

The Project Manager is responsible for residual waste management, through the field Environmental supervisor, who must be adequately trained to carry out inspection, supervision, and recording of residual waste management practices.

Common solid residues

Non-hazardous residues do not generally present immediate concerns for public health or environmental impact.

The non-hazardous residues generated during the project construction, include, but are not limited to: residues from food, paper, plastics, iron, aluminum, glass, and packaged miscellaneous items, inert construction materials (wooden planks, belts, tires, plastic and paper bags and other containers).

Table 8.1 contains a list of non-hazardous residues generated by project activities:

Table 8.1 contains a list of non-hazardous residues generated by the construction of the Tourism Corridor Tranche Tela - Ceiba:

Table 0.2. Non-hazardous Residues

Material Waste Flow	Description	Main Source	Management and Disposal Options	Observations / Important Considerations
Domestic/ General	Non-organic: Food Food containers, plastic water bottles, paper, carton, glass (bottles, cans, windows), polystyrene, aluminum (containers)	Main workers' rest areas within the worksite and main offices	Reuse /Rec-cycle /Disposal	Boost the initiative of diverting waste. Disposal of non-incinerable inert residues (plastic, glass, metals, polystyrene, etc.) and the flow of remaining incinerated wastes
	Organic: food leftovers	Cooking and eating areas and worksite	Disposal	Diverting organic waste from disposal can reduce leachate

Material Waste Flow	Description	Main Source	Management and Disposal Options	Observations / Important Considerations
Construction Debris	Concrete waste, cement additives etc.	Construction and maintenance activities	Reuse /Rec-cycle /Disposal	Wastes like additives should be reused for future or current activities as much as possible.
Scrap metal	Metal cuttings, electric cabling, pipes, etc.	Construction areas	Reuse /Rec-cycle /Disposal	Donate to the community
Wood	Wood, pallets, plywood, wood chips, wood scraps, etc.	Packaging material	Reuse /Rec-cycle /Disposal	Reuse or donate to community for cooking or construction
Paper, carton	Office paper, cardboard	From offices and packaging materials	Reuse /Rec-cycle /Disposal	Separate at the source and maximize recycling opportunities such as donations to local schools.
Polystyrene	Polystyrene	Packaging material	Recycle / Disposal	Recycling
Plastics	Plastic wrappers, PET resin bottles, HDPE, scrap, etc.	Construction Area	Recycle/ Disposal	Recycling

Material Waste Flow	Description	Main Source	Management and Disposal Options	Observations / Important Considerations
Tires	Worn-out, damaged tires	Construction and operations equipment	Reuse /Rec-cycle /Disposal	Tires must be used for ground stabilization, and embankments (crushed)
Welding wastes	Soldering rods or millstones	Maintenance or construction related activities	Recycling / Packaging in drums and disposal	
Non-greasy fabrics	Non-greasy fabrics (rags, gloves, clothes, etc.)	Temporary facilities and maintenance workshops	Disposal	No special requirements for disposal

Source: 504832-0000-4EPA-1007 "Residual Waste Management Plan" –JVP

Project activities during the construction phase generate different kinds of residues which must be handled accordingly, to avoid garbage accumulation which can cause diseases that affect worker's health. The concessionaire must avoid situations that threaten the health of the workers and the general population through adequate management of residual wastes resulting in minimal negative impacts to the environment.

The concessionaire must implement actions to:

1. Avoid residue generation (source prevention)
2. Separate residues at the source
3. Find alternatives uses for residues (reusing)
4. Material recovery (recycling)

It is important to consider that from a waste management perspective, source reduction and reuse are preferred options before the implementation of recycling, treatment, and elimination.

The residues generated during construction, such as: woods, pieces of metal rods, cardboard, paper, cans, plastics, among others, and the domestic waste generated by the workers, must be stored in adequate containers and on a specially designed and properly protected area within the worksite.

In order to guarantee proper management of residual solids, the concessionaire must adhere to the following principles:

1. Train workers on the established regulations for solid waste management;
 2. Prohibit the burning of solid residues;
 3. Appropriate segregation and labeling of solid wastes containers;
 4. Minimize residue production;
 5. Maximize recycling and reuse;
 6. Safe transport, and
- Figura7. Adequate residue disposal.

Waste Management Training

Training for all construction workers is a key element to achieve proper solid residue management. This training must take place before the start of operations in order to achieve better results. Some of the issues to be discussed during training are: safe management practices, storage, transport, treatment, and waste elimination, according to the nature of the residues.

It is also important to consider that training must be periodically renewed; the training sessions must be recorded along with the support documentation for the offered training.

Containers for Solid Waste Collection

The containers or deposits for solid wastes will be located in the work areas and operation centers, to promote appropriate disposal; not on the ground.

A recycling program must be implemented in the temporary facilities and workshops. Simple mechanisms for temporary separation and transport of wastes must be established for the different work areas. It is proposed to separate waste in these categories for recycling: paper, glass, metals, plastics, and organics. The color coding is illustrated in Figure 8.1:

Figura 0-1. Solid Waste Containers



Fuente: 504832-0000-4EPA-1007 "Waste Management Plan".

Figure 0.2. Good practices for Environmental Management of Solid Waste



Source: The Consultant

Procedures to minimize solid waste generation

The procedures for solid waste minimization include reduction at source and reuse. The source reduction of waste includes reducing the amount of materials moved to work areas. The concessionaire must consider the following elements for source reduction:

1. Purchasing products with the least amount of wrappings (e.g. groceries and paper)
2. Use of products with greater durability and that can be repaired (e.g. durable work tools and instruments)

3. Substitute single-use disposable products for reusable alternatives (e.g. bottles for cans)
4. Increase the content of recycled materials in products (e.g. find articles easily accepted by local recycling centers). Among the waste products that can be recycled are used asphalt, used concrete, leftover paint, construction timber, vegetable material from terrain clearing such as branches and stumps, used wooden pallets, discarded metals, and other materials.

The purpose of reducing sources is to avoid handling of solid wastes just by not generating them. The concessionaire must research opportunities for local reuse of products (e.g. devices, furniture, used oils), or the possibility of donating them to the community, instead of eliminating them.

Guidelines for safe transport of Solid Wastes

During construction, solid waste will be transported from the work sites to the final disposal site. The concessionaire must guarantee that the staff assigned to this task used appropriate procedures for waste transport and have the corresponding permits and authorizations required by law. The guidelines include, at least, the following elements:

- Driver of vehicles that transport solid wastes must avoid making unauthorized or unjustified stops along the transport route.
- Vehicles that transport solid wastes must be equipped with the following characteristics:
 - ✓ Covered (e.g. tarps or nets) to prevent accidental spillover on route;
 - ✓ Ability to perform flawlessly under severe weather conditions;
 - ✓ Respect the designed vehicle capacity, without overloading; and
 - ✓ Adequate and frequent cleaning to avoid unpleasant emanations.

Final Disposal of Solid Wastes

The concessionaire must carry out all necessary procedures for final disposal of the wastes generated during construction. The concessionaire must also present the certifications required by SERNA, as proof of adequate final disposal of wastes.

Specific Procedures

The following items describe the specific procedures the concessionaire must implement for the management of its solid wastes:

- Take responsibility for the classification, collection, transport and final disposal of all wastes generated by its activities.

- Keep work sites and storage areas clean and build awareness of waste management among the staff.
- Maintain records and manifests for the type and amount of wastes and the planned elimination of all wastes generated by its activities;
- Separate wastes at the source.
- Prohibit the open burning of wastes.
- Provide training to all staff involved in the adequate management and handling of wastes and emergency response
- Ensure, as much as possible, the recycling and reuse of waste generated in the work areas.

1.2 Management Plan for Toxic and Hazardous Solid Wastes

Hazardous wastes can negatively affect human health and the environment if they are inappropriately stored, handled or eliminated.

Initially, in the construction phase, hazardous wastes may include oils and greases used in vehicle maintenance, batteries (dry and wet-cell including lead acid), used oil filters, used chemical containers, paints, biological risk wastes from first-aid stations, hydrocarbons and chemically contaminated soils, rags and absorbent pads.

Many of the products used in the project are hazardous materials. Generally, hazardous materials are classified in four kinds- petroleum derivate, explosive agents, reactive and compressed gases.

Table 8.2 presents a general list of solid hazardous wastes generated during construction activities and the proposed strategies for the management of each of these wastes:

Table 0.3. Default Hazardous Wastes

Waste Flow/ Materials	Description	Main Source	Elimination options	Consideration/ Key observations
Oily fabrics	Oily fabrics (rags), gloves, clothes, etc.	Mechanic workshops, response to spills	Off-site elimination	Treat as hazardous material. Collect in an appropriate location, off-site removal by an authorized company.

Waste Flow/ Materials	Description	Main Source	Elimination options	Consideration/ Key observations
Soils contaminated by hydrocarbons	Contaminated soil	Fuel spills		Treat as hazardous material. Store in an adequate container. Elimination by an authorized company.
Lead-containing products	Batteries, soldering, electric devices, cables Sheet accessories, brass or bronze, balanced weights	Vehicle maintenance and equipment Construction activities	Off-site elimination or recycling	Treat as hazardous material. Consolidate and store to send for final disposal by an authorized company.
Used batteries	Dry-cell batteries	Electronics, offices, and monitoring equipment	Recycling	Treat as hazardous material. Return batteries to suppliers.
	Lead acid batteries	Equipment and vehicle maintenance	Recycling	
Asbestos-containing products	Vehicle braking wedges	Vehicles	Off-site elimination	Treat as hazardous material. Consolidate and store to send for final disposal by an authorized company.

Source: The Consultant

As a recommendation, the area designated for hazardous material storage, must be identified by red codes. Hazardous wastes must be placed by workers in appropriate containers and bins before transport to the hazardous wastes deposit, and include the following specific items:

- The material content (oil filters, batteries, etc.)
- The hazardous nature of the contents (flammable, corrosive, etc.)
- The date when the waste was generated.

Hazardous wastes must be consolidated and stored in a safe way in the hazardous waste deposit. Storage must not exceed 180 days upon reception at the deposit and storage prior to its shipment for appropriate elimination/treatment.

Management of Specific Wastes

Gas Cylinders

Compressed gases are considered hazardous materials, due to the high pressure of the containing cylinders. The uncontrolled escape of compressed gases creates leaks in the equipment or its hoses; or produce chain reactions. The Material Safety Data Sheets (MSDS) must provide the specific storage requirements for each gas. Gases must be stored in closed enclosures if possible.

The cylinders must be kept in a clean and well-ventilated area, in vertical position, away from incompatible material. Heat exposure must be avoided. They must be chained to a wall, rack, or other structure to prevent tipping over.

In case of accidental release of a compressed gas cylinder, the specifications detailed on the MSDS must be followed.

Gas cylinders must be returned to the provider. However, before being returned, they must be applied a label that indicates: the material they contained or contain if they have not been emptied, the provider's information, the serial number of the cylinder, pressure, date of last hydrostatic test, and any other additional identification mark considered necessary.

Used Batteries

Alkaline or zinc-carbon batteries are considered hazardous materials, lead acid batteries (vehicles), nickel-cadmium batteries (radios and cell phones), and lithium-mercury batteries require special treatment since their toxic elements could negatively impact the environment. For this reason, they must not be discarded nor stored in inappropriate containers before neutralizing their acid content.

The storage of vehicle batteries must occur in a restricted area, on a waterproof surface protected from the rain and surface water, no less than 50 meters from water courses. Vehicle batteries must be delivered to a specialized and environmentally authorized company for treatment and final disposal.

Oil Filters

When filters are replaced they must not be discarded in the deposit site before checking they are not contaminated with hydrocarbons or other hazardous substances. Filters that can be completely drained and crushed can be disposed of in special storage sites.

Used oil must be drained from filters before deposit. The filter draining process must occur at a temperature similar to the temperature of the source equipment (“hot”). There are several acceptable procedures for this operation. For example, perforating or crushing the filter drain used oil to an appropriate container. The contaminated filters that cannot be drained must be stored until the company responsible for these wastes collects them.

Contaminated Rags

Contaminated rags and absorbent pads will be treated with the same criteria and methodology of the substance they absorbed.

Personal Protection Equipment (PPE)

Storage facilities must be equipped with proper PPE, which includes, at least, eye washing stations and firefighting equipment. The staff that enters the storage sites must be equipped with proper PPE. The PPE must include rubber boots and gloves, chemical protection goggles, respirator, rubber apron, etc., as required.

Material Safety Data Sheets (MSDS)

La Material Safety Data Sheets (MSDS) must be provided for all hazardous materials by the product supplier, and must updated as soon as new materials are added to unify criteria.

A record of the MSDS must be kept for all hazardous substances used or produced during project activities.

Final Disposal

An authorized company must be contracted for final disposal of hazardous materials. The company must have a valid Environmental License which allows the provision of this service and compliance to national regulation in this matter.

1.3 Liquid Residues Management Plan

The sanitary residues or residual waters are generated by human activity during the construction of the Tourism Corridor. The volume that is generated will depend on the number of workers and the availability of toilets in the different work areas.

Portable toilets will be contracted from a specialized company (local supplier), which will clean the contents with the required frequency in order to keep them in acceptable sanitary conditions. 1 toilet for every 10 workers must be installed.

The installation of a septic tank for the management of greywater and soapy water (and sewage in case of not having portable toilets), from temporary facilities and workshops is recommended. Final disposal of this waste requires hiring an authorized company.

Table 8.3 presents a general list of hazardous liquid residues generate during project activities and the proposed strategies for the management of each kind of residue:

Table 0.4. Hazardous Liquid Residues and Management

Material Waste Flow	Description	Main Source	Elimination Options	Considerations/ Important Observations
Used oils	Lubricants, oils, hydraulic oil, brake fluid, etc. Equipment/Vehicle refrigeration agent	Equipment and vehicle maintenance	Reuse/Recycle off-site	Treat as hazardous material. Collect at an appropriate location; remove off-site by an authorized company. Return to provider if possible.
Oily water	Water and hydrocarbons	Oil/spills	Recycle off-site	

Material Waste Flow	Description	Main Source	Elimination Options	Considerations/ Important Observations
Solvents / Degreasers	Paint, thinner, acetone	Construction activities	Recycle off-site Treatment or Elimination	Treat as hazardous material. If practical, use low impact degreaser. Elimination by an authorized company.
Paints and covers	Paint residues resin covers	Construction Areas	Reuse/Treatment Elimination Off-site	Treat as hazardous material. Consolidate and store for site maintenance purposes or send off-site for final disposal.

Source: The Consultant

Management for each type of residue will take place in the following manner and is the concessionaire's responsibility:

Used Oil

Used oil is considered a hazardous material and must be collected in oil collection tanks, with correctly labeled safety tags. The tanks must be located in protected areas within the hazardous material storage facility, which must have warning signs. For delivery to the authorized company. The mixing of used oil with antifreeze substances paint residues, degreasing solvents, synthetic lubricants, or any other liquid except water is forbidden.

Solvents

Tanks containing used solvents require rigorous management and strict content control. The following requirements must be observed: the tank must be in good conditions, be hermetically sealed, contain visibly updated labels, place barrels within protective containers, before recollection by authorized company.

Paints

Paints constitute an important source of hazardous wastes. Partially used cans must be grouped per type or eliminated. Paints and solvents of different kinds should not be mixed. Instrument like brushes, paint rollers and rods can be discarded if dry.

Storage of Hazardous Wastes

Adequate containment must be provided by levees or walls with a capacity of over 110% volume than the largest tank, and must be made of waterproof and chemically resistant materials. The containment area must have a reserve capable of containing an unusual 24 hr. storm event every 25 years, apart from having sinks equipped with the necessary pumps to collect and drain pluvial precipitation. Containment will be designed to prevent contact between incompatible materials.

For containers with lesser volumes, there must be antispill trays to avoid placing containers directly on the ground. The antispill trays must have a containment capacity of 110% the containers volume. They must be located on stable and level surfaces for storage and use.

Any bottle cylinder or hazardous material container must be labeled indicating content and hazard level.

Material Safety Data Sheets (MSDS)

Material Safety Data Sheets (MSDS) must be provided by the supplier for all hazardous material and will be updated as soon as new materials are added to unify criteria.

There must be a record of all MSDS for all hazardous substances used or produced during project activities.

FINAL DISPOSAL

An authorized company will be hired for final disposal of this type of waste. The company must have a valid Environmental License that allows providing this service and compliance to National Regulations.

1.4 Risk Prevention Plans

1.4.1 Identification of risks associated to Project Activities

In order to develop the emergency and contingency plans, it is necessary to identify the possible risks associated to the Tourism Corridor project development.

An environmental risk is the possibility of damage or catastrophe in the environment due to a natural phenomenon or human action.

During the construction of the Tourism Corridor Tela - La Ceiba, some activities may represent risk situations, some activities may present risk to the environment, infrastructure and equipment.

The evaluation of inherent environmental impacts and risks during the different phases of the project considered the activities to be executed and the associated risks; the analysis focused on the kinds of risks for which, in case of an incident, activation of Emergency and Contingency Plan is required.

Considering the nature of the project there was a general evaluation of the project activities and associated risks, whether physical, biological, or chemical. It also includes safety and hygiene measures that must be enforced at all times to prevent affecting workers health.

The identified physical risks include workplace accidents, risks associated to the use of mechanical equipment (rollovers, traffic accidents, and run overs), risk of falling, risk of fire, risk of floods, earthquakes, among others. The spill of fuels constitutes a chemical risk, while biological risks include animal/insect bites and/or stings, animal attacks or contact with poisonous and/or allergenic vegetation.

The following is a list of measures to be implemented to avoid accidents during project development:

1.4.1.1 Physical Risks

The following physical risks could affect adequate functioning of the Project:

Risk of Workplace Accidents

Many of the construction Project activities present risks for workers. In order to prevent workplace accidents, the construction company must have a Manual of Construction Safety Regulations and an Occupational Security Regulation.

It must at least contemplate the following measures:

- **Accident prevention responsibility level:** every worker is responsible of following the Safety Regulations, consequently looking out for his/her and his/her coworker's safety.
- **Safety training:** all workers must receive a safety, health and hygiene induction before start of labors; as well as routine training on executed activities and safety regulations.

- **Personal Protection Equipment:** the company must provide personal equipment protection which every worker is required to use.
- **First-aid:** the company must train the workers selected for first-aid duties.
- **Lighting:** the company must provide sufficient lighting for nighttime activities.
- **Air pollution and noise prevention and protection:** the company must provide implements for auditory protection and to avoid the threats of polluting agents and dust, such as work shoes, helmets, eye protection, auditory protection, safety belts, and respirators, among others.
- **Fires:** the company must provide necessary equipment for initial fire containment and workers must follow the corresponding preventive measures.
- **Signals:** the company must develop a policy of installing signals to indicate possible risks.

- **Security Supervisor:** the company must include in its organization an Industrial Security, Health, and Hygiene Department, previously approved by the developer in compliance with current regulations and contractual specifications.
- Observe Honduran regulations regarding Industrial Security, Health, and Hygiene.
- The concessionaire must count with ambulance services (internal or external), as well as first-aid on site.
- Train workers on good construction techniques, occupational safety guidelines and the mandatory use of safety implements.
- The concessionaire must place the procedures manual within the reach of every worker, in case of accidents. The manual must include accident management and the sanction for regulation non-compliance.

As a consequence of these training-awareness actions, the whole Project area must have safety and caution signals to avoid contingencies; this action must continue throughout the project duration.

The Contingency Plan must be followed to avoid bodily injuries and traffic accidents, and traffic accidents Vehicle driving policies for staff must be strictly enforced during project construction.

Flood Risks

Some areas within the projects are prone to flooding: Considering this risks the concessionaire must:

- Train workers on issues related to flood risks.
- Draft an Evacuation Plan per area which must be updated at least every 6 months.
- Identify areas prone to flooding and instability.
- Suspend activities when and incident occurs.
- Identify shelter areas.

Fire Risks

In order to guarantee effective protection against fire risks, the concessionaire must comply with the following measure amongst others:

- Count with the required fire extinction and prevention equipment. Guarantee access to firefighting equipment located in accessible places with clear signals.
- Provide a 20 lb ABC type fire extinguisher within a radius of 15 mts. from any site that holds more than 25 lts of flammable fluid or 3 kg. Or more of flammable gases are used in the site.
- Smoking is strictly forbidden in all areas that constitute a fire risk. Clear signs must be placed in these areas.

Electric Risks

In this type of Project this kind of accident is unlikely, however, it must be considered. The concessionaire must:

- Hire qualified staff for electric work. Use of tools in proper condition.
- Any areas where cabling is installed superficially or buried must be covered. The cabling must be isolated.
- Spatially locate the area where cabling is installed superficially or buried.

Use of Mechanical Equipment

This type of risk is focused on the different equipment used during the different stages of the project and the possibility of running over workers. This risk is extended to workers who transport supplies and materials.

These are some preventive measures for staff that operates mechanical equipment:

- Operation of machines and tools by qualified personnel only (verify certification). Use of equipment and machinery in good condition and with proper protection (if applicable).
- Any employee that operates heavy equipment must be aware of the functions and limitations of the equipment. He/she must also be aware of the equipment's regulation within the work site.
- Count with the correct extinguishers for the equipment being used.
- Establish an early warning system before mobilizing equipment and activating the alarm when reverse maneuvers are executed.
- Delimit the safety zones for vehicle and machinery circulation. Vehicles operating within the construction site must not exceed 10 kms/h.
- Dump trucks carrying material or wastes to and from the project area must not be overloaded.
- Workers must be trained on the Honduran Transit Law regulations.
- All trucks must have a radio communication system for fluid communication in case of emergency.
- Control posts must be set up in different locations to really information about material transport.
- Safety cones and flashing signs must be placed in dangerous areas.

1.4.1.2 Chemical Risks

These risks are presented when the workers manipulate chemical substances incorrectly, affecting worker's health through physical contact or inhaling hazardous fumes. These are some measures to be considered:

- The concessionaire must observe strict safety measures in the temporary facilities to avoid spilling of bituminous material, fires, as well as accidents.
- Storage areas must be kept free of undergrowth, debris, and any other flammable material that does not require storage.
- Train the staff regarding the appropriate handling of chemical substances and the personal protection equipment to be used.
- Provide the staff with the required personal protection equipment for the handling of chemicals according to the MSDS.
- The work sites must be equipped with bottles for eye-washing and water for situations requiring safety washing or rinsing.
- Maintenance activities in the work sites must be kept to a strict minimum. If maintenance activities are executed in the work sites, it must be on surfaces that have some sort of temporary waterproofing.
- Spilling lubricants, fuels, or other hydrocarbon products on the soil, surface water, and water collection systems is strictly prohibited.
- Containment vats for hydrocarbon products must be designed to hold 110% more than the volume of the largest tank.
- If maintenance is required for equipment that may drain fuels or lubricants, containers must be used to collect these fluids, these containers must be kept close to the spill containment site.
- Waters contaminated by petroleum products cannot be discharged without separating the contaminating agents, which implies the installation of oil and petroleum separators.
- Any vehicle used for transport and/or delivery of liquid fuel or other flammable substance must have at least one portable fire extinguisher, ABC type, 20 lbs minimum capacity

1.4.1.3 Biological Risk

The biological risks include snake and other animal bites, as well as insect bites. This condition carries greater risk due to the clearing of vegetation activities to be executed in the area of direct influence. There is also the risk of contact with poisonous, allergenic and/or irrigative vegetation. The following preventive measures must be applied in these cases:

- Require that the staff use adequate clothing to minimize skin exposure to insects and animals.
- Prohibit staff to unnecessarily disturb local wildlife.
- Train the staff on the dangers of working in this kind of areas and the pertinent preventive measures.
- Provide staff with enough insect repellent and anti-bite gloves.
- Prohibit staff to touch or collect vegetation in the work areas.
- Provide gloves for those activities where it is inevitable to have direct contact with vegetation.

1.4.2 Security Training and Education

Training is an essential element for the success of the prevention plan, the concessionaire commits to:

1. Instruct each employee to recognize and avoid unsafe conditions and the regulations that apply to their work environment to control or eliminate any danger or exposure to diseases or injuries.
2. Instruct employees required to handle or use hazardous materials. This training must focus on safe use and handling, as well as potential dangers, hygiene and the required measures for personal protection.
3. Guarantee that employees comply with regulation concerning tight or closed spaces, instruct them on the dangers involved, the necessary precautions and the use of required protection and emergency equipment. The concessionaire must comply with any specific regulation that applies to working in dangerous or potentially dangerous areas.
4. The company must keep records on workplace accidents and diseases in the site where workers usually report for duties.
5. The file must include:
 - a) A record of bodily injuries and workplace accidents
 - b) Supplementary records for each accident or disease.
6. Records must be updated and made available to authorized government representatives or other authorities.

1.4.2.1 Personal protection equipment

Supervisors must ensure that employees have the appropriate personal protection equipment and the workers are required to use them during any operation that implies exposure to dangerous, the equipment includes:

1. Feet Protection. Employees exposed to potential risks must use safety footwear. No canvas shoes or sandals are allowed in the construction site.

2. Head Protection. Employees that work in areas where there is risk of injuries due to flying objects, electrical shocks or burns must wear protective helmets.

3. Ear protection.

- a) Whenever it is not feasible to reduce noise levels or periods of exposure, ear protection must be provided.
- b) Inner ear protection devices inserted in the ear canal must be measured or prescribed individually by competent technicians. Cotton by itself is not acceptable and a protection measure.

4. Face and eye protection.

- a) Employees must be provided with protective equipment for face and eyes, when machines or operations present a potential risk of eye or face injuries, resulting from exposure to chemical or physical agents.
- b) Employees who require the use of corrective lenses must be protected by one of the following kinds of visors

- Visors with lenses that offer optic correction
- Visors that can be used over corrective lenses without altering visual adjustment
- Visors with corrective lenses mounted behind the protective glass.

5. Safety Vests

All company staff and sub-contractors must wear their respective reflective vest regardless of the job they perform.

Rules for Order and Cleanliness

The main concern of all construction works must be to focus on maintaining proper order and cleanliness in their work area to prevent environmental impacts. However, these “order and cleanliness” activities must be planned at the start of operations and be periodically verified until project completion.

3. Work areas must be free of wastes and debris of any kind for the duration of activities.
4. In workshop and storage areas, where activities and operations occur in short periods of time, debris and leftover material must be cleared from the work area as it produces fire risk.
5. The indications of the Waste Management Plan include guidelines for the management of solid, liquid, and hazardous wastes; these indications apply here as well.

1.4.2.2 Fire Prevention and Protection

The concessionaire is responsible for the development and maintenance of an effective fire protection and prevention plan in the work sites, during all phases of construction of the Tourism Corridor: Tranche Tela – La Ceiba.

Fire Protection

To guarantee effective fire protection the company must comply with the following:

4. Guarantee the availability of fire prevention and extinction equipment.
5. Keep access to firefighting equipment clear at all times.
6. Locate firefighting equipment in accessible places and signals.
7. Inspect firefighting equipment periodically and maintain it in operable conditions. Defective equipment must be replaced.
8. Train and equip a fire brigade team to assume adequate protection of portables and human lives.
9. Provide a 20 lb ABC type fire extinguisher within a radius of 15 mts. from any site that holds more than 25 lts of flammable fluid or 3 kg. or more of flammable gases are used in the site.
10. Prohibit the use of carbon tetrachloride extinguishers and other toxic volatile liquids extinguishes.

Fire Prevention

To achieve a safe management of hazardous liquids, fuels, and flammables the concessionaire must

6. Ensure that only approved containers and portable tanks are used for storage and handling flammable and combustible liquids. Metal safety containers must be used for handling and use of flammable liquids in quantities greater than a gallon. The previous exception must not be applied to flammable liquid of high viscosity which must be handled in their original containers. For less than a gallon, only the original container or metal safety cans must be used for storage and handling of flammable liquids.
7. Keep storage areas free of undergrowth, debris and other flammable materials that do not require storage.
8. Provide at least one 20 lb ABC type fire extinguisher within a distance of 5 and 20 meters from any site that holds more than 25 lts of flammable fluid or 3 kg. or more of flammable gases are used in the site.
9. Provide at least one portable fire ABC type extinguisher with capacity of 20 lbs or more for every tank truck and other vehicles used for the transport and/or delivery of fuels and other flammable liquids.
10. Prohibit smoking and the lighting of bonfires in areas used for fueling, and fuel dispensing.
11. Ensure that striking and legible signs indicate the non-smoking rule.
12. Ensure that all operators turn off their equipment's engine when fueling and not using their cell phones when fueling.

1.5 Contingency and Emergency Plan

Attention to foreseen risks should preferably be preventive; however, in case of accidents of any kind, there must be a Contingency Plan that allows responding to the described risk situations.

The main objective of the Contingency Plan is to preserve the life, health, and integrity of the project's staff and prevent or minimize soil and surface water contaminations and preserve the quality of the environment in case of emergency.

To achieve these objectives the contingency plan must include various critical elements such as major and minor accident response procedures, spill containment procedures to prevent contamination of water and soil and, in case of a spill, have the necessary measures to clean and mitigate, and attention procedures for fire outbreaks and major fires. In terms of procedure, there are routine visual inspections and planned maintenance to reduce the potential for oil and other materials spilling on the soil or water.

The following is a list of the minimum contingency measures to be adopted:

1. Work sites must have an adequate alert system, to promptly warn the staff and give first-aid to injured people;
2. There must be a safe and efficient communication system with the nearest fire department in case of emergencies out of the company's control;
3. Work sites must be equipped with a radio or phone, first-aid kits, and qualified staff; there must be a working vehicle in case of emergency at all times; there must be equipment to extinguish fires and control explosions and fuel spills.
4. In case of spills or accidents that might affect surface waters, the company must have trained staff and proper equipment and materials to take quick and effective measures.
5. All work sites must have proper equipment to remove landslides, rock movements or provide assistance in case of floods.

The Plan activities obey the following order of priorities:

- Protection of human life
- Protection of human settlements (villages)
- Prevention of contamination in bodies of water (aqueducts, rivers, streams, lakes)
- Prevention of contamination in wildlife areas

The construction company is responsible of managing its own risks, as well as prevention and response to its emergencies. In this context, the construction company will always be the main and sole responsible for the safety and health of its employees as well as the activities they develop.

Before the start of operations, the construction company must establish the necessities agreements with the Fire Department, the National Police and emergency teams the might be required in case of a contingency, with the objective of establishing mechanisms of notification and access to the corresponding sites within the work areas in case of requiring support during emergencies. Local hospitals and clinics must be informed about the properties of the hazardous wastes and materials used by the project and the type of wound or decease that may be caused by fires or explosions.

Table 8.4 presents a list of authorities that must be included in the Contingency Plan. This list includes telephone numbers in case of an emergency.

Table 0.5. Contacts for the Preparation of Contingency Plan

ENTITY	PHONE NUMBER
Transit Police	222
Preventive Police	199
Fire Department	198
Honduran Red Cross	195
Environmental Specialist	
Occupational Safety Specialist	
COPECO (Regional 1 and Regional 2)	2553-6561 / 2553-6562 2442-5820

1.5.1 Emergency Equipment

The company must prepare a list that details the type, amount and location of the equipment to be used for storage, containment, and cleaning of the work areas and construction sites. This list will include the procedures and impact minimization measures to be used when responding to a spill. The selected, measure and mitigation equipment must adjust to the characteristics of the affected terrain as well as the types and quantities of material that could potentially be spilled. The following equipment, at least, for spill containment and cleaning must be provided:

- d) Absorbents such as pads, rags, and burlap for containment and collection of spilled liquids.
- e) Commercial equipment for spills (or its functional equivalent) which are prepackaged with a wide variety of absorbents for small and large spills;
- f) Shovels and backhoes for the excavation of contaminated materials;
- g) Containers, deposits and temporary storage bags to clean and store contaminated materials

1.5.2 Equipment Maintenance and Inspection

The projects security supervisor will inspect and require maintenance of the fueling and lubricant equipment following a strict program. The company must present written documentation on the methods employed and executed activities. All containers, valves, pipes and hoses must be regularly examined to evaluate their general condition. This evaluation will identify any sign of wear that could cause a spill, as well as leakage signals (e.g. accumulated fluids). Leaks must be corrected and repaired with the utmost diligence

1.5.3 Equipment Failures

Spills may be produced as a consequence of unpredictable events like the rupture of fuel tanks, radiators and hydraulic lines. Devices with an absorption capacity of up to 20 liters can be accommodated under them operator's seat, in construction and land movement equipment.

Construction staff will be trained on the operation and maintenance of the equipment, to prevent accidental discharge or fuel, oil or lubricant spills. The staff must also be aware of laws, dispositions and regulations of environmental contamination control that apply to their jobs. Training sessions will be held with crews about the prevention of spills, these sessions must be frequent enough to guarantee learning of spill prevention measures.

Containment is the immediate priority in case of a spill; if possible, the spill must be retained in the site of occurrence.

Cleaning procedures must begin immediately upon spill containment. Under no circumstance will containment equipment be used to store contaminated material. The company must have a list of the equipment that must be used to facilitate cleaning and minimizing damages to the environment.

In case of a spill, the project must notify the emergency response team, the environmental specialist and competent authorities.

1.5.4 Action Plan

Plan The following Action Plans must be followed step by step, and in order, to respond to emergencies related to the risks identified in the Risk Prevention Plan.

1.5.4.1 General Plan

1. The employee that detects the emergency must immediately inform the Area Supervisor and the Project Supervisor.
 - a. Project Supervisor arrives to the site of the emergency to assess the situation and coordinate pertinent actions with the assistance of the Area Supervisor
2. If the Project Supervisor considers the situation can be resolved with internal resources, he proceeds to activate the Action Plan for the specific situation.
3. If the Project Supervisor considers the situation cannot be resolved with internal resources, he proceeds to notify the Security Supervisor and/or the Environmental Specialist.
 - a. The Security Supervisor and/or the Environmental Specialist coordinate activities with competent authorities and other external resources to determine the actions needed to resolve the emergency.

 - b. The Security Supervisor and/or the Environmental Specialist proceed to apply provisional measures until the arrival of external help (as long as the safety of the staff is not compromised).
 - c. The Security Supervisor and/or the Environmental Specialist, if necessary proceed to evacuate the facilities.
 - d. The Security Supervisor and/or the Environmental Specialist, upon the arrival of external help, provide the necessary information to resolve the emergency.

1.5.4.2 Fuel or Lubricant Spill

1. The employee that detects the emergency must immediately inform the Area Supervisor and the Project Supervisor.
2. The Project Supervisor arrives to the site of the emergency to assess the situation and coordinate pertinent actions with the assistance of the Area Supervisor
3. If the Project Supervisor considers the spill can be resolved with internal resources he proceeds to act in accordance to the subsequent items, if this is not the case he must then precede to point 4 of the General Plan.
4. The source of the spill must be immediately stopped or cut.
5. A fire extinguisher must be transferred to the site of the spill.
6. The project supervisor notifies the Security Supervisor and/or the Environmental Specialist of the incident and provides preliminary information about its magnitude.
 - a. The Security Supervisor and/or the Environmental Specialist, evaluates the need to coordinate actions with external resources and proceeds to it.
 - b. The Security Supervisor and/or the Environmental Specialist, depending on the incidence magnitude, evaluate the need of transferring to the site to provide support, to the Plan's activities.
 - c. The Project Supervisor coordinates spill containment using, depending on the magnitude, of containment barriers in ditches and drainages and the use of absorbent materials.

The Security Supervisor and/or the Environmental Specialist coordinate the tasks of cleaning up the spill.

7. The Security Supervisor and/or the Environmental Specialist draft the corresponding report and submit it to the developer or Project Manager.
8. The Security Supervisor and/or the Environmental Specialist make sure that the equipment and material used for spill containment that are restituted to their storage.
9. In the case of spills greater than 50 gallons, the project manager proceeds to inform competent authorities about the situation and executed actions within a 24 hour period after the incident.

1.5.4.3 Fire Outbreak

1. The Security Supervisor and/or the Environmental Specialist ensure that the equipment use for extinction is restituted in its storage place. The employee that detects the emergency must immediately notify the Area Supervisor and the Project Supervisor who must go to the site of the incident.
2. The employee that's detects the emergency takes the nearest extinguisher, foam tank or hose and proceeds to extinguish the fire outbreak; if he/she does not know how to operate the extinction system he/she must request help from other onsite staff.
3. Once the fire outbreak has been controlled, the project supervisor notifies the Security Supervisor and/or the Environmental Specialist about the incident.
4. The Security Supervisor and/or the Environmental Specialist drafts the corresponding report and submits it to the developer or Project Manager.
5. The Security Supervisor and/or the Environmental Specialist makes sure that the equipment and material used for extinction are restituted to their storage.

1.5.4.4 Fire

1. The employee that detects the emergency must immediately inform the Area Supervisor and the Project Supervisor.
2. The project supervisor notifies the Security Supervisor and/or the Environmental Specialist of the incident and provides preliminary information about its magnitude.
 - a. The Security Supervisor and/or the Environmental Specialist proceeds to coordinate assistance with the nearest Fire Department and goes to the site.

The Security Supervisor and/or the Environmental Specialist proceed to notify the Developer or the Company Manager about the incident.

3. The Project Supervisor considering the safety pf the staff, proceeds if possible, to organize extinction activities while the Fire Department Arrives
 4. Depending on the magnitude of the incident the Security Supervisor and/or the Environmental Specialist will assess the need of site evacuation and await the arrival of the fire department.
 5. Once the emergency has been contained the Security Supervisor and/or the Environmental Specialist drafts the corresponding report and submits it to the Developer or Project Manager.
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6. The Security Supervisor and/or the Environmental Specialist ensure that the equipment used for extinction is restituted to their storage location.
7. The Project Manager proceeds to inform the proper authorities of the situation and the applied containment measures, within 24 hours of the incident.

1.5.4.5 Minor Workplace Accidents (concussions and lacerations)

1. The employee that detects the emergency must immediately notify the Area Supervisor or the Project Supervisor and the First Aid Coordinator.
2. The employee that detects the emergency retrieves the first aid kit and provides the care that the injured worker requires.
3. The First Aid Coordinator goes to where the injured worker is located, assesses provided care and determines the need or not of sending the injured worker to a clinic for specialized attention.
4. If the need for specialized attention is acknowledged, the First Aid Coordinator coordinates the Security Supervisor and/or the Environmental Specialist the transfer of the affected person.
5. Once the emergency has been contained the Security Supervisor and/or the Environmental Specialist, in collaboration with First Aid Coordinator drafts the corresponding report and submits it to the Developer or Project Manager.
6. The Security Supervisor and/or the Environmental Specialist ensure that the materials from the First Aid Kit are restituted.

1.5.4.6 Minor Workplace Accidents Related to the Manipulation of Hazardous Substances

1. The employee that detects the emergency must immediately inform the Area Supervisor and the Project Supervisor and the First Aid Coordinator.
2. The employee that detects the emergency retrieves the First Aid Kit and the safety sheet (MSDS), of the chemical substance involved in the accident.
3. The employee that detects the emergency proceeds to administer first aid according to the instructions defined in the safety sheet of the chemical substance.
4. The First Aid Coordinator (who reports to the Security Supervisor), goes to where the injured worker is located, assesses provided care and determines the need or not of sending the injured worker to a clinic for specialized attention.
5. If the need for specialized attention is acknowledged, the First Aid Coordinator coordinates the Security Supervisor and/or the Environmental Specialist the transfer of the affected person. The safety sheet (MSDS), of the chemical substance involved in the accident, must be brought and given at the hospital.
6. Once the emergency has been contained the Security Supervisor and/or the Environmental Specialist, in collaboration with First Aid Coordinator drafts the corresponding report and submits it to the Developer or Project Manager.
7. The Security Supervisor and/or the Environmental Specialist ensure that the materials from the First Aid Kit are restituted.

1.5.5 Equipment and Material for Emergency Attention

The following is a list of equipment and material that must be available in the worksite during the implementation of the various Action Plans.

Once the work areas have been defined, during construction the concessionaire must prepare diagrams of the site that show the location of equipment and material for emergency control, as well as the minimum quantities that must be kept in stock.

During the construction phases of the highway the following equipment and materials must be kept on site:

- Portable Extinguishers
- Foam Fire Extinguishers
- Barriers for containment of major spills
- Barriers for containment of minor spills and absorbent pads
- Cleaning products for small fuel spills
- First Aid Kit
- Communications equipment
- Personal protection equipment for cleaning activities, including rubber and leather gloves, protective lenses, protective clothing.
- Shovels, machetes and picks.

Large plastic bags

- Flashlights

The inventory of these equipment and materials must be verified monthly.

1.6 Citizen Participation Plan

Principle 10 of the United Nations Declaration on Environment and Development, establishes that environmental issues “are managed in a better way”, with the participation of all interested citizens.

The Citizen Participation Plan has the following objectives:

8. Explain the project’s characteristics to the population in the project’s area of influence.
9. Establish dialogue and communication messages with the community benefitted by the Project.
10. Listen to the communities’ opinions and perceptions regarding the project’s potential impacts.
11. Learn the opinion of institutions and other key stakeholders through interviews.

The Citizen Participation plan has been designed to maintain effective communication in the communities within the area of socioeconomic influence and Serna, the Developer (SOPTRAVI) and the Concessionaire:

- SERNA (and/or Environmental Management Units → The Concessionaire → SOPTRAVI, the Environmental Management Unit of SOPTRAVI, through the unit chief who will serve as liaison.
- Community → The Concessionaire → SOPTRAVI, through the proper authorities only with strictly administrative problems.
 - Community → The Concessionaire → SOPTRAVI, through the SOPTRAVI Environmental Management Units, when dealing with environmental issues or social complaints. The Environmental Management Unit will notify SERNA (Natural Resources & Environment Secretariat) about the object of the quarry or the existing problem.
- The Concessionaire will notify SERNA (Natural Resources & Environment Secretariat) and/or Environmental Management Units, about events related to the units as construction advances and coordinates follow-up inspections to the Project.

In all of these cases communication must be in writing and delivered directly to the corresponding offices. In this sense, the concessionaire should establish an office of citizen participation or community relations, which must be located in an area close to the project but accessible, or within the field offices, this office must have qualified personnel (social workers or sociologists) who will be responsible to respond and receive any doubt, complaint or information request from nearby or neighboring communities.

The concessionaire must establish a mechanism to receive complaints, through a single window or a toll free telephone number, which must be answered by the same qualified staff in charge of the previously mentioned citizen participation office.

1.6.1.1 Labor Hiring Program

Considering that the new program will require skill and unskilled labor, it is recommended that the concessionaire, through its human resources office, organize a job fair according to the projects labor needs. This job fair must be promoted through massive media three months before the start of project operations.

The concessionaire's human resources office must receive resumes of possible candidates through a single window functioning during the projects execution, in order to involve or incorporate people from communities from within the area of socioeconomic influence to labor for which they are qualified or they can join new workers training programs, in collaboration with educational institutions, the Ministry of Labor and Social Security and the Honduran National Employment Service.

Finally, candidates who are duly selected and have enough qualifications to execute the required labor will be formally linked to the project with the requirements demanded by law and protected by the National Labor Regulations.

5.1.1.1 Institutional Strengthening

Considering that within the Environmental Management Program there will be an Environmental Surveillance and Control Program that implies the development of a system of environmental quality monitoring, the concessionaire in collaboration with SOPTRAVI, will hold project advanced meeting with involved institutions to familiarize them with project execution phases and facilitate their job of monitoring and follow-up.

5.1.1.2 Elements to Consider in the Citizen Participation Plan

Table 8.5, presents the elements and measures to be contemplated for the development of the Citizen Participation Plan:

Table 0.6. Citizen Participation Plan Evaluation Elements

No	Element	Measures
1	Maintain a citizen participation office managed by qualified staff to receive any doubt, complaint, or information request from the communities with the area of socioeconomic influence through a single window or a toll-free telephone line.	Record of visits, complaints, and/or requests received
2	Hold a job fair to incorporate community members from the area of socioeconomic influence to the project activities and maintain a single window to receive candidate applications during the project execution.	Number of person to be hired, by gender and age
3	Establish an agreement (with education institutions), or professionals for training on different issues.	Signing and execution of an agreement between the concessionaire and the educational institution or the professional trainers and SOPTRAVI, for an estimated period of time.
4	Incorporate local schools identified in the area of influence to an environmental education Project.	Preparation of an environmental education program

Source: The Consultant

1.7 Environmental Recovery and Abandon

Environmental recovery will take place once construction activities have ended (e.g. installation and operation of temporary facilities, extraction of material from stone quarries, use of water sources, etc.) in those sites that require it and will not be used again. In this sense, the Environmental Recovery Plan must be presented in phases, as project stages end, with a corresponding Closure Plan.

The objective of environmental recovery is the restoration of adequate conditions for the restoration of natural biological communities in the work sites (natural recovery or natural revegetation). Environmental Recovery includes the following tasks:

- Reshaping of the pre-construction terrain profile
- Erosion control
- Revegetation
- Reforestation, if necessary

The Environmental Recovery Plan must be applied to all areas not occupied with project activities and which can be recovered such as temporary facilities, borrow pits, warehouses, storage sites, parking spaces, among others. The removal of temporary facilities and machinery requires removing all surface and underground infrastructure (e.g. aqueduct pipes, sewage or drainage systems, viaducts, cabling, etc.). Once all infrastructure has been removed environmental recovery or restoration must proceed, which must include only native species for reforestation and revegetation.

Recovery activities must be monitored constantly to ensure achieving the objective without leaving behind environmental liabilities. The concessionaire is responsible for the environmental recovery plan. To this effect, the concessionaire must present its Closure Plan to the SOPTRAVI Environmental Management Unit at least six (6) months before removing any project segment. The plan must detail demobilization, cleaning, and restoration activities according to initial conditions.

1.8 Monitoring and internal evaluation of the Environmental Management Plan and Individual Management Plans

1.8.1 Objective

The objective of the Environmental Management Plan is to document the degree in which preventive and mitigation actions outlined in the Environmental Management Plan achieve their objective of minimizing negative impacts associated with the project's construction.

In order to document and prove achieved objectives, it is necessary to collect and report key information that show how environmental variables have behaved, when corrective were executed and their degree of affectivity to prevent, mitigate, and compensate identified environmental effects.

1.8.2 Special Monitoring Aspects

This section summarizes the main environmental variables that will be monitored during the project's construction, in order to gather enough information to evaluate environmental effects due to its development. This monitoring is independent from the environmental inspection required to guarantee compliance of each of the mitigation measures proposed in this plan.

A summary of monitoring activities is included in table 8.6 to facilitate reading and approval by the environmental specialist and the pertinent authorities.

Table 0.7. Project Monitoring Plan

Nº	Impact	Medium	Mitigation Measures	Monitoring Activities	Periodicity	Regulation	Responsible
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N°	Impact	Medium	Mitigation Measures	Monitoring Activities	Periodicity	Regulation	Responsible																																							
1	Contamination of Surface water during the construction of bridges, accidental fuel spills or sedimentation due to excavation. Effects on aquatic fauna	Ac and Bio	<ul style="list-style-type: none"> Management Program for Liquid and Solid Wastes Contingency program: Prevention and Control of Hazardous Substance Spills (oils, fuels, paints, etc.) 	<ul style="list-style-type: none"> Surface water quality monitoring in main waterways during the construction of every bridge upstream and downstream of the worksite. Monitoring will take place through direct field measurements and lab analysis of sediment and water samples. The water analysis includes parameters for pH^o, biochemical oxygen demand, dissolved oxygen, suspended solids, fecal matter, greases and oils and hydrocarbons. 	Surface water analysis will take place in main waterways during the construction of bridges or every three months if determined by SERNA or the Environmental Management Units	<p>Water Quality¹²</p> <ul style="list-style-type: none"> Primary regulation for Environmental Quality and quality levels for continental waters for recreational use with and without direct contact. DE. 75 de 2008. Panamá. <ul style="list-style-type: none"> Medium Risk: Fir for recreation with and without direct contact. Continental waters that allow recreational activities that do not imply prolonged exposure with the liquid nor complete skin and mucous membranes immersion. It involves only recreational activities where limbs are moistened such as sailing and fishing. Project draft that dictates environmental quality regulations for natural waters. <ul style="list-style-type: none"> 2 C Class Waters: Waters for: <ol style="list-style-type: none"> Human consumption with conventional treatment (coagulation, flocculation, sedimentation, filtering and disinfection) Risk of contamination of vegetables consumed by humans after processing or parks, gardens and fields and sports when there is direct contact. Artisan fishing Risk recreation according to norms. Cattle watering. World Bank recommended standards <table border="1"> <thead> <tr> <th rowspan="2">PARAMETER</th> <th colspan="3">Limit Values for Natural Water</th> </tr> <tr> <th>D.E 75 DE 2008 Mean Risk</th> <th>Class 2 C</th> <th>Limit BM - IFC</th> </tr> </thead> <tbody> <tr> <td>PH</td> <td>6.5-8.5</td> <td>6.0 – 9.0</td> <td>-</td> </tr> <tr> <td>Suspended Solids (mg/L)</td> <td><50</td> <td>-</td> <td>50</td> </tr> <tr> <td>Turbidity (NTU)</td> <td>50-100</td> <td><100</td> <td>-</td> </tr> <tr> <td>Dissolved oxygen (mg/L)</td> <td>6-7</td> <td>>5</td> <td>-</td> </tr> <tr> <td>Biochemical oxygen demand (mg/L)</td> <td>3-5</td> <td><5</td> <td><50</td> </tr> <tr> <td>Greases and oils (mg/L)</td> <td><10</td> <td><10</td> <td>10</td> </tr> <tr> <td>Hydrocarbons(mg/L)</td> <td>0.05-2.0</td> <td><50 µg/L</td> <td>-</td> </tr> <tr> <td>Fecal matters (UFC1/100 mL)</td> <td>251-450</td> <td><1000</td> <td>-</td> </tr> </tbody> </table>	PARAMETER	Limit Values for Natural Water			D.E 75 DE 2008 Mean Risk	Class 2 C	Limit BM - IFC	PH	6.5-8.5	6.0 – 9.0	-	Suspended Solids (mg/L)	<50	-	50	Turbidity (NTU)	50-100	<100	-	Dissolved oxygen (mg/L)	6-7	>5	-	Biochemical oxygen demand (mg/L)	3-5	<5	<50	Greases and oils (mg/L)	<10	<10	10	Hydrocarbons(mg/L)	0.05-2.0	<50 µg/L	-	Fecal matters (UFC1/100 mL)	251-450	<1000	-	The Concessionaire Environmental specialist Tourism Corridor Supervision
PARAMETER	Limit Values for Natural Water																																													
	D.E 75 DE 2008 Mean Risk	Class 2 C	Limit BM - IFC																																											
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Fecal matters (UFC1/100 mL)	251-450	<1000	-																																											

¹² Since there is no Honduran Regulation, it is proposed to use World Bank and Panama City regulations which include: Primary regulation for Environmental Quality and quality levels for continental waters for recreation and no direct contact use. DE. 75 de 2008 y the Regulation Project to dictate the environmental quality for Natural Water.

N°	Impact	Medium	Mitigation Measures	Monitoring Activities	Periodicity	Regulation	Responsible																				
2	Deterioration of quality or air contamination Foul odor and dust generation	At	<ul style="list-style-type: none"> Preventive vehicle and construction equipment maintenance program (adequate mechanical state is required) Vehicular Emissions Compliance Control Program Dust and Foul Odor Emission control Program 	<ul style="list-style-type: none"> Air quality monitoring must be done every six months in 4 control points located in the tranche (sensitive receivers) Site selection must consider the location of the most sensitive receivers, the activities of most impact on air quality; climatic variables that might influence the effects of dispersion and possible barriers or natural area conditions. Adequate maintenance of heavy equipment Maintenance Record 	<p>Every six months or according to the pertinent authority.</p> <p>In 4 sites or according to the pertinent authorities as established in regulations</p>	<p>Air: Since there is no local regulation for air quality control, it is suggested to use the World Bank and EPA guidelines.</p> <p>World Bank parameter guidelines NO₂, SO₂ y PM₁₀, y EPA 2003 para CO</p> <table border="1"> <thead> <tr> <th>PARAMETER</th> <th>PERIOD</th> <th>MAX LIMIT</th> </tr> </thead> <tbody> <tr> <td rowspan="2">NO₂ – World Bank 2007.</td> <td>Annual</td> <td>40 µg/m³</td> </tr> <tr> <td>1 hour</td> <td>200 µg/m³</td> </tr> <tr> <td rowspan="2">SO₂ – World Bank 2007.</td> <td>24 hours (guide value)</td> <td>20 µg/m³</td> </tr> <tr> <td>10 minutes ¹³</td> <td>500 µg/m³</td> </tr> <tr> <td rowspan="2">CO - EPA 2003. National Ambient Air Quality Standards.</td> <td rowspan="2">1 hour</td> <td>9 ppm</td> </tr> <tr> <td>10 mg/m³</td> </tr> <tr> <td>PM 10 – World Bank 2007.</td> <td>24 hours</td> <td>50 µg/m³</td> </tr> </tbody> </table> <p>Regulation for Control of Contaminating Gases and Smoke Emissions from motor vehicles</p>	PARAMETER	PERIOD	MAX LIMIT	NO ₂ – World Bank 2007.	Annual	40 µg/m ³	1 hour	200 µg/m ³	SO ₂ – World Bank 2007.	24 hours (guide value)	20 µg/m ³	10 minutes ¹³	500 µg/m ³	CO - EPA 2003. National Ambient Air Quality Standards.	1 hour	9 ppm	10 mg/m ³	PM 10 – World Bank 2007.	24 hours	50 µg/m ³	The Concessionaire Environmental specialist Tourism Corridor Supervision
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PM 10 – World Bank 2007.	24 hours	50 µg/m ³																									
3	Impact to worker's health	SE	<ul style="list-style-type: none"> Dust and Foul Odor Emission control Program 	<ul style="list-style-type: none"> Monitoring of breathable particles 	<p>Depending on the number of workers and exposure Every six months</p>	<p>Total Breathable Particles Occupational Safety and Health Administration" (OSHA/ USA, max value is 5 mg/m³)</p>	The Concessionaire Environmental specialist Tourism Corridor Supervision)																				

¹³ Según estudio de la OMS, se recomienda que no se supere una concentración de SO₂ de 500 µg/m³ durante periodos con una duración media de 10 minutos.

N°	Impact	Medium	Mitigation Measures	Monitoring Activities	Periodicity	Regulation	Responsible														
4	Increase in noise levels	At	<ul style="list-style-type: none"> Preventive vehicle and construction equipment maintenance program <p>Work Schedule: avoid as much as possible work during night hours or rest periods; if unavoidable notify affected populations in advance</p>	<ul style="list-style-type: none"> Field supervision of applied measures Records of Personal Protective equipment Photographic record of staff wearing protective equipment Noise monitoring plan in 4 control points where the most sensitive receivers are located in the tranche. 	Noise monitoring in the in 4 points during the Selective rehabilitation and maintenance Stage and then every six months	<p><u>Environmental Noise</u></p> <p>The impacts of noise cannot exceed the levels established in the following table, nor can the derive in a maximum increase of background noise levels 3 db in the nearest receiver.</p> <table border="1"> <thead> <tr> <th colspan="3">NOISE LEVELS GUIDE ¹</th> </tr> <tr> <th rowspan="2">RECEIVER</th> <th colspan="2">ONE HOUR L_{AQ} (DBA)</th> </tr> <tr> <th>Daytime 07:00 – 22:00</th> <th>Nighttime 2:00 – 07:00</th> </tr> </thead> <tbody> <tr> <td>Residential, Institutional, educational²</td> <td>55</td> <td>45</td> </tr> <tr> <td>Industrial, Commercial</td> <td>70</td> <td>70</td> </tr> </tbody> </table>	NOISE LEVELS GUIDE ¹			RECEIVER	ONE HOUR L _{AQ} (DBA)		Daytime 07:00 – 22:00	Nighttime 2:00 – 07:00	Residential, Institutional, educational ²	55	45	Industrial, Commercial	70	70	The Concessionaire Environmental specialist Tourism Corridor Supervision
NOISE LEVELS GUIDE ¹																					
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	Daytime 07:00 – 22:00	Nighttime 2:00 – 07:00																			
Residential, Institutional, educational ²	55	45																			
Industrial, Commercial	70	70																			
5	Impact to worker's health	SE	<ul style="list-style-type: none"> Provide auditory protection equipment for workers exposed to levels higher than 80 dBA. 	Occupational Monitoring <ul style="list-style-type: none"> Noise and control measuring 	Monitoring every six months and then every six months according to exposure conditions	<p><u>Workplace Noise</u></p> <p>General Regulation of Preventive Measures for Accidents and Professional Diseases</p> <p>Maximum Level: 85dB maximum exposure</p>	The Concessionaire Environmental specialist Tourism Corridor Supervision														
6	Soil contamination due to the spill of fuels, oils, greases, and/or lubricants.	T/S	<ul style="list-style-type: none"> Liquid and Solid Waste Management Program Contingency Program 	<ul style="list-style-type: none"> Draft of the report Photographic record of spills and cleanup activities See Section 8.5.4.2. Application of vehicle and oils and grease best practices established by law 	Permanent during Selective rehabilitation and maintenance Construction Operation	Regulation for the installation and operation of Service Stations, Fuel Deposits and Alternative or Substitute Products. (Agreement No. 1011, La Gaceta 18/04/2009).	The Concessionaire Environmental specialist Tourism Corridor Supervision														

N°	Impact	Medium	Mitigation Measures	Monitoring Activities	Periodicity	Regulation	Responsible
7	Increase in public sanitation issues due to the generation of solid and liquid wastes	SE	<ul style="list-style-type: none"> Liquid and Solid Waste Management Program 	<ul style="list-style-type: none"> Record of monthly disposal payments to the municipality Record of waste disposal activities and amount of disposed material Record of toilet cleaning 	Permanent during Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Health Code – Decree N°65 – 1991 Environmental Health Regulation – Agreement N° 0094-1997 Agreement for Solid Waste Management – Agreement N°378-2001 	The Concessionaire Environmental specialist Tourism Corridor Supervision

Medium: Ac. = Aquatic (Water); At. = Atmosphere (Air); T/S = Terrestrial or Soil; Bio = Biologic (Flora and Fauna); SE = Socioeconomic y C = Cultural.

Source: The consultant

1.9 Implementation and Evaluation Timeline

Dates must be assigned for the mitigation measures that must be executed during each project phase. Some of these measures have specific dates and others continue throughout all project phases. The implementation timetable can be visualized in Table 8.7:

Table 0.8. Timetable for the Execution of Mitigation Measures

Medium	Impact	Mitigation Measure	Responsible Entity	Frequency	Stage	Regulating Entity
Aquatic	1a. Hydrological regime alteration	<ol style="list-style-type: none"> Under no circumstance shall the extraction activities endanger the freshwater conduction systems or the terrains adjacent to the project. Surveillance and Control Program: delimit the area of direct influence to avoid damage to other areas. Avoid the formation of pools and depositing material on the natural water runoff sources and avoid the stacking of materials higher than 2 meters 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA Health Secretariat
	1b. Phreatic Level alteration	<ul style="list-style-type: none"> Surveillance and Control Program: delimit the area of direct influence to avoid damage to other areas. Follow the technical guidelines of INHGEO MIN for floodplain soils. 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA Health Secretariat
	1c. Deterioration of quality or air contamination	<ul style="list-style-type: none"> Liquid and Solid Wastes Management Program Contingency Program: Prevention and Control of Hazardous Substance Spills (oils, fuels, paints, etc.) 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA Health Secretariat
Atmospheric	2a. Deterioration of quality or air contamination	<ol style="list-style-type: none"> Construction Equipment and Vehicles Preventive Maintenance Plan Vehicular Emissions Compliance Program 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA DNT
		<ul style="list-style-type: none"> Air quality monitoring plan in 4 control points where the most sensitive receivers are located in the tranche. 	The Concessionaire Environmental specialist	Every six months	Selective rehabilitation and maintenance Construction Operation	
	2b. Dust and foul odor generation	<ol style="list-style-type: none"> Dust and Foul Odor Emission control Program 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	

Medium	Impact	Mitigation Measure	Responsible Entity	Frequency	Stage	Regulating Entity
	2c. Increase in noise levels	6. Construction Equipment and Vehicles Preventive Maintenance Plan <ul style="list-style-type: none"> Work Schedule: Avoid nighttime or rest period operations or notify affected communities in advance E Provide auditory protection equipment to workers exposed to noise levels over 80 dBA. 	The Concessionaire Environmental specialist Security supervisor	Permanent	Selective rehabilitation and maintenance Construction Operation	
		<ul style="list-style-type: none"> Noise Monitoring Program 	The Concessionaire Environmental specialist Security supervisor	Every six months	Selective rehabilitation and maintenance Construction Operation	
		<ul style="list-style-type: none"> Labor vibrations monitoring plan 	The Concessionaire Environmental specialist Security supervisor	Every six months	Selective rehabilitation and maintenance Construction Operation	
Terrestrial	3a. Effects on soil due to compacting or leveling	Surveillance and Control Program: Delimit the area of direct influence to avoid intervention in other areas.	The Concessionaire Environmental specialist	Permanent	Construction	<ul style="list-style-type: none"> Municipal Environmental Units Environmental Management Units SOPTRAVI SERNA
	3b. Quality deterioration or soil contamination	7. Contingency Program: avoid, if possible, the accidental spill of contaminating substances on the soil. 8. Prevention and Control of contaminating substance spills (oils, fuels, paints, etc.) Liquid and Solid Waste Management Program	The Concessionaire Environmental specialist Security supervisor	Permanent	Selective rehabilitation and maintenance Construction Operation	
	3c. Extraction or loss of soil	<ul style="list-style-type: none"> Surveillance and Control Program: Delimit the area of direct influence to avoid intervention in other areas. 	The Concessionaire Environmental specialist	Permanent	Construction	
	3d. Increased soil erosion processes	<ul style="list-style-type: none"> Erosion control and slope stability measures 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA
	3e. Reduction in fertility and use of soil	9. Reforestation, Arborization and Revegetation Plan	The Concessionaire Environmental specialist		Construction	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA

Medium	Impact	Mitigation Measure	Responsible Entity	Frequency	Stage	Regulating Entity
Biotic	4a. Loss of vegetation cover	<ul style="list-style-type: none"> Surveillance and Control Program: Delimit the area of direct influence to avoid intervention in other areas. 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA ICF
	4b. Alteration or elimination of terrestrial and aquatic fauna	<ul style="list-style-type: none"> Surveillance And Control Program: Avoid predation and the alteration of species habitats 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA ICF
	4c. Increased risk of running over local fauna	<ul style="list-style-type: none"> Place animal crossing signs; Speed regulation 	The Concessionaire Environmental specialist	Once	Operation	<ul style="list-style-type: none"> Municipal Environmental Units SOPTRAVI Environmental Management Units SERNA
Socioeconomic	5b. Modification to local traffic	<ul style="list-style-type: none"> Work Schedule: Execute installation of road signals proposed in Transit Management Program Coordination between DNT and Dissemination And Communication Plan: Maintain a permanent campaign for communication of affected areas 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA DNT
	5e. Increased risk of contagious diseases	<ul style="list-style-type: none"> Health and Hygiene Program 	The Concessionaire Environmental specialist Security supervisor	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA DNT
	5f. Increase in the risk of workplace accidents	<ul style="list-style-type: none"> Risk and Accident Prevention Program Maintain first-aid kits and ambulance services Record of worker's training on first aid measures 	The Concessionaire Environmental Specialist Security supervisor	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA Health Secretariat Ministry of Labor
	5h. Increase in public sanitation issues and the generation of soils and liquid wastes	<ul style="list-style-type: none"> Collection and Disposal of Solid Wastes Program Portable Toilets for Company workers cleaned at least twice a week. 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> Environmental Management Units SOPTRAVI SERNA Health secretariat

Medium	Impact	Mitigation Measure	Responsible Entity	Frequency	Stage	Regulating Entity
	5i. Disturbances to surrounding communities	<ul style="list-style-type: none"> • Work plan: Establish a work Schedule that avoids affecting daily community activities Work Schedule: Execute installation of road signals proposed in Transit Management Program • Coordination between DNT and • Dissemination And Communication Plan: Maintain a permanent campaign for communication of affected areas 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> • Environmental Management Units • SOPTRAVI • SERNA Health secretariat
	5j. Changes in the use of soil	<ul style="list-style-type: none"> • Agreement selection in the Municipal Zoning Plan • Request change in the use of soil by the municipality 	The Concessionaire Environmental specialist	Permanent	Planning	<ul style="list-style-type: none"> • Environmental Management Units • SOPTRAVI • SERNA Health secretariat
Landscape related	7a. Alteration or changes to the landscape and environment aesthetics	<ul style="list-style-type: none"> • Execute planned installation of road signals in the Traffic Management Program. • Surveillance and Control Program: Delimit the area of direct influence to avoid intervention in other areas. 	The Concessionaire Environmental specialist	Permanent	Selective rehabilitation and maintenance Construction Operation	<ul style="list-style-type: none"> • Environmental Management Units • SOPTRAVI • SERNA Health secretariat

Source: The consultant

2 ENVIRONMENTAL MANAGEMENT PLAN UPDATES

It is recommended to draft Environmental Measures Compliance Reports (Known As Icma) every six months, these reports gather the results obtained from program execution and the plans defined in the Environmental Management Product, as well as the analysis of the results obtained from the implementation of each measure.

The Environmental Management Plan must be continually revised during the Selective rehabilitation and maintenance stage, for an estimated period of 10 months, and 12 months for the construction phase and 6 months after the execution of programmed measures. This period can be extended if, in light of the obtained results, environmental authorities consider it necessary. The Environmental Management Plan can be adapted to the activities executed during the operation and maintenance stage.

Modifications must be approved by the concessionaire, who will proceed to notify SERNA (Natural Resources & Environment Secretariat) for final approval.

3 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION COST

Table 10.1 presents the detail and flow of the costs for the Environmental Management Plan.

Tabla 0.9. Costos de implementación del PGA

No.	Programa del PMA	Entidad Responsable de Ejecución	Frecuencia	Etapa	Costo Unitario / año	Costo Total [US\$]
1	Programa de Manejo de Campamentos e Instalaciones Provisionales	Concesionario	Permanente	Ejecución	\$ 9,651	\$ 9,651
2	Programa de Mantenimiento Preventivo de Vehículos y Equipo de Construcción	Concesionario	Permanente	Ejecución	S/C	\$ -
3	Programa de Cumplimiento de Control de Emisiones Vehiculares	Concesionario	Permanente	Ejecución	S/C	\$ -
4	Plan de Manejo de Desechos	Concesionario	Permanente	Ejecución	\$ 5,677	\$ 5,677
5	Plan de Prevención de Riesgos	Concesionario	Permanente	Ejecución	\$ 6,813	\$ 6,813
6	Plan de Comunicación y Divulgación	Concesionario	Permanente	Ejecución	\$ 2,839	\$ 2,839
7	Programa para el Control de Emisiones de Polvo y malos olores	Concesionario	Permanente	Ejecución	S/C	\$ -
8	Programa de Salud e Higiene para la Prevención de Enfermedades Contagiosas	Concesionario	Permanente	Ejecución	\$ 5,677	\$ 5,677
9	Programa de Manejo de Tráfico	Concesionario	Permanente	Ejecución	S/C	\$ -
10	Programa de Vigilancia y Control	Concesionario	Permanente	Ejecución	\$ 8,516	\$ 8,516
11	Plan Mon. Amb. - Monitoreo de la Calidad del Aire (ambiental y laboral)	Concesionario	Semestral ⁽²⁾	Ejecución	\$ 10,000	\$ 10,000
			Anual	O/M	\$ -	\$ -
12	Plan Mon. Amb. - Monitoreo del Ruido (ambiental y laboral)	Concesionario	Semestral ⁽²⁾	Ejecución	\$ 7,500	\$ 7,500
			Anual	O/M	\$ -	\$ -
13	Plan Mon. Amb. - Monitoreo de Vibraciones (laboral)	Concesionario	Semestral ⁽²⁾	Ejecución	\$ 5,000	\$ 5,000
			Bianual	O/M	\$ -	\$ -
14	Programa de Selección de Proveedores Locales y Regionales	Concesionario	Mensual	Ejecución	S/C	\$ -
15	Plan de Educación Ambiental	Concesionario	Permanente	Ejecución	\$ 4,542	\$ 4,542
16	Plan de Contingencia y Emergencia	Concesionario	Permanente	Ejecución	\$ 4,542	\$ 4,542
17	Plan de Participación Ciudadana	Concesionario	Permanente	Ejecución	\$ 2,271	\$ 2,271
18	Plan de Recuperación Ambiental y de Abandono	Concesionario	Permanente	Ejecución	\$ 2,839	\$ 2,839
19	Programa de Auditoría Ambiental	Concesionario	Semestral ⁽²⁾	Ejecución	\$ 3,406	\$ 3,406
						\$ 79,273

(2) El análisis de la calidad del aire, ruido y vibraciones se realizará de forma semestral como mínimo.

S/C: Sin costo para el PGA, ya que está incluido en las acciones que debe cumplir el Concesionario.

Fuente: Elaboración propia.

ANNEXES

Annex 1. Consultant's Affidavit

Annex 2. Original or Legalized Copy of the Proof of License of the Consultant

Annex 3. Legalized copy of the Consultant's Registration

a. F-02 Form – Evaluation of the Environmental Impact Significance (Matrix)

b. Environmental Management Plan

**c. Document of Society
Constitution, individual service
provider or legal status (N/A)**

d - Property or lease deed for the location where the Project will be developed, duly stamped and registered (N/A)

**e - Certificate issued by the Municipal
Environmental Unit (known in Spanish as UMA)
which certifies the condition of the Project (N/A)**

F- Publication (in a renowned newspaper) notification of receipt by this Secretariat, five days before the presentation of this form and other requirements

**(Insert the newspaper
publication here)**

G- Breakdown of the global investment amount for the activity, work or project

The capital costs for the project are estimated as follows:

Section	Length (Km)	Basic (US\$)			Optional (US\$)	
		Construction costs	Tuning	Bridges	Construction costs	Tuning
El Progreso - Camalote	6	8 831 457,25			9 615 255,66	
Camalote - Chindongo	6	5 951 217,09	691 324,09			
Chindongo - El Aguacate	18,1	20 938 870,12	2 160 339,25			
El Aguacate - La Mulera	21,6	24 497 796,57	2 002 394,23			
La Mulera - Tela	16,9		1 490 618,26		16 334 406,80	
Santa Rita - El Progreso	26		5 148 198,42	5 500 732,63	29 467 495,33	
La Barca - Santa Rita	11				10 421 908,86	
San Pedro - El Progreso	17,5		3 044 748,76	2 988 500,00		
Tela - La Ceiba	95					5 677 334,73
		3 010 967	726 881	424 462		
Implementing Environmental Management Plan		1 000 000,00	-			
Transfer Utility Networks		1 000 000,00	1 000 000,00			
Join And/Or Transfer Of Fiber Optic Networks		1 000 000,00	-			
Studies And Designs		886 000,00	-		110 000,00	475 000,00
Weighing Stations And Tolls		3 000 000,00				
Total (Usd 2012)		70 116 308,03	16 264 504,01	8 913 694,63	65 949 066,65	6 152 334,73

Source: Client

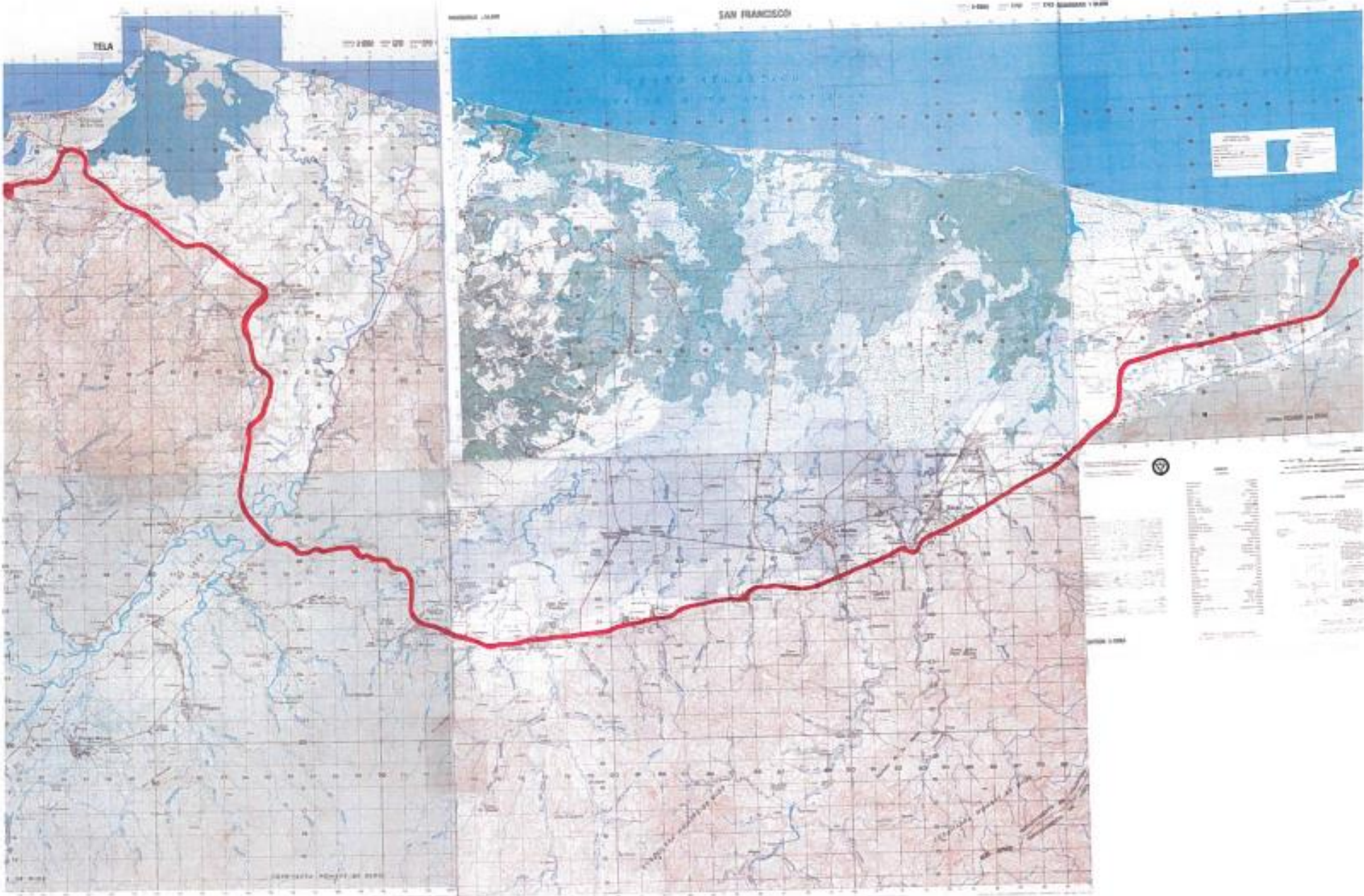
The basic design of the site, is based on a general plan for the activity, work or project to be developed (N/A)

Copy of the map sheet in which the AP is located

Category 3 Project: Honduras Tourism Corridor

Tranche: Tela-La Ceiba

Environmental Management Plan



**Certificate issued by the
consultant responsible for the
Geotechnical and Civil Engineer
Situation of the Terrain (N/A)**

**Certificate issued by the consultant - regarding
the Geological, Geomorphological,
Hydrogeological and Natural Threats (N/A)**

**Certificate issued by the consultant
responsible for the archeological
situation of the terrain where the project
is located**

CERTIFICATION

The General Secretary of the Honduran College of Civil Engineers of Honduras (CICH) hereby certifies that the company Ingeniería y Ambiente de Sula is duly registered in this College and according to our records is allowed to execute Consulting Activities, being represented by Engineer Carol Yisel Perdomo CICH No. 02293, with both parties being up-to-date with the corresponding obligations.

As a consequence, the company Ingeniería y Ambiente de Sula S. de R.L. de CV is allowed to participate.

This college declares that any other firm associated with Ingeniería y Ambiente de Sula is not allowed to intervene separately in any bidding process unless participating jointly.

Honduran Institute of Anthropology and History

TECHNICAL OPINION No. 055-SGP-2013

The Deputy Manager of the Heritage Office of the IHAH certifies that it received Technical Inspection Report No. 30-RN, on July 10th of 2013, as presented by the Northern Regional IHAH - representative Aldo Zelaya, and his archaeologist assistant, Melvin Evenor Fuentes, as requested by Carol Perdomo from Ingeniería y Ambiente de Sula for the project Tourism Corridor coordinated by the Transportation and Civil Works Secretariat (SOPTRAVI).

The inspection was done in the following road tranches where the highway will be expanded to have four lanes:

La Barca-El Progreso with an extension of 36.5 kms

El Progreso-Tela with an extension of 68.8kms

These tranches can be found in the following map sheets:

2661 III Rio Lindo

2662 VI Villanueva

2662 III El Progreso

2662 II Ocote Paulino

In the tranches of San Pedro Sula-Progreso (17,5 kms) and Tela-La Ceiba (97 kms) there was no inspection because the dirt road will not be expanded and no crevasses will be built, there will only be repair of pot holes, general maintenance and cleaning over a terrain that has been asphalted or paved.

According to the report, since the inspection took place on an existing road "there was an ocular inspection of the tranche and camp areas that were previously used for maintenance and parking of machinery", there was also "a review of archaeological records in the Northern Regional project laboratory for site identification".

Having reviewed the records of previous archaeological projects no damage to infrastructure was found in these tranches and the inspection did not show "any archaeological site in danger of being damaged or destroyed in the expansion of the road from La Barca to La Ceiba", as per the quoted report.

In tenor of articles 1,2,3,9,19 and 22 of the Law for the protection of Cultural Patrimony of the Nation, Decree 200-97, the Deputy Direction of Patrimony finds:

1. There is no presence of archaeological sites or remains in danger of being damaged or destroyed in the areas for maintenance and expansion of the Tourism Corridor, tranches San Pedro Sula-Progreso, La Barca- El Progreso, El Progreso-Tela, and Tela-La Ceiba.
2. The responsible for the Tourism Corridor Project are required to notify the IHAH in case of any archaeological or paleontological finding in the area.
3. This formal opinion is subject to change if an archeological or paleotological site or remains are found.

Signed in the City of Tegucigalpa, Municipality of the Central District, on the 30th of July of 2013.

[SIGNATURE AND SEAL – ROLANDO CANIZALES VIJIL]

