
EIA Technical Review Guidelines: Tourism Related Projects

Volume I Part 2 Example Terms of Reference

Regional Document prepared under CAFTA DR Environmental Cooperation Program to Strengthen Environmental Impact Assessment (EIA) Review



Prepared by CAFTA-DR and U.S. Country EIA and Tourism Experts with support from:



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EXCELLENCE FOR CAFTA-DR PROGRAM



This document is the result of a regional collaboration under the environmental cooperation agreements undertaken as part of the Central America and Dominican Republic Free Trade Agreements with the United States. Regional experts participated in the preparation of this document, however, the guidelines do not necessarily represent the policies, practices or requirements of their governments and organizations.

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EIA Technical Review Guidelines: Tourism-Related Projects

Volume I Part 2 Example Terms of Reference

The EIA Technical Review Guidelines for Tourism-Related Projects were developed as part of a regional collaboration to better ensure proposed tourism-related projects undergoing review by government officials, non-governmental organizations and the general public successfully identify, avoid, prevent and/or mitigate potential adverse impacts and enhance potential beneficial impacts throughout the life of the projects. The guidelines are part of a broader program to strengthen environmental impact assessment (EIA) review under environmental cooperation agreements associated with the “CAFTA-DR” free trade agreement between the United States and five countries in Central America and the Dominican Republic.

The guidelines and example terms of reference were prepared by regional experts from the CAFTA-DR countries and the United States in both the government organizations responsible for the environment and tourism and leading academics designated by the respective Ministers supported by the U.S. Agency for International Development (USAID) contract for the Environment and Labor Excellence Program and grant with the Central America Commission for Environment and Development (CCAD). The guidelines draw upon existing materials from within and outside these countries and from international organizations and do not represent the policies, practices of any one country or organization.

The guidelines are available in English and Spanish on the international websites of the U.S. Environmental Protection Agency (U.S. EPA), the International Network for Environmental Compliance and Enforcement (INECE), and the Central American Commission on Environment and Development (CCAD): www.epa.gov/oita/ www.inece.org/ www.sica.int/ccad/ Volume 1 contains the guidelines with a glossary and references which track with internationally recognized elements of environmental impact assessment; Volume 2 contains Appendices with detailed information on tourism, requirements and standards, predictive tools, and international codes; and Volume 1, part 2 contains example Terms of Reference cross-linked to Volumes 1 and 2 for resort/hotel/condo developments, concessions, and coastal and marine projects respectively for use by the countries as they prepare their own EIA program requirements.



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EXAMPLE TERMS OF REFERENCE (TORs)

Terms of Reference are used by countries to describe both general and specific requirements for the preparation of an environmental impact assessment, in this instance tailored to proposed projects for tourism. Volume 1, Part 2 contains example Terms of Reference (TORs) cross-referenced to Volumes 1 and 2 of the “EIA Technical Review Guideline for Tourism Projects”. The Example Terms of Reference are printed separately to facilitate use by countries as they prepare their own EIA program requirements for tourism projects.

Three terms of references (TORs) are provided below as examples for countries to use directly or draw upon for their own TORs and guidelines for tourism projects, including: 1. Hotel and Resort Developments, 2. Concessions, and 3. Marine and Coastal Tourism. For each there are two sections to the TOR: PART A is an overview describing general expectations for the preparation of the environmental impact assessment. PART B addresses detail related to the specific type of project. All sections are important guidance for preparation of adequate EIA documents for tourism projects, and the TORs are cross-referenced to relevant sections of the Guidelines. The three terms of reference are designed to be applied in combination based on the nature of the proposed project and expectations for related tourism activities whether or not the related activities are to be developed, owned and/or operated by the same parties. For example, resorts located on or near the coast are designed so that tourist may avail themselves of recreational activities along the coast and it is therefore assumed that it is relevant to assess the coastal impacts of the foreseeable uses of the coast by patrons of the resort. Similarly, if a resort is proposed but is intended to utilize an existing or new proposed golf course, those impacts should be addressed within the same EIA, and if a resort or hotel complex is located to support eco-tourism at an adjacent national or local protected area, even if the resort itself does not sponsor trips to explore those resources, those impacts must be taken into account. The test for relevance is the “but for” test, whether the proposed project would be proposed and viable in the absence of these related activities and whether it is foreseeable that the resources can be affected.

The details in the example TORs address each element of the EIA analysis and documentation including what should be included in the description of the proposed project and alternatives; environmental setting; assessment of impacts; mitigation and monitoring measures; an environmental management plan; a signed commitment statement; and key supporting materials, each aligned with the physical, biological and social-economic-cultural environments.

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1 TERMS OF REFERENCE (TOR) FOR HOTEL/RESORT DEVELOPMENTS

A. OVERVIEW

These terms of reference (TOR) describe the minimum requirements for the preparation of the Environmental Impact Assessment (EIA) for proposed hotel and resort developments. Both the TOR and the cross referenced “*EIA Technical Review Guidelines for Tourism Projects*” should be used to establish minimally acceptable conditions for satisfying the requirement to submit an EIA. There are three different TORs for tourism projects. Part A, Overview, is common to all three TORs but Part B is tailored respectively to: 1 Hotel and Resort Developments, 2. Concessions, and 3. Marine and Coastal Tourism. The three TORs are structured to facilitate mixing and matching as appropriate to the purpose and need for a proposed project and alternatives.

The basic format for the EIA document that should be followed is:

- Table of Contents
- Acronyms and Abbreviations
- Executive Summary
- General Information
- Project and Alternatives Description
- Environmental Setting
- Assessment of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Commitment Statement
- Annexes

In general, the EIA must identify and address:

- Applicable environmental standards, norms, and requirements set forth at the international, national, regional and/or local levels including those designed to meet the objectives of resource management and/or land use plans that may be in effect in and around the jurisdiction(s) in which the proposed project is located. In the absence of such standards, the EIA should establish a set of benchmarks that can be used in the analysis and selection of an alternative. The Guidelines identify standards in use by various countries and international organizations in Appendix C.
- Public/Stakeholder concerns related to impacts in and around the proposed project and alternatives at least for stakeholders within the geographic scope of potential impact. The project proponent should document specific steps taken to engage the public and other stakeholders, and engage these publics as early as possible before undertaking to prepare the EIA. Concerned publics include: local governments, persons living and working in the vicinity of the project, those with interests in resources that may be affected i.e., indigenous peoples, and those concerned about protected areas and prime agricultural lands. A summary of public outreach activities, audience, number of persons, organizations involved, concerns raised, responses to comments and actual copies of written comments received should be included in the Annex.
- All relevant plans related to the proposed tourism project, for example, engineering and site preparation plans, operations and decommissioning/closure, environmental management, and mitigation in whatever form these may take.
- All phases of the project from feasibility studies to site preparation to operations to closure and also plans to expand capacity at the current or adjacent sites.

- Alternative approaches to meeting the purpose and need for the proposed tourism project, including siting, designing, constructing, operating and closing the project firstly to avoid and prevent, or secondly to reduce or minimize adverse or improve beneficial environmental or socioeconomic impacts. The EIA should assess as appropriate the impacts of a range of reasonable and technically feasible alternatives as well as the proposed project. The alternatives to the project must include a “no action” alternative, as well as consideration of best practices that may not otherwise have been incorporated in the proposed project. Other alternatives should be developed as needed to avoid or minimize significant adverse impacts associated with the proposal.
- Direct, indirect and cumulative impacts and their significance level.
- Uncertainty and how that uncertainty will be addressed through monitoring and contingency plans as may be needed to reduce risk of adverse impacts in the future.
- Specific commitments, including who is responsible, what will be done, when and how it will be monitored, reported and audited to confirm that commitments are met.

Finally, a key part of the TOR is obtaining a legally binding commitment from the project proponent that the approved EIA will be implemented as presented. Such a commitment adds to the legal enforceability of the outcomes of the EIA process.

B. DETAILS FOR HOTEL/RESORT DEVELOPMENT PROJECTS

0 Table of Contents

A general Table of Contents for the Environmental Impact Assessment (EIA) shall be provided. The Table of Contents shall be organized in such a manner as to facilitate the use of the EIA by reviewers and project implementers. EIAs for larger projects should have a more detailed Table of Contents than those for smaller projects. At a minimum, the Table of Contents shall include the following:

- Acronyms and Abbreviations
- Executive Summary
- General Information
 - Objectives and Justification
 - Project Proponents
 - Project Team
 - Legal and Regulatory Framework
- Project and Alternatives Description
- Environmental Setting
 - Physical Environment
 - Geologic Resources
 - Soil Resources
 - Water Resources
 - Air and Climate
 - Noise and Vibration
 - Aesthetic Resources
 - Biological Environment
 - Vegetation/Flora
 - Aquatic and Terrestrial Wildlife/Fauna
 - Ecosystems: Terrestrial, Wetlands, Aquatic, Marine
 - Endangered or Threatened Species and Habitat
 - Protected Areas
 - Social-Economic-Cultural Environment
 - Socio-Economic Conditions
 - Infrastructure
 - Cultural, Archeological, Ceremonial and Historic Resources
 - Land Use
- Assessment of Impacts to resources described in the Environmental Setting
- Mitigation and Monitoring Measures
- Environmental Management Plan
 - Overview of Environmental Management Plan Organization and Policy
 - Project-wide Mitigation Plan
 - Project-wide Monitoring Plan
 - Management of Other On- or Off-Site Pollution Controls and Infrastructure
 - Contingency Plans
 - Performance-related Contingency Plan
 - Natural Disaster Risk Response Plan
 - Other Risk Response Plans
- Signed Commitment Statement
- Annexes
 - Public Consultation
 - Public Consultation Plan
 - Summary of Public Outreach Activities
 - Summary of Responses to Comments
 - Copies of Written Comments
 - Technical Supporting Materials
 - Maps and Plans, in the sequence mentioned in the EIA document
 - Charts and Figures
 - Details about predictive modeling used, calculations and assumptions
 - Special Studies
 - References

1 Acronyms and Abbreviations

All acronyms and abbreviations used in the EIA must be clearly and succinctly defined and described in this section. This will relieve the reader of the need to search for the first occurrence of a word and the citing of the acronym or abbreviation in the text.

2 Executive Summary

A general summary of the EIA shall be provided in this section. The summary shall be written using a vocabulary that can be easily understood by the public. It shall include at least the following information about the project from the EIA:

- Objectives and Justification
- Location
- Project Proponents
- Project Description
- Other Project Alternatives
- Environmental Setting
- Evaluation of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Issues raised by stakeholders and any outstanding issues

3 General Information

3.1 Objectives of and Justification for the Proposed Project

- 3.1.1 **Objectives:** A statement of the general and specific objectives (purpose) of the proposed project, including whether it is a new project, an expansion of an existing project (e.g., increase in land area or increase in visitor capacity) or modernization of an existing operation.
- 3.1.2 **Justification for the Project:** Provide a justification for the proposed project (need) highlighting the benefits to surrounding communities and economic development of the region and country.

3.2 Project Proponents

- 3.2.1 Names, addresses, telephone numbers, and applicable legal documentation of proponents (including developers, major equipment suppliers if part of project team, shareholders and providers of financing, and representatives).
- 3.2.2 Names and contact information for responsible parties within the organization.
- 3.2.3 Financial viability of the company (including a certified banking statement indicating that the company is financially stable and reputable).
- 3.2.4 Bonding requirements and proof of ability to meet bonding requirements sufficient to cover the anticipated costs of environmental management during all phases, as well as the costs, by a third party, of decommissioning and long-term post-closure liabilities associated with the project.

3.3 Project Team

This section shall provide information on the multidisciplinary team that prepares the EIA. The types of professionals included in the team shall be appropriate to the type of project and the type of environment in which the project is located and may include (but not be limited to) engineers, architects, biologists, geologists, hydrologists, air quality experts, archeologists, anthropologists, sociologists and economists. The information provided for each member of the EIA project team includes the following:

- 3.3.1 Names, addresses and registry numbers of contractors.
- 3.3.2 Names, contact information, qualifications and registry numbers of key personnel involved in the study; as well as an affidavit indicating their area of participation.
- 3.3.3 List of professionals/experts participating in the EIA, their areas of expertise, degrees, experience, professional registrations and stamps, seals and signatures.

3.4 Legal and Regulatory Framework

This section of the EIA shall define the legal framework under which the EIA is being completed listing and summarizing requirements or alternatives used as benchmarks, and evidence of non-applicability or compliance including:

- 3.4.1 Information that demonstrates rights and access:

C.2 Documentation of Purpose and Need

C.3.1 General Information

G.6 Financial Assurance

C.3.1 General Information

- 3.4.1.1 Ownership with written authorization
- 3.4.1.2 Governmental authorization (if required)
- 3.4.1.3 Period of lease/permit/concession agreement
- 3.4.1.4 Maps showing the lease/permit/concession area
- 3.4.2 Applicable environmental standards, norms and requirements set forth at the international, national, regional and/or local levels
 - 3.4.2.1 In the absence of such standards, identify a set of benchmarks used in the analysis
- 3.4.3 Required regulatory approvals and/or permits for all stages and their status
- 3.4.4 Applicable land use requirements (demonstrate conformity and compliance with applicable plans)
- 3.4.5 Applicable tourism strategies and plans – national, regional, and local
- 3.4.6 Applicable natural resource management or protected area management plans and responsible agency(ies) (demonstrate conformity and compliance with all applicable plans)

4 Project and Alternatives Description

The project proponent shall submit a full description and location of the proposed project and reasonable alternatives including ancillary facilities and operations such as the camp/housing for construction and operation phases, borrow and disposal areas, sanitary services, waste disposal and transportation infrastructure, etc. as addressed through 4.1 to 4.3 below. It shall include at a minimum:

4.1 Location

The general location of the project and associated activities in terms of:

- 4.1.1 Political-administrative location (region, district, town or other relevant political-administrative units) with accompanying location map
- 4.1.2 Means of site access – i.e., by air, river, road, train or vehicle
- 4.1.3 Latitude and longitude of project area
- 4.1.4 Maps of project area at a scale of no less than 1:50,000 or as required by the regulatory agency
 - 4.1.4.1 Project plat plan and location on a fold-out 11" X 17" page.
 - 4.1.4.2 Indicate the project area and the direct and indirect areas of influence for the physical, biological and social-economic-cultural impacts
 - 4.1.4.3 All drawings should present scale and key coordinates or benchmarks as latitude/longitude, Universal Transverse Mercator (UTM) coordinates, or local survey plate that can be cross-referenced to latitude/longitude or UTM coordinates
- 4.1.5 Has the area of the project ever been a tourist destination before?
 - 4.1.5.1 If so, show other tourist facilities in the area on the maps, including those under construction and, if known, those in the design phase

4.2 Summary of Proposed Project and Alternatives

All project alternatives that are reasonable and feasible and meet the purpose and need for the proposed project shall be identified, summarized in this section, and evaluated in the EIA as appropriate. In addition to the proposed project, such alternatives include alternative locations, alternative site configuration of elements of the project, alternative size, and alternative plans for construction, operation and decommissioning of the project including best practices that may avoid and/or reduce the adverse impacts to the physical, biological or social-economic-cultural environments.

If the project area or the buffer zone of the project area for an alternative is in an ecologically fragile area, the description of the alternative must include a clear justification for not opting for another site. Identify which alternatives will be carried through the analysis in the EIA and the basis for that decision.

4.3 Project and Alternatives Details

The EIA shall provide specific project details for the proposed project and each alternative as identified in subsections 4.3.1 through 4.3.8. The level of detail presented shall be the same for the proposed project and each alternative evaluated. The following project details shall be provided:

- 4.3.1 Type and nature of the project
 - 4.3.1.1 Type (resort, hotel, camping, day use)
 - 4.3.1.2 Overview of all proposed facilities and activities and their relationship

C.3.1 General Information

C. Project and Alternatives Description

C.3.2 Overall Project Description Information

C.3.5 Maps, Diagrams, Site Design and Plan

C.3.2 Overall Project Description Information

C.3.4 Project Details

C.3.5 Project

		Alternatives
4.3.1.3	A detailed drawing showing access points, layout of all project components including on-site roads, walkways and paths, existing structures, topography and natural features such as water bodies, wetlands and geologic structures	C.3.8 Hotel, Resort and Restaurant Facilities Table C-3
4.3.1.4	A summary table showing the type, quantity and size of each component	
4.3.1.5	Expected life of operation	
4.3.1.6	Anticipated use: maximum, minimum and average by month and season for: <ul style="list-style-type: none"> • Day use • Overnight stays 	
4.3.1.7	Recreational, leisure and adventure uses by visitors of surrounding natural and cultural resources <ul style="list-style-type: none"> • Type of use (type of activities, motorized or non-motorized, etc.) • Anticipated use (maximum, minimum and average by month and season) 	
4.3.2	Principal project facilities Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.	
4.3.2.1	Hotel (including cabins, cabanas and other overnight visitor quarters) <ul style="list-style-type: none"> • Number of rooms by: <ul style="list-style-type: none"> ○ Structure (if more than one structure will house rooms) ○ Number and types of beds (single or double occupancy beds) ○ In-room or shared bath/toilet facilities ○ Other in-room facilities (kitchens, kitchenettes, pools, jacuzzies, etc.) • Locations, sizes and types of common bath/toilet facilities • Reception area • Hallways, causeways, stairs, elevators, etc. 	
4.3.2.2	Restaurant(s) and bar(s) <ul style="list-style-type: none"> • Seating capacity • Hours of service • Kitchen facilities 	C.4.2.3 Restaurants
4.3.2.3	Conference center <ul style="list-style-type: none"> • Number and size of meeting rooms • Locations and sizes of toilet facilities • Hallways, causeways, stairs, elevators, etc. 	C.3.8 Hotel, Resort and Restaurant Facilities
4.3.2.4	Entertainment venue (indoor or outdoor) <ul style="list-style-type: none"> • Size and seating capacity • Locations and sizes of toilet facilities 	
4.3.2.5	Shopping area (mall, arcade, craft market, etc.) <ul style="list-style-type: none"> • Number and size of stores or booths • Locations and sizes of toilet facilities • Hallways, causeways, stairs, elevators, etc. 	C.3.8 Hotel, Resort and Restaurant Facilities
4.3.2.6	Camping <ul style="list-style-type: none"> • Number, type (tent or recreational vehicle) and sizes of sites • Site amenities (tables, benches, barbeque, fire pits, electrical hookups, etc.) • Common facilities <ul style="list-style-type: none"> ○ Reception/office ○ Common room(s) ○ Bath/toilet facilities ○ Water taps ○ Sewage dump stations (for recreational vehicles) 	C.3.8 Hotel, Resort and Restaurant Facilities
4.3.2.7	Swimming pool(s) <ul style="list-style-type: none"> • Size (dimensions, water capacity) • Water treatment • Bath/toilet facilities 	C.3.8 Hotel, Resort and Restaurant Facilities

- 4.3.2.8 Gym/Exercise room
 - Size
 - Types of equipment
 - Bath/toilet/sauna/steam room/massage facilities
- 4.3.2.9 Athletic courts (tennis, basketball, raquet ball, etc.)
 - Types, numbers and sizes
 - Surface material
 - Fences
- 4.3.2.10 Golf course
 - Number of holes
 - Length, width and layout of each fairway (included maintained ruff)
 - Size and location of each tee, green and hazard
 - Vegetation (tees, fairways, roughs, greens, landscaping, undisturbed [natural])
 - Cart paths
 - Widths and layout
 - Surface material
 - Erosion control
 - Vegetative management
 - Irrigation (including grey water systems if applicable)
 - Fertilization
 - Pest control
 - On-site support facilities (clubhouse, cart storage, cart repair, equipment storage, toilets, bar and/or restaurant [include in 4.3.2.2], etc.)
- 4.3.2.11 Dock for visitor arrival or recreational activities
 - Types of uses
 - On-site facilities (equipment storage, toilets, bar and/or restaurant [include in 4.3.2.2], etc.)
- 4.3.2.12 Dredging (if applicable)
 - Legal authorization for the dredging
 - Name of water body to be dredged
 - Dimensions of area to be dredged
 - Map showing extent of dredging operations
 - Longitudinal and transversal cross-sections of the area to be dredged
 - Operation description
 - Frequency
 - Operational hours
 - Time table for dredging
 - Equipment Roster, specifying type and quantity by: size, motor size, and fuel requirements for each type of dredging equipment
- 4.3.2.13 Developed beach
 - Beach uses
 - On-beach structures (recreational equipment rental/storage, bath/toilet facilities, bar, restaurant [include in 4.3.2.2] lifeguard towers, sun shades, etc.)
 - Breakwaters and shoreline erosion protection
- 4.3.2.14 Walking trails
 - Widths and layout
 - Surface material
 - Erosion control
- 4.3.3 Onsite support facilities

Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.

 - 4.3.3.1 On-site walkways
 - Widths and layout

C.3.8.2 Golf Course Operations

C.9 Marine and Coastal Table C-5

C.4.2.2 Dredging Waste

- Surface material
- Lighting (if applicable)
- Erosion control
- 4.3.3.2 On-site laundry (number and size of washing machines and dryers and other equipment)
- 4.3.3.3 Staff housing
 - Number of rooms by:
 - Structure (if more than one structure will house rooms)
 - Number and types of beds (single or double occupancy beds)
 - In-room or shared bath/toilet facilities
 - Other in-room facilities (kitchens, kitchenettes, pools, jacuzzies, etc.)
 - Locations, sizes and types of common bath/toilet facilities
 - Cafeteria [include in 4.3.2.2],
 - Common areas
 - Hallways, causeways, stairs, elevators, etc.
- 4.3.3.4 Storage areas and warehouses
 - Locations
 - Sizes
 - Materials to be stored
- 4.3.3.5 Parking lots
 - Locations
 - Sizes
 - Lighting
 - Materials (permeability)
- 4.3.3.6 Repair shops
 - Activities
 - Locations
 - Sizes
- 4.3.3.7 Fuel stations
 - Commercial or for operator use only
 - Locations
 - Number, size and configuration of tanks (buried or above ground, leak protection, etc.)
- 4.3.3.8 Electrical energy
 - Consumption, including energy conservation measures
 - Source – offsite
 - Transmission lines (if necessary)
 - Substation (if necessary)
 - On-site power generation power
 - Type
 - Emissions and noise controls (if applicable)
 - On-site distribution (routes, overhead or buried)
- 4.3.3.9 Water supply
 - Requirements (m3/day), including conservation measures
 - Rights
 - Sources
 - Treatment
 - Distribution
- 4.3.3.10 Waste handling and disposal
 - Sewers
 - Wastewater treatment
 - Quantity
 - Type
 - Discharge
 - Solid waste
 - Quantity (kg/day and m3/day), including waste reduction measures
 - Collection

Table C-11

C.4.1 Water and Sanitation Facilities

Table C-6

Table C-8

C.4.2 Solid and Hazardous Waste

- Separation (if any)
- Disposal
- 4.3.3.11 Green spaces/landscaping
 - Vegetation types
 - Vegetative management
 - Irrigation (including grey water systems if applicable)
 - Fertilization
 - Pest control
- 4.3.3.12 Fencing
- 4.3.4 Access and transportation
 - 4.3.4.1 Roads
 - Identify all new and existing roads to be used (including closed roads that will be reopened, if applicable)
 - Traffic volume, operating speeds and trip times
 - Closed roads that will be reopened
 - Detailed information on any access, on-site and recreational activity roads to be constructed or upgraded
 - Location
 - Timing of construction
 - Road surface and shoulder width and barriers
 - Grade
 - Construction methods including clearing and grubbing
 - Construction materials
 - Compaction
 - Stream and wetland crossings and associated designs
 - Animal crossings
 - Sedimentation and erosion prevention and control structures and practices
 - Stabilization methods for cuts and fills
 - Typical elevations for each type and situation of road displaying construction materials, levels of compaction and erosion and sedimentation features
 - Location and size (area and volume of material) of borrow pits
 - Lighting (where applicable)
 - Operation
 - Closure plan (if applicable)
 - Traffic volume, operating speeds and trip times
 - Dust control for construction and operation
 - Maintenance
 - Roster for construction and maintenance equipment, specifying type and quantity by size, motor size, and fuel requirements
 - 4.3.4.2 Other transport systems (if applicable)
 - Airstrip
 - Length and width
 - Surface material
 - On-site facilities
 - Rail transport – Same as for Roads with the addition of:
 - Tightest curves
 - Track construction materials
 - Turnouts and sidings
 - Railroad communications and signaling
 - Waterways
 - Location, design, construction and operation of docks
 - Rosters of boats, specifying type and quantity by: size, motor size, and fuel requirements
 - Maintenance
- 4.3.5 Best Practices
 - Description of standard best practices to be incorporated into the project.
- 4.3.6 Construction phase and timetable

Table C-9

**C.3.7 Transportation:
Roads, Pathways,
Air Strips, and Boat
Facilities**

Table C-2

- 4.3.6.1 Schedule for each phase of construction for all project and ancillary facilities (including temporary structures) including, but not limited to:
 - Mobilization
 - Road construction and improvements
 - Land clearing
 - Blasting
 - Erosion and sediment control
 - Excavation and subgrade preparation
 - Foundation preparation
 - Concrete work
 - Construction or installation of each project facility
 - Stabilization of disturbed areas
- 4.3.6.2 A GANTT or critical path management chart for the entire project, from start to finish
- 4.3.6.3 Borrow and fill material
 - Locations from which fill material will be sourced
 - Locations where fill material will be placed on-site
 - Locations where fill and other construction material will be temporarily stockpiled/stored
 - Borrow and spoil disposal
- 4.3.6.4 Key areas (related to environmental sensitivity/importance) that will remain undisturbed during construction (waterways, wetlands, forested areas and other “green space,” etc.)
- 4.3.6.5 Erosion control structures such as:
 - Temporary diversions for waterways
 - Erosion control barriers
- 4.3.6.6 Equipment
 - Equipment Roster, specifying type and quantity by size, weight, motor size, and fuel requirements for each piece of equipment or machinery used in each activity
 - Transportation mobilization and mobilization frequency
 - Machinery and equipment mobilization routes to be used, as well as the features of the ways on which they will be transported, including a map of routes, as applicable, and mobilization.
- 4.3.6.7 Labor during construction
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
- 4.3.6.8 Raw materials to be used for construction
 - Give a complete list of the raw materials and construction materials to be used, indicating the amounts per day, month, and the storage means
 - Include an inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.6.9 Construction camp (if applicable)
Description of the camp including but not limited to:
 - A map showing all facilities at a legible scale appropriate to the size of the project
 - Buildings by type (use) and size
 - Roads
 - Electrical transmission lines and/or substation
 - Drainage
 - Water supply and distribution
 - Distribution system
 - Use (m³/day)
 - Rights
 - Sources

**C.3.6 Details on
Construction
Procedures
Table C-1**

**C.6 Manpower and
Local Purchases**

- Waste handling and disposal components
 - Sewers
 - Wastewater treatment
 - Solid waste facilities
- Energy generation and use requirements
- Closure or transition from construction camp to onsite employee housing
- 4.3.6.10 Decommissioning of temporary structures including measures for returning the area to pre-construction features
- 4.3.7 Operation phase
 - 4.3.7.1 Description of how the project would operate (seasonally, monthly, daily, hourly, as appropriate)
 - 4.3.7.2 Operation information
 - Roster of equipment and machinery to be used during operation, specifying type and quantity by size, weight, motor size, and fuel requirements for each activity
 - Labor during operation
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
 - Overall energy requirements and sources
 - Raw materials to be used for operation
 - List of the raw materials to be used, indicating the amounts per day, month, and the storage means
 - Inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.8 Closure and decommissioning plan

If it becomes clear that closure will be required, or when the project nears the the end of its service life, the project operator shall contact the proper regulatory agency(ies) to obtain the environmental guidelines to carry out the closure or decommissioning.

 - 4.3.8.1 The project description shall include at least a general Restoration and Closure Plan, recognizing that terms of closure may be very different when this phase approaches
 - 4.3.8.2 The description of restoration measures should include the size of the area to be restored as well as concurrent, temporary and final restoration measures to be used and their schedules. For each measure include:
 - Area to be addressed
 - Timing and schedule for executing measures
 - Equipment and structure removal or conversion
 - Remedial measures, including success indicators and contingency measures if initial efforts are unsuccessful

C.6 Manpower and Local Purchases

C.7 Closure

5 Environmental Setting

Based on information available from the literature, government and special studies or other sources, the EIA shall provide information on environmental setting for the different types of physical, biological and social-economic-cultural environments for the current situation, important trends and predicted situation in the absence of the proposed project. All sources of data must be cited in the EIA when and where they are used. Indicate the direct and indirect and cumulative impact areas of influence for physical, biological, and social-economic-cultural impacts and basis for defining area. This section shall include at a minimum, the following information:

D. Environmental Setting
Table D-1

Physical Environment

5.1 Geologic Resources and Hazards

- 5.1.1 Cross sections of the geology including soil horizons
 - 5.1.1.1 Geologic characteristics at all project structure locations and in the area of

D.2 Physical Environment

- influence.
- 5.1.1.2 Geological map of the project area and area of influence at a scale of 1:10,000.
Submit a map of the area displaying all characteristics described.
Include geological profiles and cuts, as well as stratigraphic columns.
- 5.1.2 Topography and slope conditions and geomorphology
- 5.1.3 Seismicity and stability characteristics
- 5.1.3.1 Indicate the general seismic and tectonic features of the surrounding areas:
- Seismic sources close to the project area
 - Seismic history
- 5.1.3.2 Volcanic activity (must be provided by all the projects that are located within a radius of 30 km from an active volcanic emission center)
- Indicate the general volcanic features of the area near the site
 - Historical eruptions
 - Period of recurrence
 - Type of eruptions
 - Affected areas and high risk areas
- 5.1.3.3 Describe project areas susceptible to soil liquefaction; planned, active, and abandoned mines; karst terrain; and areas of potential ground failure, such as subsidence, slumping, and land sliding

5.2 Soil Resources

The EIA shall describe baseline soil resources, and make use of maps, tables and accompanying narrative text to describe the soils at the project site and along new or reconditioned access routes associated with the project and included in the EIA.

- 5.2.1 Types, capacity and uses
- 5.2.2 Fertility and potential uses of the land for agriculture
- 5.2.3 Stability and permeability
- 5.2.4 Erosion and sedimentation potential
- 5.2.5 Quantity and quality available for revegetating and restoring the disturbed area at time of closure

5.3 Water Resources

- 5.3.1 Surface water
- 5.3.1.1 Names and locations on maps of all permanent and intermittent streams, rivers, wetlands, lakes and reservoirs within the area of influence
- 5.3.1.2 Flow (only necessary if water source will be surface water or if wastewater will be discharged to surface water)
- The monthly minimum, mean and maximum recorded flows in m³/s of the river at the diversion point
 - Location of gauging stations where data were gathered to derive the curves
 - 2-, 10-, 25-, 50- and 100-year runoff events and 100-yr floodplain for streams and rivers
- 5.3.1.3 Seasonal fluctuations in area and volume of wetlands, lakes and reservoirs
- 5.3.1.4 Delineation of watersheds and water drainage pattern in the area of influence using cadastral/aerial/remote sensing satellite imageries (map)
- Runoff characteristics of watersheds
- 5.3.1.5 Inventories of consumptive and non-consumptive use
- 5.3.1.6 Surface water balance (only necessary if water source will be surface water)
- Existing uses by type and volume
 - Capacity
- 5.3.2 Groundwater
- Provide a map and identify and describe aquifers and underground waters adjacent to the project, indicating the depth of the water table along with trend data:
- 5.3.2.1 Hydrogeologic characteristics of the project site including fuel storage areas, wastewater discharge areas, and golf courses (vadose zone and

D.2.1 Geology and Soils

D.2.1 Geology and Soils

D.2.2 Water Resources

D.2.2.1 Surface Water

D.2.2.2 Marine Waters

D.2.2.3 Groundwater

- aquifers)
 - Water table levels (dry and rainy season)
 - Flow regime
 - Flow direction
 - Influences of geologic structures (faults, contacts, bedrock fracturing, etc) and surface water bodies
- 5.3.2.2 Location and characteristics of all existing springs and wells in the area of influence (on topographic map)
 - Flow/yield data for each spring and well (including water levels in wells)
 - Depth and construction information for each well
 - Existing uses by type and volume
 - Capacity available
- 5.3.2.3 Groundwater recharge data
- 5.3.2.4 Groundwater potential yield (only necessary if water source will be groundwater)
- 5.3.3 Water quality (only necessary if project will discharge wastewater, includes irrigation, or will use fertilizers and pesticides on landscaped areas)
 - 5.3.3.1 Existing water quality data
 - Locations of all water quality monitoring stations in and around the project area (with direction and distance from the site)
 - Water quality data for each station for those parameters likely to be affected by project construction, operation or maintenance
 - Physical, chemical and biological water quality characteristics, including water temperature and dissolved oxygen concentrations
 - 5.3.3.2 Supplemental sampling and analysis (if existing data is not adequate to characterize water quality)
Sampling and Analysis Program in annex
 - Proposed locations of representative monitoring stations upstream and downstream of proposed project activities
 - Monitoring program design with at least a year of baseline data being collected
 - Parameters (including as appropriate, physical, chemical and biological)
 - Frequency of collection
 - Analytic methods
 - 5.3.3.3 Surface water and groundwater standards that apply to the project
 - Current uses
 - Standards for current uses (in the absence of such standards, identify a set of benchmarks used in the analysis)

5.4 Air and Climate

Baseline information for air resources shall be collected for at least one year or as required by the regulatory agency and shall include at a minimum the following:

- 5.4.1 Climate and meteorology
 - 5.4.1.1 Source of data (meteorological station(s) from which climatological data have been obtained)
 - 5.4.1.2 Temperature variations
 - 5.4.1.3 Relative humidity
 - 5.4.1.4 Solar radiation and evaporation rates
 - 5.4.1.5 Rainfall (total precipitation, rainfall intensity, and duration by month)
 - 5.4.1.6 Wind Rose (Wind direction and speed, 24 hourly data)
 - 5.4.1.7 Statistical analysis of the data
 - 5.4.1.8 Risk of high impact storms, storm surges, hurricane levels, tropical storms frequency and seasonality

5.5 Noise and Vibration

Present a description of the noise and vibration levels for receptors near where noise generating activities of the project may occur. The EIA shall include:

- 5.5.1 Location of monitoring stations
- 5.5.2 Daytime and night time noise levels (measured in decibels)

D.2.3 Air and Climate

D.2.4 Noise and

5.5.3 Inventory of existing noise sources

5.6 Aesthetic and Visual Resources

- 5.6.1 Photos presenting baseline panoramic views of the project site from potential viewpoints
- 5.6.2 Viewsheds or other aesthetic or landscape resources
- 5.6.3 Existing sources of light contamination

Biological Environment

The EIA shall provide detailed information on the location and condition of ecosystems in and around the project area in the form of narrative, maps and tables, including the following:

5.7 Vegetation/Flora

- 5.7.1 Vegetative mapping of terrestrial and wetland habitats (aquatic and marine if appropriate) for project area and areas affected by the project (e.g., project site and areas around new roads)
- 5.7.2 Species and structure (abundance, density, status, plant communities, presence of invasive species, etc.)

5.8 Aquatic and Terrestrial Wildlife/Fauna

- 5.8.1 Fish and Aquatic Resources
 - 5.8.1.1 Identification of fish, mussel, macroinvertebrate and other aquatic species
 - Spatial and temporal distribution
 - Species life stage composition
 - Standing crop
 - Age and growth data
 - Spawning run timing
 - Extent and location of spawning, rearing, feeding and wintering habitat
- 5.8.2 Wildlife Resources
 - 5.8.2.1 Species (including status, i.e., endemic, migratory, exotic, endangered, threatened, keystone, etc.), life history, and seasonal use
 - 5.8.2.2 Breeding areas
 - 5.8.2.3 Mating and brooding areas
 - 5.8.2.4 Migratory corridors (if applicable)
 - 5.8.2.5 Important wildlife use areas (roosts, clay licks, etc.)

5.9 Ecosystems: Terrestrial, Wetlands, Aquatic, Marine

Much if not all that may be needed to address the environmental setting for terrestrial, wetlands, aquatic and/or marine ecosystems may have been covered in Sections 5.7 and 5.8. This section is not intended to duplicate that information; rather, it should integrate the information to ensure that the structure and function of each ecosystem is adequately presented.

5.10 Endangered or Threatened Species and Habitats

Sections 5.7 and 5.8 should identify all species in the project area. This section should highlight all endangered and threatened species and critical habitat that potentially occur in the vicinity of the project.

5.11 Protected Areas

Identify on maps the specific locations and boundaries of relevant national parks, sanctuaries, reserves, etc., as well as any areas proposed for protection. Provide a brief narrative description of each area.

Social-Economic-Cultural Environment

5.12 Socio-Economic Conditions

Identify nearby human settlements including the following information for each settlement:

- 5.12.1 Population (size, gender and age distribution)
- 5.12.2 Cultural characteristics (religion, ethnic composition, languages spoken, etc.)
- 5.12.3 Economic activities (employers, employment and incomes)
- 5.12.4 Tax base
- 5.12.5 Crime rates
- 5.12.6 Literacy rates
- 5.12.7 Community organizations

Vibration

C.2.5 Aesthetic Resources

D.3 Biological Environment

D.3.1 Flora

D.3.2 Fauna

D.3.3 Ecosystems

D.3.4 Endangered or Threatened Species and Habitats

D.3.5 Protected Areas and Sensitive Ecosystems

D.4 Social-Economic-Cultural Environment

D.4.1 Socio-Economic Conditions and

5.12.8 Public Health and Safety

- 5.12.8.1 Diseases in the project area (including the sources of data and the methodology used to collect and analyze the data)
- 5.12.8.2 Level of emergency services and access to clinics, doctors and hospitals
- 5.12.8.3 Existing practice for assessment of occupational health

5.12.9 Skills, services and goods availability in the communities

5.13 Infrastructure

For each human settlement identified in subsection 5.12, describe the infrastructure in or serving the settlement, including the following information:

5.13.1 Transportation infrastructure

- 5.13.1.1 Roads – Location and condition of all existing roads in the project area that may be used by the project or tourists coming to the project
 - Surface materials
 - Erosion and sediment control
 - Maintenance programs (what, when and whom)
 - Description of anticipated third-party improvements (government or entity other than the proponent)
 - Traffic capacity, patterns and densities
 - Safety levels and current circulation issues

5.13.1.2 Airports and air strips – Locations, conditions, capacities, current uses and trends

5.13.1.3 Other transportation infrastructure as applicable such as rail, bus, pipelines for fueling, harbors for cruise ships, and marinas for boats – Locations, conditions, capacities, current uses and trends

5.13.2 Public health infrastructure

- 5.13.2.1 Drinking water supplies and treatment,
- 5.13.2.2 Wastewater treatment and management
- 5.13.2.3 Solid and hazardous waste management and treatment

5.13.3 Communications infrastructure

- 5.13.3.1 Types of communications systems
- 5.13.3.2 Types of transmission (wired or wireless)
- 5.13.3.3 Locations of transmission lines (if applicable)
- 5.13.3.4 Locations of microwave towers and/or antennae (if applicable)

5.13.4 Energy infrastructure

- 5.13.4.1 Types of energy
- 5.13.4.2 Sources including location and description of generating facilities in the area of influence
- 5.13.4.3 Transmission lines and/or pipelines
- 5.13.4.4 Fuel storage facilities

5.14 Cultural, Archeological, Ceremonial and Historic and Resources

Identify all cultural, archaeological, ceremonial and historic resources within the area of influence, including the following information:

- 5.14.1 Data and maps relating to archeological, cultural, ceremonial, and historic sites in the direct vicinity of the project
- 5.14.2 Information on indigenous people or other traditional cultures, if any

5.15 Land Use

Describe actual and potential land use showing location, size and proximity within and surrounding the project area, including land use maps, and to extent possible, integrated into one map.

5.15.1 Population centers, including information and locations of

- 5.15.1.1 Schools
- 5.15.1.2 Cemeteries
- 5.15.1.3 Churches
- 5.15.1.4 Other public buildings
- 5.15.1.5 Housing (including housing density)
- 5.15.1.6 Commercial areas

5.15.2 Agricultural lands

5.15.3 Forested lands

5.15.4 Protected areas (including but not limited to)

Resources

D.4.2 Infrastructure Systems and Equipment

D.4.2.1 Transportation Infrastructure

D.4.2.2 Public Health Infrastructure

D.4.2.3 Communications Infrastructure

D.4.2.4 Energy Infrastructure

D.4.3 Cultural, Archeological, Ceremonial and Historic Resources

D.4.4 Land Use

- 5.15.4.1 National parks
- 5.15.4.2 Wildlife refuges
- 5.15.5 Wetlands and mangroves
- 5.15.6 Other environmentally sensitive areas
- 5.15.7 Tourism and recreation areas
 - 5.15.7.1 Recreation facilities
 - 5.15.7.2 Eco-cultural-tourist locations
- 5.15.8 Culturally sensitive areas
- 5.15.9 Flood plains and water bodies
- 5.15.10 Coastal zones
- 5.15.11 Other land uses as appropriate

6 Assessment of Impacts

The EIA shall provide information on potential impacts (direct, indirect and cumulative) and the magnitude and frequency of potential impacts on physical, biological, social-economic-cultural resources resulting from construction, operation and closure of the proposed project and alternatives. The assessment shall use standardized predictive methods, such as models, to determine the specific range of impacts on environmental and socio-economic resources. The EIA shall identify which impacts are significant and the criteria used to make this judgment. Critical data input from project description and environmental setting analysis projecting the conditions in the environmental setting in the absence of the proposed project shall be used as the baseline upon which potential impacts are forecast. The EIA shall also identify sources of data used in the analysis and the uncertainties associated with the outputs of each method used.

Physical Impacts

6.1 Geologic Resources and Hazards

Potential impacts to geologic resources and potential effects on project structures shall be described including but not limited to the following:

- 6.1.1 Geologic hazards and potential effects on project structures
- 6.1.2 Changes in topography and drainage patterns
- 6.1.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.2 Soil Resources

Potential impacts to soil resources shall be described. The analysis shall include, but not be limited to the following:

- 6.2.1 Soil quality
 - 6.2.1.1 Contamination
 - Salinization due to irrigation
 - Use of pesticides and chemical fertilizers
 - 6.2.1.2 Impacts on use
- 6.2.2 Erosion, slope alteration, vegetation removal and drainage patterns
 - 6.2.2.1 Models for soil erosion should be included using methods like USLE, defining the areas with high erosion potential
 - 6.2.2.2 Sediment accumulation and transport
 - 6.2.2.3 Sediment and hazardous waste removal and disposal
- 6.2.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.3 Water Resources

Potential impacts to surface water and groundwater shall be described. The analysis shall include but not be limited to the following:

- 6.3.1 Geomorphology
 - 6.3.1.1 Location of all stream or wetland crossings by access roads.
 - 6.3.1.2 Modification/diversion in the existing drainage pattern
 - 6.3.1.3 Bank erosion (surface water discharges, stream crossings and dredging)
 - 6.3.1.4 Potential for increased flash flooding
- 6.3.2 Quantity
 - 6.3.2.1 Impact of water use on surface water and groundwater, including specific

E. Potential Impacts

F. Assessing Impacts

F.1 Overview of Using Predictive Tools for an EIA

F.2 General Approaches for Prediction of Impacts

Appendix C

E.2 Physical Environment

E.2.1 Geology, Soils and Ocean Topography
Table E-1

F.3 Soils and Geology Impact Assessment Tools

E.2.2 Water Resources
Table E-2

- uses
 - Model results
 - Water table levels
 - Well production
 - Spring and stream flows
- 6.3.3 Quality
 - 6.3.3.1 Runoff, erosion and sedimentation from roads, disturbed areas and stream crossings
 - Sources
 - Receiving waters
 - Concentrations
 - Physical parameters
 - Chemical parameters
 - Biological parameters
 - 6.3.3.2 Description of impact from wastewater discharges
 - 6.3.3.3 Chemical contamination from herbicides used for vegetative maintenance (fertilizers and pesticides)
 - 6.3.3.4 Spills and accidents
 - Chemical, hazardous waste and fuel spills
- 6.3.4 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.4 Air and Climate

Potential impacts to air resources shall be described including but not limited to the following:

- 6.4.1 Impacts on ambient air quality
 - 6.4.1.1 Sources (e.g., windblown dust, fixed and mobile equipment)
 - 6.4.1.2 Concentrations
 - 6.4.1.3 Receptors (e.g., communities, schools, soils, water bodies, ecosystems)
- 6.4.2 Greenhouse gas generation
- 6.4.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.5 Noise and Vibration

Potential impacts from noise shall be described including but not limited to the following:

- 6.5.1 Potential noise levels at different representative sites in the project area and in communities near the project area
- 6.5.2 Potential vibration due to blasting and movement of heavy equipment, and related damage to materials and structures
- 6.5.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.6 Aesthetic and Visual Resources

Potential impacts to Aesthetic Resources, including light pollution, shall be described including but not limited to the following:

- 6.6.1 Impacts on visual resources and landscapes
- 6.6.2 Increases in light contamination
- 6.6.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

Biological Impacts

Potential impacts to biological resources shall be described and quantified including but not limited to the following:

6.7 Vegetation/Flora and Associated Ecosystems

Describe and quantify alterations in vegetative cover due to:

- 6.7.1 Deforestation or wetlands destruction
- 6.7.2 Other vegetative type conversions

F.4 Water Resources Impact Assessment Tools

Table F-2
Table F-3

Table F-2
Table F-3

E.2.3 Air Resources
Table E-3

F.5 Air Resources
Impact Assessment
Tools
Table F-5

E.2.4 Noise and
Vibration
Table E-4

F.6 Noise Impact
Assessment Tools

E.2.5 Aesthetic
Resources

F.7 Aesthetic/Visual
Resource Impact
Assessment Tools
Table F-6

E.3 Biological
Environment

- 6.7.2.1 Direct vegetative removal
- 6.7.2.2 Indirect (e.g., poisoning by dust and pesticides)
- 6.7.3 Wildfires
- 6.7.4 Increased road access in remote areas leading to destruction of existing vegetative cover (land use changes)
- 6.7.5 Spread of noxious or invasive species
- 6.7.6 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

Describe and quantify alterations in aquatic and terrestrial wildlife populations due to:

- 6.8.1 Fish and Aquatic Resources
 - 6.8.1.1 Loss in habitat (e.g., spawning, rearing, juvenile, or adult habitats) from changes in water quality due to sedimentation and use of chemicals for vegetation maintenance
 - 6.8.1.2 Disturbance of aquatic resources during construction, operations, or maintenance activities, including equipment noise, erosion and sedimentation, vehicular movements, or blasting
- 6.8.2 Wildlife Resources
 - 6.8.2.1 Loss of habitat, migratory routes/corridors, and breeding areas due to changes in vegetative cover/wetlands loss
 - 6.8.2.2 Disturbance of habitat, migratory routes/corridors and breeding areas due to project construction, operation, and maintenance, recreational use, and human settlement associated with the project (e.g., noise, vibration, illumination, vehicular movement)
 - 6.8.2.3 Loss or contamination of drinking water for wildlife species
 - 6.8.2.4 Poisoning (e.g., direct contact with toxic waster/substances)
 - 6.8.2.5 Animals attracted to garbage and food waste generated at construction camps, restaurants and on-site employee housing
 - 6.8.2.6 Increased hunting
- 6.8.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.9 Endangered or Threatened Species or Habitats

Describe and quantify impacts to endangered or threatened species or habitats

- 6.9.1 Biodiversity
- 6.9.2 Individual species (with special emphasis on endemic, rare, threatened and endangered species)
- 6.9.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.10 Protected Areas

Social-Economic-Cultural Impacts

The EIA shall assess potential positive and negative impacts to social-economic-cultural resources including but not limited to the following:

6.11 Socio-Economic Conditions

- 6.11.1 Increased individual incomes
 - 6.11.1.1 Direct employment at the project
 - 6.11.1.2 Indirect employment generated by project activities
 - 6.11.1.3 Increased purchases from local businesses
 - 6.11.1.4 Other economic activities stimulated in the community as a result of the project
- 6.11.2 Employment opportunities for local residents
- 6.11.3 Increased tax base
- 6.11.4 Displacement and relocation of current settlements, residents or community resources

Table E-5

E.3.1 Terrestrial Species and Associated Ecosystems

E.3.2 Aquatic Ecosystems

F.8 Flora, Fauna, Ecosystems and Protected Areas Impact Assessment Tools **Table F-2**

E.3.3 Endangered or Threatened Species and Habitats and Protected Areas

F.8 Flora, Fauna, Ecosystems and Protected Areas Impact Assessment Tools

E. Social-Economic-Cultural Environment **Table E-6**

- 6.11.5 Displacement or disruption of people’s livelihoods (e.g., fishing, hunting, grazing, farming, forestry and tourism)
- 6.11.6 Public finance requirements – will more infrastructure need to be built and maintained to meet the demands of increased population in the areas of public education and public service (water, sanitation, roads, emergency services, etc.)
- 6.11.7 Reduction in quality of life for residents from visual and noise impacts
- 6.11.8 Change in crime rate (drugs, alcohol, prostitution, etc.)
- 6.11.9 Change in population (temporary or permanent)
- 6.11.10 Change in character of community
- 6.11.11 Change in religious, ethnic or cultural makeup of community
- 6.11.12 Impacts on public health
 - 6.11.12.1 Water-related vector diseases (malaria, dengue, etc.)
 - 6.11.12.2 Health impacts of pesticide and fertilizer use
- 6.11.13 Impacts on worker health and safety
 - 6.11.13.1 Identification of hazardous jobs and number of workers exposed with duration of exposure
 - 6.11.13.2 Occupational diseases due to exposure to dust and other project related activities such as handling of explosives, solvents, petroleum products, etc.
 - 6.11.13.3 Identification of physical risks and safety aspects
- 6.11.14 Potential for fires
- 6.11.15 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.12 Infrastructure

- 6.12.1 Transportation infrastructure

This section of the EIA addresses impacts of transportation and traffic patterns on existing roads. The impacts of new and existing roads on water quality, biological resources and land use should be addressed in those respective sections. The EIA shall assess potential impacts to transportation systems including but not limited to the following:

 - 6.12.1.1 Potential changes to traffic patterns, densities, and traffic safety issues in area affected by project
 - A determination of vehicular traffic density in the project area (before, during, and after the proposed activities)
 - Potential for traffic accidents
 - Congestion
 - Noise
 - 6.12.1.2 Potential impacts to previously inaccessible areas from improvement of roads
- 6.12.2 Public health infrastructure
 - 6.12.2.1 Increased need for public health infrastructure
 - 6.12.2.2 Alterations to public health infrastructure
- 6.12.3 Communications infrastructure
 - 6.12.3.1 Increased need for communications infrastructure
 - 6.12.3.2 Alterations to communications infrastructure
- 6.12.4 Energy infrastructure
 - 6.12.4.1 Increased need for energy infrastructure
 - 6.12.4.2 Alterations to energy infrastructure
- 6.12.5 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.13 Cultural, Archeological, Ceremonial and Historic and Resources

- 6.13.1 Destruction during construction
- 6.13.2 Damage and alteration
- 6.13.3 Removal from historic location
- 6.13.4 Introduction of visual or audible elements that diminish integrity
- 6.13.5 Neglect that causes deterioration

F.9 Socio-Economic Conditions, Infrastructure and Land Use

F.12 Health and Safety Impact Assessment Tools

E.4.2 Infrastructure: Systems, Equipment, Capacity, Performance
Table E-7

F.9 Socio-Economic Conditions, Infrastructure and Land Use

- 6.13.6 Loss of medicinal plants
- 6.13.7 Loss of access to traditional use areas
- 6.13.8 Damage to resources due to increased visitation promoted by the project
- 6.13.9 Impacts to previously inaccessible resources from development/improvement of roads
- 6.13.10 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.14 Land Use

- 6.14.1 Temporary and permanent changes in land use by both area and location
- 6.14.2 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context
- 6.14.3 Social infrastructure (schools, cemeteries, churches, other public buildings, communication systems and housing)
 - 6.14.3.1 Increased need for additional infrastructure
 - 6.14.3.2 Alterations to social infrastructure
- 6.14.4 Existing tourism and recreation infrastructure
 - 6.14.4.1 Change in tourist activities
 - 6.14.4.2 Increased need for tourism and recreation infrastructure
 - 6.14.4.3 Alterations to tourism and recreation infrastructure
- 6.14.5 Housing market (during construction and operation and after closure)
- 6.14.6 Identification of any components of the proposed project that would fall within 25- or 100-year flood plains
- 6.14.7 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

7 Mitigation and Monitoring Measures

This section of the EIA must include measures designed to mitigate potential adverse impacts to physical, biological and social-economic-cultural resources from construction, operation and closure of the proposed project and alternatives. These shall include measures to avoid and prevent, and if needed, to reduce or minimize adverse impacts. The project proponent must include measures considered to be "best practices" in the design of all alternatives.

Here and/or in the Environmental Management Plan section, proposed mitigation shall be described in auditable terms and at a level of detail sufficient to demonstrate its effectiveness in addressing the concern or performance criterion, including its anticipated level of effectiveness and/or measurable performance, and design specifications.

The monitoring plan must include monitoring throughout the life of the project for each potential mitigation to confirm the effectiveness of the measure and support contingency plans to provide assurance that the project, at the site preparation, construction, operation, expansion, and closure stages will meet applicable environmental requirements/standards by law, and fall within the limits of impacts deemed acceptable upon approval of the EIA. Some important items to address in the mitigation plan and associated monitoring plans include, but are not limited to the following:

Physical Impacts

7.1 Geologic Resources and Hazards

- 7.1.1 Pre-excavation, onsite geological inspection and geotechnical study protocols to determine slope stability and landslide risks
- 7.1.2 Slopes built and maintained to avoid landslides and favor revegetation and soils formation
- 7.1.3 Slope stabilization by constructing retaining walls, using vegetation, geotextile membranes, or other mechanical methods
- 7.1.4 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- 7.1.5 Use of signage to mark areas where slopes are not stable as a preventive measure in the event of a landslide
- 7.1.6 Mitigation measures unique to specific alternatives

E.4.3 Cultural, Archeological, Ceremonial and Historic Resources
Table E-8

E.4.4 Land Use

F.9 Socio-Economic Conditions, Infrastructure and Land Use

G. Mitigation and Monitoring Measures
Tables G-1, G-2 & G-3
Tables G-6, G-7 & G-8

Tables G-1, G-2 & G-3

7.2 Soil Resources

- 7.2.1 Erosion and sedimentation control measures (temporary and permanent) including when each will be installed or implemented, how often it will be checked and the process for and timing of removal of temporary measures
- 7.2.2 Spoil and disposal measures
- 7.2.3 Best management practices to minimize soil disturbance
- 7.2.4 Decommissioning/Rehabilitation Plan-if needed (summary of relevant measures with full document in Annex)
- 7.2.5 Restrictions on discharge of pollutants to soil
- 7.2.6 Mitigation measures unique to specific alternatives

7.3 Water Resources

- 7.3.1 Quality
 - 7.3.1.1 Water Quality Management Plan (summary of relevant measures with full document in Annex)
 - Sewage and domestic wastewater
 - Nonpoint sources – runoff, erosion and sediment control prevention measures
 - 7.3.1.2 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.3 Solid Waste Management Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.4 Hazardous Waste Management Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.5 Transport system construction and maintenance to avoid erosion and sedimentation including:
 - Elevation or rerouting
 - Design for proper run-off control and catchment
 - Provision of culverts to allow flow that might otherwise be impeded by roadways or other rights of way
 - Appropriate traffic control
 - 7.3.1.6 Off-road vehicle use restrictions
 - 7.3.1.7 Waste minimization practices
- 7.3.2 Quantity
 - 7.3.2.1 Water conservation practices
 - 7.3.2.2 Mitigation measures unique to specific alternatives

7.4 Air and Climate

- 7.4.1 Dust control measures
- 7.4.2 Energy conservation measures
- 7.4.3 Emissions control measures
 - 7.4.3.1 Emissions reduction equipment
 - 7.4.3.2 Maintenance and inspection of equipment and vehicles using combustion engines to reduce emissions
- 7.4.4 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)

7.5 Noise and Vibration

- 7.5.1 Noise control measures
 - 7.5.1.1 Noise reduction technologies (suppression equipment, sound-absorbing structures, vibration dampening devices, berms, noise barriers, etc.)
 - 7.5.1.2 Rerouting of traffic and other infrastructure related activities to minimize impacts of noise and vibration
 - 7.5.1.3 Time of day limitations on blasting and movement of heavy equipment when in close proximity to houses not being operated during evening hours
- 7.5.2 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- 7.5.3 Mitigation measures unique to specific alternatives

Appendix D

7.6 Aesthetic Resources

- 7.6.1 Relocation of project to another site
- 7.6.2 Redesign of placement of project structures on site
- 7.6.3 Redesign height and location of structures blocking view or producing light pollution
- 7.6.4 Lighting minimization
- 7.6.5 Visual/Landscape Management Plan (summary of relevant measures with full document in Annex)
- 7.6.6 Mitigation measures unique to specific alternatives

Biological Impacts

7.7 Vegetation/Flora and Associated Ecosystems

- 7.7.1 Control of noxious and invasive weeds
- 7.7.2 Measures to compensate for loss or damage of forests, wetlands or other critical ecosystems, including establishment of new protected areas
- 7.7.3 Restoration/Rehabilitation Plan for disturbed areas (summary of relevant measures with full document in Annex)
- 7.7.4 Mitigation measures unique to specific alternatives

7.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

- 7.8.1 Fish and Aquatic Resources
 - 7.8.1.1 Scheduling construction to avoid critical or important fish life history periods (e.g., spawning)
 - 7.8.1.2 Relocation of sensitive, threatened or endangered species
 - 7.8.1.3 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
 - 7.8.1.4 Mitigation measures unique to specific alternatives
- 7.8.2 Wildlife Resources
 - 7.8.2.1 Controls on hunting within the project area
 - 7.8.2.2 Modify locations of structures and locations and timing of activities to avoid critical ecosystems, migratory routes and breeding areas
 - 7.8.2.3 Scheduling construction to avoid critical or important wildlife history periods (e.g., breeding, nesting)
 - 7.8.2.4 Relocation of sensitive, threatened or endangered species
 - 7.8.2.5 Blasting plan, if applicable (summary of relevant measures with full document in Annex)
 - 7.8.2.6 Mitigation measures unique to specific alternatives

Social-Economic-Cultural Impacts

7.9 Socio-Economic Conditions

- 7.9.1 Selection of an alternate site for the project, and if not possible then adhering to requirements of an internationally recognized Resettlement Action Plan (RAP)
- 7.9.2 Rehabilitation Program for people displaced by the project (summary of relevant measures with full document in Annex)
- 7.9.3 Training local residents for employment in the project
- 7.9.4 Development of a "Code of Conduct" (with associated training program) for workers to show respect to the local populations and their culture and social rules
- 7.9.5 Public Health Program to protect local population from potential health problems caused by the project operation (summary of relevant measures with full document in Annex)
- 7.9.6 Development of an Occupational Health, Industrial Safety and Accidents Prevention Program with appropriate accident prevention program, reporting and periodic review (summary of relevant measures with full document in Annex) including provision of routine training and testing, and proper safety equipment such as hearing protection, hardhats, steel-toed shoes, safety railings and fall arrestors

Table G-5

Tables G-1, G-2 & G-3

Appendix F

Table G-4

- 7.9.7 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- 7.9.8 Hazardous Materials Management Plan (summary of relevant measures with full document in Annex)
- 7.9.9 Mitigation measures unique to specific alternatives

7.10 Infrastructure

- 7.10.1 Transportation infrastructure
This section of the EIA addresses mitigation measures for transportation and traffic patterns on existing infrastructure (roads, airports, air strips, harbors, etc.). Mitigation of impacts of new and existing transportation infrastructure on water quality and biological resources and land use should be addressed in those respective sections.
 - 7.10.1.1 Transportation Plan (summary of relevant measures with full document in Annex)
 - Placement of traffic signals
 - Establishing, posting and enforcing speed limits for the vehicles that transport material
 - Training employees, contractors and subcontractors on measures to reduce or avoid potential accidents
 - Hiring and training security personnel devoted exclusively to preventing accidents in the access road and controlling the speed of the vehicles transporting project material
- 7.10.2 Public health infrastructure
- 7.10.3 Communications infrastructure
- 7.10.4 Energy Infrastructure
- 7.10.5 Mitigation measures unique to specific alternatives

7.11 Cultural, Archeological, Ceremonial and Historic and Resources

- 7.11.1 Modify structure and activity locations to avoid significant archeological, cultural, ceremonial and historic sites
- 7.11.2 If avoidance is not possible, conduct appropriate resource recovery operations before disturbing the sites
- 7.11.3 Clearly delineate boundaries and post signs identifying existing archeological, cultural and historic sites on roadsides and within the project area boundaries so that they are easily recognized by machinery operators, workers and tourists
- 7.11.4 Development of a training program so that staff recognize and respect culturally and archeological sensitive areas
- 7.11.5 Development of a code of conduct for activities in indigenous and local communities with the consent of and in collaboration with the community
- 7.11.6 Provide guests with information about and interpretation of the local culture and cultural heritage, as well as explaining appropriate behavior while visiting living cultures and cultural heritage sites
- 7.11.7 Development protocols for use during construction and operation stages for identifying and responding to archeological, cultural, ceremonial and historic sites not identified during the preliminary surveys
 - 7.11.7.1 In the event such a site is found, they will stop activities at the site and report to the government relocation of cultural or historical resources, for their physical protection.
- 7.11.8 Mitigation measures unique to specific alternatives

7.12 Land Use

- 7.12.1 Criteria and method for calculating compensation for loss of land and crops
- 7.12.2 Compensation to farmers and ranchers for crop or forage losses and restore lost agricultural lands at the end of the project.
- 7.12.3 Compensation to property owners for relocation of their homes in the event the relocation is unavoidable
- 7.12.4 Mitigation measures unique to specific alternatives

8 Environmental Management Plan

The EIA shall include an Environmental Management Plan to prevent, mitigate and monitor each impact identified in the EIA. Plans will describe actions to be taken in sufficient detail to provide a basis for subsequent auditing of compliance with commitments made in the EIA process including who is responsible, how and when it will be implemented, what will be done and what results will be achieved, why it is being done, and how to know whether it is effective in addressing the underlying concerns. The Environmental Management Plan shall have the following elements:

8.1 Overview of Environmental Management Plan Organization and Policy

- 8.1.1 Describe the project management and how environmental management and organization relates to overall project responsibility. Describe the personnel and performance accountability system for design, operation, maintenance and closure for implementation of mitigation and monitoring measures
- 8.1.2 Describe the environmental policy that will govern the Project throughout its implementation, including at least the objectives, scope, commitment to continuous improvement, control and environmental monitoring and good relationship with neighboring populations and countries, as well as the commitment to internal controls such as compliance and environmental monitoring and routine audits
- 8.1.3 Identify the persons responsible for the implementation of mitigation measures, in each phase

8.2 Project-wide Mitigation Plan including an implementation schedule. It has two elements:

- 8.2.1 Environmental resource mitigation (such as air, water)
- 8.2.2 Socio-economic-cultural mitigation (relocation, etc.)

8.3 Project-Wide Monitoring Plan (usually specific to monitoring of surface and ground water)

- 8.3.1 Short-term and long-term monitoring of resource condition, including but not limited to:
 - 8.3.1.1 Slope stability
 - 8.3.1.2 Water Quality Monitoring Program
 - Where, how and when monitoring shall be conducted
 - Parameters to be monitored
 - Monitoring frequencies
 - Sampling and analytical protocols to be used
 - 8.3.1.3 Air Quality Monitoring Program
 - Where, how and when monitoring shall be conducted
 - The Parameters to be monitored
 - The monitoring frequencies
 - The sampling and analytical protocols to be used
 - 8.3.1.4 Noise and Vibration
 - 8.3.1.5 Cultural, ceremonial archeological and historic resources in the vicinity of the project
- 8.3.2 Short-term and long-term monitoring to ensure that the mitigation measures are functioning as predicted and that rehabilitation is working

8.4 Management of Other On- or Off-Site Environmental Pollution Control and Infrastructure

This section should address management of critical elements of pollution control and infrastructure that are not otherwise included in the mitigation plan because they were considered an essential part of the proposed project.

8.5 Contingency Plans

Contingency plans shall be prepared and described to address a) failure to meet specific performance criteria established by law or necessary for the project to meet its commitments in the EIA and b) respond to natural and other risks previously identified and mitigated in the EIA in the event reasonable and feasible mitigation measures to address the risks are inadequate.

- 8.5.1 Performance-related Contingency Plans, indicating the steps that will be taken should monitoring indicate that:
 - 8.5.1.1 Environmental standards are not being met

H Environmental
Management Plan
Table H-1

Appendix E

- 8.5.1.2 Impacts are greater than predicted
- 8.5.1.3 The mitigation measures and/or rehabilitation are not performing as predicted
- 8.5.2 Natural Disaster Risk Response Plan (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)
- 8.5.3 Other Risks Response Plans (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)
- 8.5.4 Contingency plans for maintaining service or reducing downtime in the event of accidents or natural catastrophes that disrupt project operation

9 Signed Commitment Statement

The EIA shall contain a legally binding signed letter of commitment to meeting the terms of the EIA. The statement must be signed by the authorized representative of the proponent company with assurance that all financial surety measures as required by the regulatory agency have been met.

10 Annexes

These shall be numbered and duly referenced in the text

10.1 Public Consultation

- 10.1.1 Public consultation plan
- 10.1.2 A summary of public outreach activities including: audience, number of persons, organizations involved, concerns raised, responses to comments
- 10.1.3 Summary of response to comments
- 10.1.4 Actual copies of written comments

10.2 Technical Supporting Documents

- 10.2.1 Include maps, plans, charts and figures in the sequence mentioned in the EIA document
- 10.2.2 Zoning maps with resources and results of impacts
- 10.2.3 Special Studies if relevant but not readily accessible
- 10.2.4 Detailed materials on predictive tools/models and assumptions used for the assessment but too detailed for the body of the EIA

10.3 References

Submit a list of all references, (books, articles, technical reports and other information sources) cited in the various chapters of the EIA study with full biographic references, and the following conventional procedures cited in the literature: author, year, title, source, number of pages, and city of publication or issuance.

B.2 Public Participation

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2 TERMS OF REFERENCE (TOR) FOR CONCESSIONS PROJECTS

A. OVERVIEW

These terms of reference (TOR) describe the minimum requirements for the preparation of the Environmental Impact Assessment (EIA) for proposed concessions. Both the TOR and the cross referenced “*EIA Technical Review Guidelines for Tourism Projects*” should be used to establish minimally acceptable conditions for satisfying the requirement to submit an EIA. There are three different TORs for tourism projects. Part A, Overview, is common to all three TORs but Part B is tailored respectively to: 1. Hotel and Resort Developments, 2. Concessions, and 3. Marine and Coastal Tourism. The three TORs are structured to facilitate mixing and matching as appropriate to the purpose and need for a proposed project and alternatives.

These TORs are focused on specific types of concessions dealing with the use of public land for recreational activities such as:

- Hiking trails and backcountry camping
- Horseback riding
- Off road vehicles
- Zip lines and canopy walks
- River rafting/kayaking/canoeing
- Lake-based recreation (boating, skiing, swimming, etc.)
- Sport fishing (lake or river)

Many concessions may also include hotels, restaurants, campgrounds and other such components. These components are covered by the TOR for Hotel and Resort Developments. If the concession is for marine or coastal tourism, you should also consult the TOR for Marine and Coastal Tourism.

The basic format for the EIA document that should be followed is:

- Table of Contents
- Acronyms and Abbreviations
- Executive Summary
- General Information
- Project and Alternatives Description
- Environmental Setting
- Assessment of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Commitment Statement
- Annexes

In general, the EIA must identify and address:

- Applicable environmental standards, norms, and requirements set forth at the international, national, regional and/or local levels including those designed to meet the objectives of resource management and/or land use plans that may be in effect in and around the jurisdiction(s) in which the proposed project is located. In the absence of such standards, the EIA should establish a set of benchmarks that can be used in the analysis and selection of an alternative. The Guidelines identify standards in use by various countries and international organizations in Appendix C.
- Public/Stakeholder concerns related to impacts in and around the proposed project and alternatives at least for stakeholders within the geographic scope of potential impact. The project proponent should document specific steps taken to engage the public and other stakeholders, and engage

these publics as early as possible before undertaking to prepare the EIA. Concerned publics include: local governments, persons living and working in the vicinity of the project, those with interests in resources that may be affected i.e., indigenous peoples, and those concerned about protected areas and prime agricultural lands. A summary of public outreach activities, audience, number of persons, organizations involved, concerns raised, responses to comments and actual copies of written comments received should be included in the Annex.

- All relevant plans related to the proposed tourism project, for example, engineering and site preparation plans, operations and decommissioning/closure, environmental management, and mitigation in whatever form these may take.
- All phases of the project from feasibility studies to site preparation to operations to closure and also plans to expand capacity at the current or adjacent sites.
- Alternative approaches to meeting the purpose and need for the proposed tourism project, including siting, designing, constructing, operating and closing the project firstly to avoid and prevent, or secondly to reduce or minimize adverse or improve beneficial environmental or socioeconomic impacts. The EIA should assess as appropriate the impacts of a range of reasonable and technically feasible alternatives as well as the proposed project. The alternatives to the project must include a “no action” alternative, as well as consideration of best practices that may not otherwise have been incorporated in the proposed project. Other alternatives should be developed as needed to avoid or minimize significant adverse impacts associated with the proposal.
- Direct, indirect and cumulative impacts and their significance level.
- Uncertainty and how that uncertainty will be addressed through monitoring and contingency plans as may be needed to reduce risk of adverse impacts in the future.
- Specific commitments, including who is responsible, what will be done, when and how it will be monitored, reported and audited to confirm that commitments are met.

Finally, a key part of the TOR is obtaining a legally binding commitment from the project proponent that the approved EIA will be implemented as presented. Such a commitment adds to the legal enforceability of the outcomes of the EIA process.

B. DETAILS FOR CONCESSIONS PROJECTS

0 Table of Contents

A general Table of Contents for the Environmental Impact Assessment (EIA) shall be provided. The Table of Contents shall be organized in such a manner as to facilitate the use of the EIA by reviewers and project implementers. EIAs for larger projects should have a more detailed Table of Contents than those for smaller projects. At a minimum, the Table of Contents shall include the following:

- Acronyms and Abbreviations
- Executive Summary
- General Information
 - Objectives and Justification
 - Project Proponents
 - Project Team
 - Legal and Regulatory Framework
- Project and Alternatives Description
- Environmental Setting
 - Physical Environment
 - Geologic Resources
 - Soil Resources
 - Water Resources
 - Air and Climate
 - Noise and Vibration
 - Aesthetic Resources
 - Biological Environment
 - Vegetation/Flora
 - Aquatic and Terrestrial Wildlife/Fauna
 - Ecosystems: Terrestrial, Wetlands, Aquatic, Marine
 - Endangered or Threatened Species and Habitat
 - Protected Areas
 - Social-Economic-Cultural Environment
 - Socio-Economic Conditions
 - Infrastructure
 - Cultural, Archeological, Ceremonial and Historic Resources
 - Land Use
- Assessment of Impacts to resources described in the Environmental Setting
- Mitigation and Monitoring Measures
- Environmental Management Plan
 - Overview of Environmental Management Plan Organization and Policy
 - Project-wide Mitigation Plan
 - Project-wide Monitoring Plan
 - Management of Other On- or Off-Site Pollution Controls and Infrastructure
 - Contingency Plans
 - Performance-related Contingency Plan
 - Natural Disaster Risk Response Plan
 - Other Risk Response Plans
- Signed Commitment Statement
- Annexes
 - Public Consultation
 - Public Consultation Plan
 - Summary of Public Outreach Activities
 - Summary of Responses to Comments
 - Copies of Written Comments
 - Technical Supporting Materials
 - Maps and Plans, in the sequence mentioned in the EIA document
 - Charts and Figures
 - Details about predictive modeling used, calculations and assumptions
 - Special Studies
 - References

1 Acronyms and Abbreviations

All acronyms and abbreviations used in the EIA must be clearly and succinctly defined and described in this section. This will relieve the reader of the need to search for the first occurrence of a word and the citing of the acronym or abbreviation in the text.

2 Executive Summary

A general summary of the EIA shall be provided in this section. The summary shall be written using a vocabulary that can be easily understood by the public. It shall include at least the following information about the project from the EIA:

- Objectives and Justification
- Location
- Project Proponents
- Project Description
- Other Project Alternatives
- Environmental Setting
- Evaluation of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Issues raised by stakeholders and any outstanding issues

3 General Information

3.1 Objectives of and Justification for the Proposed Project

- 3.1.1 **Objectives:** A statement of the general and specific objectives (purpose) of the proposed project, including whether it is a new project, an expansion of an existing project (e.g., increase in land area or increase in visitor capacity) or modernization of an existing operation.
- 3.1.2 **Justification for the Project:** Provide a justification for the proposed project (need) highlighting the benefits to surrounding communities and economic development of the region and country.

3.2 Project Proponents

- 3.2.1 Names, addresses, telephone numbers, and applicable legal documentation of proponents (including developers, major equipment suppliers if part of project team, shareholders and providers of financing, and representatives).
- 3.2.2 Names and contact information for responsible parties within the organization.
- 3.2.3 Financial viability of the company (including a certified banking statement indicating that the company is financially stable and reputable).
- 3.2.4 Bonding requirements and proof of ability to meet bonding requirements sufficient to cover the anticipated costs of environmental management during all phases, as well as the costs, by a third party, of decommissioning and long-term post-closure liabilities associated with the project.

3.3 Project Team

This section shall provide information on the multidisciplinary team that prepares the EIA. The types of professionals included in the team shall be appropriate to the type of project and the type of environment in which the project is located and may include (but not be limited to) engineers, architects, biologists, geologists, hydrologists, air quality experts, archeologists, anthropologists, sociologists and economists. The information provided for each member of the EIA project team includes the following:

- 3.3.1 Names, addresses and registry numbers of contractors.
- 3.3.2 Names, contact information, qualifications and registry numbers of key personnel involved in the study; as well as an affidavit indicating their area of participation.
- 3.3.3 List of professionals/experts participating in the EIA, their areas of expertise, degrees, experience, professional registrations and stamps, seals and signatures.

3.4 Legal and Regulatory Framework

This section of the EIA shall define the legal framework under which the EIA is being completed listing and summarizing requirements or alternatives used as benchmarks, and evidence of non-applicability or compliance, including:

- 3.4.1 Information that demonstrates rights and access:
3.4.1.1 Ownership with written authorization

C.2 Documentation of Purpose and Need

C.3.1 General Information

G.6 Financial Assurance

C.3.1 General Information

C.3.1 General

- 3.4.1.2 Governmental authorization (if required)
- 3.4.1.3 Period of lease/permit/concession agreement
- 3.4.1.4 Maps showing the lease/permit/concession area
- 3.4.2 Applicable environmental standards, norms and requirements set forth at the international, national, regional and/or local levels
 - 3.4.2.1 In the absence of such standards, identify a set of benchmarks used in the analysis
- 3.4.3 Required regulatory approvals and/or permits for all stages and their status
- 3.4.4 Applicable land use requirements (demonstrate conformity and compliance with applicable plans)
- 3.4.5 Applicable tourism strategies and plans – national, regional, and local
- 3.4.6 Applicable natural resource management or protected area management plans and responsible agency(ies) (demonstrate conformity and compliance with all applicable plans)

4 Project and Alternatives Description

The project proponent shall submit a full description and location of the proposed project and reasonable alternatives including ancillary facilities and operations such as the camp/housing for construction and operation phases, borrow and disposal areas, sanitary services, waste disposal and transportation infrastructure, etc. as addressed through 4.1 to 4.3 below. It shall include at a minimum:

4.1 Location

The general location of the project and associated activities in terms of:

- 4.1.1 Political-administrative location (region, district, town or other relevant political-administrative units) with accompanying location map
- 4.1.2 Means of site access – i.e., by air, river, road, train or vehicle
- 4.1.3 Latitude and longitude of project area
- 4.1.4 Maps of project area at a scale of no less than 1:50,000 or as required by the regulatory agency
 - 4.1.4.1 Project plat plan and location on a fold-out 11" X 17" page.
 - 4.1.4.2 Indicate the project area and the direct and indirect areas of influence for the physical, biological and social-economic-cultural impacts
 - 4.1.4.3 All drawings should present scale and key coordinates or benchmarks as latitude/longitude, Universal Transverse Mercator (UTM) coordinates, or local survey plate that can be cross-referenced to latitude/longitude or UTM coordinates
- 4.1.5 Has the area of the project ever been a tourist destination before?
 - 4.1.5.1 If so, show other tourist facilities in the area on the maps, including those under construction and, if known, those in the design phase

4.2 Summary of Proposed Project and Alternatives

All project alternatives that are reasonable and feasible and meet the purpose and need for the proposed project shall be identified, summarized in this section, and evaluated in the EIA as appropriate. In addition to the proposed project, such alternatives include alternative locations, alternative site configuration of elements of the project, alternative size, and alternative plans for construction, operation and decommissioning of the project including best practices that may avoid and/or reduce the adverse impacts to the physical, biological or social-economic-cultural environments.

If the project area or the buffer zone of the project area for an alternative is in an ecologically fragile area, the description of the alternative must include a clear justification for not opting for another site. Identify which alternatives will be carried through the analysis in the EIA and the basis for that decision.

4.3 Project and Alternatives Details

The EIA shall provide specific project details for the proposed project and each alternative as identified in subsections 4.3.1 through 4.3.8. The level of detail presented shall be the same for the proposed project and each alternative evaluated. The following project details shall be provided:

- 4.3.1 Type and nature of the project
 - 4.3.1.1 Type (guided hikes or horseback trips, trail development, off-road vehicles, campsites, water sports, etc.)
 - 4.3.1.2 Overview of all proposed facilities and activities and their relationship

Information

C. Project and Alternatives Description

C.3.2 Overall Project Description Information

C.3.5 Maps, Diagrams, Site Design and Plan

C.3.2 Overall Project Description Information

C.3.4 Project Details

C.3.5 Project Alternatives Table C-4

- 4.3.1.3 A detailed drawing showing access points, layout of all project components including on-site roads, walkways and paths, existing structures, topography and natural features such as water bodies, wetlands and geologic structures
- 4.3.1.4 A summary table showing the type, quantity and size of each component
- 4.3.1.5 Expected life of operation
- 4.3.1.6 Anticipated use: maximum, minimum and average by month and season for:
 - Day use
 - Overnight stays (if applicable)
- 4.3.1.7 Recreational, leisure and adventure uses by visitors of surrounding natural and cultural resources
 - Type of use (type of activities, motorized or non-motorized, etc.)
 - Anticipated use (maximum, minimum and average by month and season)
- 4.3.2 Principal project facilities
 - Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.
 - 4.3.2.1 Hiking trails and backcountry camping
 - Trails
 - Widths and layout
 - Surface material
 - Erosion control
 - Camping sites (if applicable)
 - Number, locations, capacity per location and layout
 - Site amenities (tables, benches, barbeque, fire pits, etc.)
 - Bath/toilet facilities
 - Water taps
 - Fuel sources
 - Solid waste management
 - 4.3.2.2 Horseback riding
 - Trails
 - Widths and layout
 - Surface material
 - Erosion control
 - Camping sites (if applicable)
 - Number, locations, capacity per location and layout
 - Site amenities (tables, benches, barbeque, fire pits, etc.)
 - Bath/toilet facilities
 - Water taps
 - Fuel sources
 - Solid waste management
 - Stables
 - Location
 - Dimensions
 - Animal waste management
 - Toilet facilities
 - Pastures
 - Location
 - Dimensions
 - 4.3.2.3 Off road vehicles
 - Types, number, sizes and fuels of vehicles
 - Trails
 - Widths and layout
 - Surface material
 - Erosion control
 - Vehicle storage

- Vehicle fueling and repair facilities
- Toilet facilities
- 4.3.2.4 Zip lines and canopy walks
 - Start point, end point and route (for canopy walks)
 - End point
 - Toilet facilities
- 4.3.2.5 River rafting/kayaking/canoeing
 - Put in and take out locations
 - Camping or picnicking sites
 - Number, locations, capacity per location and layout
 - Site amenities (tables, benches, barbeque, fire pits, etc.)
 - Bath/toilet facilities
 - Water taps
 - Solid waste management
 - Office and equipment storage areas
 - Toilet facilities
- 4.3.2.6 Lake-based recreation (boating, skiing, swimming, etc.)
 - Types of uses
 - Dock
 - Developed beach
 - Beach uses
 - On-beach structures (recreational equipment rental/storage, bath/toilet facilities, bar/store/restaurant [refer to Resort TOR], lifeguard towers, sun shades, etc.)
 - Shoreline erosion protection
 - Type and source of beach material (if applicable)
 - Equipment roster (types, numbers and sizes of equipment made available to clients)
 - On-site facilities (equipment storage, toilets, etc.)
- 4.3.2.7 Sport fishing (lake or river)
 - Types of services and equipment provided
 - Facilities
- 4.3.3 Onsite support facilities

Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.

- 4.3.3.1 Storage areas and warehouses
 - Locations
 - Sizes
 - Materials to be stored
- 4.3.3.2 Parking lots
 - Locations
 - Sizes
 - Lighting
- 4.3.3.3 Repair shops
 - Activities
 - Locations
 - Sizes
- 4.3.3.4 Fuel stations
 - Commercial or for operator use only
 - Locations
 - Number, size and configuration of tanks (buried or above ground, leak protection, etc.)
- 4.3.3.5 Electrical energy
 - Consumption, including energy conservation measures
 - Source – offsite
 - Transmission lines (if necessary)
 - Substation (if necessary)

Table C-11

- On-site power generation power
 - Type
 - Emissions and noise controls (if applicable)
- On-site distribution (routes, overhead or buried)
- 4.3.3.6 Water supply
 - Requirements (m3/day), including conservation measures
 - Rights
 - Sources
 - Treatment
 - Distribution
- 4.3.3.7 Waste handling and disposal
 - Sewers
 - Wastewater treatment
 - Quantity
 - Type
 - Discharge
 - Solid waste
 - Quantity (kg/day and m3/day), including waste reduction measures
 - Collection
 - Separation (if any)
 - Disposal
- 4.3.4 Access and transportation
 - 4.3.4.1 Roads
 - Identify all new and existing roads to be used (including closed roads that will be reopened, if applicable)
 - Traffic volume, operating speeds and trip times
 - Closed roads that will be reopened
 - Detailed information on any access, on-site and recreational activity roads to be constructed or upgraded
 - Location
 - Timing of construction
 - Road surface and shoulder width and barriers
 - Grade
 - Construction methods including clearing and grubbing
 - Construction materials
 - Compaction
 - Stream and wetland crossings and associated designs
 - Animal crossings
 - Sedimentation and erosion prevention and control structures and practices
 - Stabilization methods for cuts and fills
 - Typical elevations for each type and situation of road displaying construction materials, levels of compaction and erosion and sedimentation features
 - Location and size (area and volume of material) of borrow pits
 - Lighting (where applicable)
 - Operation
 - Closure plan (if applicable)
 - Traffic volume, operating speeds and trip times
 - Dust control for construction and operation
 - Maintenance
 - Roster for construction and maintenance equipment, specifying type and quantity by size, motor size, and fuel requirements
- 4.3.5 Best Practices
 - Description of standard best practices to be incorporated into the project.
- 4.3.6 Construction phase and timetable
 - 4.3.6.1 Schedule for each phase of construction for all project and ancillary facilities (including temporary structures) including, but not limited to:

**C.4.1 Water and Sanitation Facilities
Table C-8**

**C.4.2 Solid and Hazardous Waste
Table C-9**

**C.3.7 Transportation:
Roads, Pathways,
Air Strips, and Boat
Facilities
Table C-2**

**C.3.6 Details on
Construction
Procedures
Table C-1**

- Mobilization
- Road construction and improvements
- Land clearing
- Blasting
- Erosion and sediment control
- Excavation and subgrade preparation
- Foundation preparation
- Concrete work
- Construction or installation of each project facility
- Stabilization of disturbed areas
- 4.3.6.2 A GANTT or critical path management chart for the entire project, from start to finish
- 4.3.6.3 Borrow and fill material (if applicable)
 - Locations from which fill material will be sourced
 - Locations where fill material will be placed on-site
 - Locations where fill and other construction material will be temporarily stockpiled/stored
 - Borrow and spoil disposal
- 4.3.6.4 Key areas (related to environmental sensitivity/importance) that will remain undisturbed during construction (waterways, wetlands, forested areas and other “green space,” etc.)
- 4.3.6.5 Erosion control structures such as:
 - Temporary diversions for waterways
 - Erosion control barriers
- 4.3.6.6 Equipment
 - Equipment Roster, specifying type and quantity by size, weight, motor size, and fuel requirements for each piece of equipment or machinery used in each activity
 - Transportation mobilization and mobilization frequency
 - Machinery and equipment mobilization routes to be used, as well as the features of the ways on which they will be transported, including a map of routes, as applicable, and mobilization.
- 4.3.6.7 Labor during construction
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
- 4.3.6.8 Raw materials to be used for construction
 - Give a complete list of the raw materials and construction materials to be used, indicating the amounts per day, month, and the storage means
 - Include an inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.6.9 Construction camp (if applicable)

Description of the camp including but not limited to:

 - A map showing all facilities at a legible scale appropriate to the size of the project
 - Buildings by type (use) and size
 - Roads
 - Electrical transmission lines and/or substation
 - Drainage
 - Water supply and distribution
 - Distribution system
 - Use (m³/day)
 - Rights
 - Sources
 - Waste handling and disposal components
 - Sewers

**C.6 Manpower and
Local Purchases**

- Wastewater treatment
 - Solid waste facilities
 - Energy generation and use requirements (including fuelwood consumption and source)
 - Closure or transition from construction camp to onsite employee housing
- 4.3.6.10 Decommissioning of temporary structures including measures for returning the area to pre-construction features
- 4.3.7 Operation phase
- 4.3.7.1 Description of how the project would operate (seasonally, monthly, daily, hourly, as appropriate)
- 4.3.7.2 Operation information
- Roster of equipment and machinery to be used during operation, specifying type and quantity by size, weight, motor size, and fuel requirements for each activity
 - Labor during operation
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
 - Raw materials to be used for operation
 - List of the raw materials to be used, indicating the amounts per day, month, and the storage means
 - Inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.8 Closure and decommissioning plan
- If it becomes clear that closure will be required, or when the project nears the the end of its service life, the project operator shall contact the proper regulatory agency(ies) to obtain the environmental guidelines to carry out the closure or decommissioning.
- 4.3.8.1 The project description shall include at least a general Restoration and Closure Plan, recognizing that terms of closure may be very different when this phase approaches
- 4.3.8.2 The description of restoration measures should include the size of the area to be restored as well as concurrent, temporary and final restoration measures to be used and their schedules. For each measure include:
- Area to be addressed
 - Timing and schedule for executing measures
 - Equipment and structure removal or conversion
 - Remedial measures, including success indicators and contingency measures if initial efforts are unsuccessful

5 Environmental Setting

Based on information available from the literature, government and special studies or other sources, the EIA shall provide information on environmental setting for the different types of physical, biological and social-economic-cultural environments for the current situation, important trends and predicted situation in the absence of the proposed project. All sources of data must be cited in the EIA when and where they are used. Indicate the direct and indirect and cumulative impact areas of influence for physical, biological, and social-economic-cultural impacts and basis for defining area. This section shall include at a minimum, the following information:

Physical Environment

5.1 Geologic Resources and Hazards

- 5.1.1 Topography and slope conditions and geomorphology
- 5.1.2 Seismicity and stability characteristics
- 5.1.2.1 Indicate the general seismic and tectonic features of the surrounding areas:

C.6 Manpower and Local Purchases

C.7 Closure

D. Environmental Setting Table D-1

D.2 Physical Environment

D.2.1 Geology and Soils

- Seismic sources close to the project area
- Seismic history
- 5.1.2.2 Volcanic activity (must be provided by all the projects that are located within a radius of 30 km from an active volcanic emission center)
 - Indicate the general volcanic features of the area near the site
 - Historical eruptions
 - Period of recurrence
 - Type of eruptions
 - Affected areas and high risk areas
- 5.1.2.3 Describe project areas susceptible to soil liquefaction; planned, active, and abandoned mines; karst terrain; and areas of potential ground failure, such as subsidence, slumping, and land sliding

5.2 Soil Resources

The EIA shall describe baseline soil resources, and make use of maps, tables and accompanying narrative text to describe the soils at the project site and along new or reconditioned access routes associated with the project and included in the EIA.

- 5.2.1 Types, capacity and uses
- 5.2.2 Stability and permeability
- 5.2.3 Erosion and sedimentation potential
- 5.2.4 Quantity and quality available for revegetating and restoring the disturbed area at time of closure

5.3 Water Resources

- 5.3.1 Surface water
 - 5.3.1.1 Names and locations on maps of all permanent and intermittent streams, rivers, wetlands, lakes and reservoirs within the area of influence
 - 5.3.1.2 Flow (only necessary if water source will be surface water or if wastewater will be discharged to surface water)
 - The monthly minimum, mean and maximum recorded flows in m³/s of the river at the diversion point
 - Location of gauging stations where data were gathered to derive the curves
 - 2-, 10-, 25-, 50- and 100-year runoff events and 100-yr floodplain for streams and rivers
 - 5.3.1.3 Seasonal fluctuations in area and volume of wetlands, lakes and reservoirs
 - 5.3.1.4 Delineation of watersheds and water drainage pattern in the area of influence using cadastral/aerial/remote sensing satellite imageries (map)
 - Runoff characteristics of watersheds
 - 5.3.1.5 Inventories of consumptive and non-consumptive use
 - 5.3.1.6 Surface water balance (only necessary if water source will be surface water)
 - Existing uses by type and volume
 - Capacity
- 5.3.2 Groundwater

Provide a map and identify and describe aquifers and underground waters adjacent to the project, indicating the depth of the water table along with trend data:

 - 5.3.2.1 Hydrogeologic characteristics of the project site including fuel storage areas, wastewater discharge areas, and golf courses (vadose zone and aquifers)
 - Water table levels (dry and rainy season)
 - Flow regime
 - Flow direction
 - Influences of geologic structures (faults, contacts, bedrock fracturing, etc) and surface water bodies
 - 5.3.2.2 Location and characteristics of all existing springs and wells in the area of influence (on topographic map)
 - Flow/yield data for each spring and well (including water levels in wells)
 - Depth and construction information for each well

D.2.1 Geology and Soils

D.2.2 Water Resources

D.2.2.1 Surface Water

D.2.2.2 Marine Waters

D.2.2.3 Groundwater

- Existing uses by type and volume
- Capacity available
- 5.3.2.3 Groundwater recharge data
- 5.3.2.4 Groundwater potential yield (only necessary if water source will be groundwater)
- 5.3.3 Water quality (only necessary if project will discharge wastewater)
 - 5.3.3.1 Existing water quality data
 - Locations of all water quality monitoring stations in and around the project area (with direction and distance from the site)
 - Water quality data for each station for those parameters likely to be affected by project construction, operation or maintenance
 - Physical, chemical and biological water quality characteristics, including water temperature and dissolved oxygen concentrations
 - 5.3.3.2 Supplemental sampling and analysis (if existing data is not adequate to characterize water quality)
Sampling and Analysis Program in annex
 - Proposed locations of representative monitoring stations upstream and downstream of proposed project activities
 - Monitoring program design with at least a year of baseline data being collected
 - Parameters (including as appropriate, physical, chemical and biological)
 - Frequency of collection
 - Analytic methods
 - 5.3.3.3 Surface water and groundwater standards that apply to the project
 - Current uses
 - Standards for current uses (in the absence of such standards, identify a set of benchmarks used in the analysis)

5.4 Air and Climate

Baseline information for air resources shall be collected for at least one year or as required by the regulatory agency and shall include at a minimum the following:

- 5.4.1 Climate and meteorology
 - 5.4.1.1. Source of data (meteorological station(s) from which climatological data have been obtained)
 - 5.4.1.2. Temperature variations
 - 5.4.1.3. Relative humidity
 - 5.4.1.4. Solar radiation and evaporation rates
 - 5.4.1.5. Rainfall (total precipitation, rainfall intensity, and duration by month)
 - 5.4.1.6. Wind Rose (Wind direction and speed, 24 hourly data)
 - 5.4.1.7. Statistical analysis of the data
 - 5.4.1.8. Risk of high impact storms, storm surges, hurricane levels, tropical storms frequency and seasonality

5.5 Noise and Vibration

Present a description of the noise and vibration levels for receptors near where noise generating activities of the project may occur. The EIA shall include:

- 5.5.1 Location of monitoring stations
- 5.5.2 Daytime and night time noise levels (measured in decibels)
- 5.5.3 Inventory of existing noise sources

5.6 Aesthetic and Visual Resources

- 5.6.1 Photos presenting baseline panoramic views of the project site from potential viewpoints
- 5.6.2 Viewsheds or other aesthetic or landscape resources
- 5.6.3 Existing sources of light contamination

Biological Environment

The EIA shall provide detailed information on the location and condition of ecosystems in and around the project area in the form of narrative, maps and tables, including the following:

5.7 Vegetation/Flora

D.2.3 Air and Climate

D.2.4 Noise and Vibration

C.2.5 Aesthetic Resources

- 5.7.1 Vegetative mapping of terrestrial and wetland habitats (aquatic and marine if appropriate) for project area and areas affected by the project (e.g., project site and areas around new access roads)
- 5.7.2 Species and structure (abundance, density, status, plant communities, presence of invasive species, etc.)

5.8 Aquatic and Terrestrial Wildlife/Fauna

- 5.8.1 Fish and Aquatic Resources (for water-based concession activities)
 - 5.8.1.1. Identification of fish, mussel, macroinvertebrate and other aquatic species
 - Spatial and temporal distribution
 - Species life stage composition
 - Standing crop
 - Age and growth data
 - Spawning run timing
 - Extent and location of spawning, rearing, feeding and wintering habitat
- 5.8.2 Wildlife Resources (for land-based concession activities)
 - 5.8.2.1. Species (including status, i.e., endemic, migratory, exotic, endangered, threatened, keystone, etc.), life history, and seasonal use
 - 5.8.2.2. Breeding areas
 - 5.8.2.3. Mating and brooding areas
 - 5.8.2.4. Migratory corridors (if applicable)
 - 5.8.2.5. Important wildlife use areas (roosts, clay licks, etc.)

5.9 Ecosystems: Terrestrial, Wetlands, Aquatic, Marine

Much if not all that may be needed to address the environmental setting for terrestrial, wetlands, aquatic and/or marine ecosystems may have been covered in Sections 5.7 and 5.8. This section is not intended to duplicate that information; rather, it should integrate the information to ensure that the structure and function of each ecosystem is adequately presented.

5.10 Endangered or Threatened Species and Habitats

Sections 5.7 and 5.8 should identify all species in the project area. This section should highlight all endangered and threatened species and critical habitat that potentially occur in the vicinity of the project.

5.11 Protected Areas

Identify on maps the specific locations and boundaries of relevant national parks, sanctuaries, reserves, etc., as well as any areas proposed for protection. Provide a brief narrative description of each area.

Social-Economic-Cultural Environment

5.12 Socio-Economic Conditions

Identify nearby human settlements including the following information for each settlement:

- 5.12.1 Population (size, gender and age distribution)
- 5.12.2 Cultural characteristics (religion, ethnic composition, languages spoken, etc.)
- 5.12.3 Economic activities (employers, employment and incomes)
- 5.12.4 Tax base
- 5.12.5 Crime rates
- 5.12.6 Literacy rates
- 5.12.7 Community organizations
- 5.12.8 Public Health and Safety
 - 5.12.8.1. Diseases in the project area (including the sources of data and the methodology used to collect and analyze the data)
 - 5.12.8.2. Level of emergency services and access to clinics, doctors and hospitals
 - 5.12.8.3. Existing practice for assessment of occupational health
- 5.12.9 Skills, services and goods availability in the communities

5.13 Infrastructure

For each human settlement identified in subsection 5.12, describe the infrastructure in or serving the settlement, including the following information:

- 5.13.1 Transportation infrastructure
 - 5.13.1.1. Roads – Location and condition of all existing roads in the project area that may be used by the project or tourists coming to the project
 - Surface materials

D.3 Biological Environment

D.3.1 Flora

D.3.2 Fauna

D.3.3 Ecosystems

D.3.4 Endangered or Threatened Species and Habitats

D.3.5 Protected Areas and Sensitive Ecosystems

D.4 Social-Economic-Cultural Environment

D.4.1 Socio-Economic Conditions and Resources

D.4.2 Infrastructure Systems and Equipment

- Erosion and sediment control
 - Maintenance programs (what, when and whom)
 - Description of anticipated third-party improvements (government or entity other than the proponent)
 - Traffic capacity, patterns and densities
 - Safety levels and current circulation issues
- 5.13.1.2. Airports and air strips – Locations, conditions, capacities, current uses and trends
- 5.13.1.3. Other transportation infrastructure as applicable such as rail, bus, pipelines for fueling, harbors for cruise ships, and marinas for boats – Locations, conditions, capacities, current uses and trends
- 5.13.2 Public health infrastructure
- 5.13.2.1. Drinking water supplies and treatment
- 5.13.2.2. Wastewater treatment and management
- 5.13.2.3. Solid and hazardous waste management and treatment
- 5.13.3 Communications infrastructure
- 5.13.3.1. Types of communications systems
- 5.13.3.2. Types of transmission (wired or wireless)
- 5.13.3.3. Locations of transmission lines (if applicable)
- 5.13.3.4. Locations of microwave towers and/or antennae (if applicable)
- 5.13.4 Energy infrastructure
- 5.13.4.1. Types of energy
- 5.13.4.2. Sources including location and description of generating facilities in the area of influence
- 5.13.4.3. Transmission lines and/or pipelines
- 5.13.4.4. Fuel storage facilities
- 5.14 Cultural, Archeological, Ceremonial and Historic and Resources**
Identify all cultural, archaeological, ceremonial and historic resources within the area of influence, including the following information:
- 5.14.1 Data and maps relating to archeological, cultural, ceremonial, and historic sites in the direct vicinity of the project
- 5.14.2 Information on indigenous people or other traditional cultures, if any
- 5.15 Land Use**
Describe actual and potential land use showing location, size and proximity within and surrounding the project area, including land use maps, and to extent possible, integrated into one map.
- 5.15.1 Population centers, including information and locations of
- 5.15.1.1. Schools
- 5.15.1.2. Cemeteries
- 5.15.1.3. Churches
- 5.15.1.4. Other public buildings
- 5.15.1.5. Housing (including housing density)
- 5.15.1.6. Commercial areas
- 5.15.2 Agricultural lands
- 5.15.3 Forested lands
- 5.15.4 Protected areas (including but not limited to)
- 5.15.4.1. National parks
- 5.15.4.2. Wildlife refuges
- 5.15.5 Wetlands and mangroves
- 5.15.6 Other environmentally sensitive areas
- 5.15.7 Tourism and recreation areas
- 5.15.7.1. Recreation facilities
- 5.15.7.2. Eco-cultural-tourist locations
- 5.15.8 Culturally sensitive areas
- 5.15.9 Flood plains and water bodies
- 5.15.10 Coastal zones
- 5.15.11 Other land uses as appropriate

D.4.2.1 Transportation Infrastructure

D.4.2.2 Public Health Infrastructure

D.4.2.3 Communications Infrastructure

D.4.2.4 Energy Infrastructure

D.4.3 Cultural, Archeological, Ceremonial and Historic Resources

D.4.4 Land Use

6 Assessment of Impacts

The EIA shall provide information on potential impacts (direct, indirect and cumulative) and the magnitude and frequency of potential impacts on physical, biological, social-economic-cultural resources resulting from construction, operation and closure of the proposed project and alternatives. The assessment shall use standardized predictive methods, such as models, to determine the specific range of impacts on environmental and socio-economic resources. The EIA shall identify which impacts are significant and the criteria used to make this judgment. Critical data input from project description and environmental setting analysis projecting the conditions in the environmental setting in the absence of the proposed project shall be used as the baseline upon which potential impacts are forecast. The EIA shall also identify sources of data used in the analysis and the uncertainties associated with the outputs of each method used.

Physical Impacts

6.1 Geologic Resources and Hazards

Potential impacts to geologic resources and potential effects on project structures shall be described including but not limited to the following:

- 6.1.1 Geologic hazards and potential effects on project structures
- 6.1.2 Changes in topography and drainage patterns
- 6.1.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.2 Soil Resources

Potential impacts to soil resources shall be described. The analysis shall include, but not be limited to the following:

- 6.2.1 Soil quality
 - 6.2.1.1. Contamination (accidental spills of fuel, oil or other hazardous substances)
 - 6.2.1.2. Impacts on use
- 6.2.2 Erosion, slope alteration, vegetation removal and drainage patterns
 - 6.2.2.1. Models for soil erosion should be included using methods like USLE, defining the areas with high erosion potential
 - 6.2.2.2. Sediment accumulation and transport
- 6.2.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.3 Water Resources

Potential impacts to surface water and groundwater shall be described. The analysis shall include but not be limited to the following:

- 6.3.1 Geomorphology
 - 6.3.1.1. Location of all stream or wetland crossings by roads and trails
 - 6.3.1.2. Modification/diversion in the existing drainage pattern
 - 6.3.1.3. Bank erosion (stream crossings, shore developments and dredging)
 - 6.3.1.4. Potential for increased flash flooding
- 6.3.2 Quality
 - 6.3.2.1. Runoff, erosion and sedimentation from roads, trails, disturbed areas and stream crossings
 - Sources
 - Receiving waters
 - Concentrations
 - Physical parameters
 - Chemical parameters
 - Biological parameters
 - 6.3.2.2. Description of impact from wastewater discharges
 - 6.3.2.3. Spills and accidents (chemicals, hazardous wastes and fuel spills)
- 6.3.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

E. Potential Impacts

F. Assessing Impacts

F.1 Overview of Using Predictive Tools for an EIA

F.2 General Approaches for Prediction of Impacts

Appendix C

E.2 Physical Environment

E.2.1 Geology, Soils and Ocean Topography
Table E-1

F.3 Soils and Geology Impact Assessment Tools

E.2.2 Water Resources
Table E-2

F.4 Water Resources Impact Assessment Tools

Table F-2
Table F-3

6.4 Air and Climate

Potential impacts to air resources shall be described including but not limited to the following:

- 6.4.1 Impacts on ambient air quality
 - 6.4.1.1. Sources (e.g., windblown dust, fixed and mobile equipment)
 - 6.4.1.2. Concentrations
 - 6.4.1.3. Receptors (e.g., communities, schools, soils, water bodies, ecosystems)
- 6.4.2 Greenhouse gas generation
- 6.4.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.5 Noise and Vibration

Potential impacts from noise shall be described including but not limited to the following:

- 6.5.1 Potential noise levels at different representative sites in the project area and in communities near the project area
- 6.5.2 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.6 Aesthetic and Visual Resources

Potential impacts to Aesthetic Resources, including light pollution, shall be described including but not limited to the following:

- 6.6.1 Impacts on visual resources and landscapes
- 6.6.2 Increases in light contamination
- 6.6.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

Biologic Impacts

Potential impacts to biological resources shall be described and quantified including but not limited to the following:

6.7 Vegetation/Flora and Associated Ecosystems

Describe and quantify alterations in vegetative cover due to:

- 6.7.1 Deforestation or wetlands destruction (associated with construction and fuelwood use)
- 6.7.2 Other vegetative type conversions
 - 6.7.2.1. Direct vegetative removal
 - 6.7.2.2. Indirect (e.g., poisoning by dust and pesticides)
- 6.7.3 Wildfires
- 6.7.4 Increased road and trail access in remote areas leading to destruction of existing vegetative cover (land use changes)
- 6.7.5 Spread of noxious or invasive species
- 6.7.6 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

Describe and quantify alterations in aquatic and terrestrial wildlife populations due to:

- 6.8.1 Fish and Aquatic Resources
 - 6.8.1.1. Loss in habitat (e.g., spawning, rearing, juvenile, or adult habitats) from changes in water quality due to sedimentation
 - 6.8.1.2. Disturbance of aquatic resources during construction, operations, or maintenance activities, including equipment noise, erosion and sedimentation, or vehicular movements
 - 6.8.1.3. Poisoning from fertilizers and pesticides
 - 6.8.1.4. Increased fishing
- 6.8.2 Wildlife Resources
 - 6.8.2.1. Loss of habitat, migratory routes/corridors, and breeding areas due to changes in vegetative cover/wetlands loss

E.2.3 Air Resources
Table E-3

F.5 Air Resources
Impact Assessment
Tools
Table F-5

E.2.4 Noise and
Vibration
Table E-4

F.6 Noise Impact
Assessment Tools

E.2.5 Aesthetic
Resources

F.7 Aesthetic/Visual
Resource Impact
Assessment Tools
Table F-6

E.3 Biological
Environment
Table E-5

E.3.1 Terrestrial
Species and
Associated
Ecosystems

E.3.2 Aquatic
Ecosystems

F.8 Flora, Fauna,
Ecosystems and
Protected Areas
Impact Assessment
Tools
Table F-2

- 6.8.2.2. Disturbance of habitat, migratory routes/corridors and breeding areas due to project construction, operation, and maintenance, recreational use, and human settlement associated with the project (e.g., noise, vibration, illumination, vehicular movement)
- 6.8.2.3. Loss or contamination of drinking water for wildlife species
- 6.8.2.4. Poisoning (e.g., direct contact with toxic wastes/substances)
- 6.8.2.5. Animals attracted to garbage and food waste generated at construction camps and campsites
- 6.8.2.6. Increased hunting
- 6.8.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.9 Endangered or Threatened Species or Habitats

Describe and quantify impacts to endangered or threatened species or habitats

- 6.9.1 Biodiversity
- 6.9.2 Individual species (with special emphasis on endemic, rare, threatened and endangered species)
- 6.9.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.10 Protected Areas

Social-Economic-Cultural Impacts

The EIA shall assess potential positive and negative impacts to social-economic-cultural resources including but not limited to the following:

6.11 Socio-Economic Conditions

- 6.11.1 Increased individual incomes
 - 6.11.1.1. Direct employment at the project
 - 6.11.1.2. Indirect employment generated by project activities
 - 6.11.1.3. Increased purchases from local businesses
 - 6.11.1.4. Other economic activities stimulated in the community as a result of the project
- 6.11.2 Employment opportunities for local residents
- 6.11.3 Increased tax base
- 6.11.4 Displacement and relocation of current settlements, residents or community resources
- 6.11.5 Displacement or disruption of people’s livelihoods (e.g., fishing, hunting, grazing, farming, forestry and tourism)
- 6.11.6 Public finance requirements – will more infrastructure need to be built and maintained to meet the demands of increased population in the areas of public education and public service (water, sanitation, roads, emergency services, etc.)
- 6.11.7 Reduction in quality of life for residents from visual and noise impacts
- 6.11.8 Change in crime rate (drugs, alcohol, prostitution, etc.)
- 6.11.9 Change in population (temporary or permanent)
- 6.11.10 Change in character of community
- 6.11.11 Change in religious, ethnic or cultural makeup of community
- 6.11.12 Impacts on public health
- 6.11.13 Impacts on worker health and safety
 - 6.11.13.1. Identification of hazardous jobs and number of workers exposed with duration of exposure
 - 6.11.13.2. Identification of physical risks and safety aspects
- 6.11.14 Potential for fires
- 6.11.15 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.12 Infrastructure

E.3.3 Endangered or Threatened Species and Habitats and Protected Areas

F.8 Flora, Fauna, Ecosystems and Protected Areas Impact Assessment Tools

E. Social-Economic-Cultural Environment Table E-6

F.9 Socio-Economic Conditions, Infrastructure and Land Use

F.12 Health and Safety Impact Assessment Tools

- 6.12.1 Transportation infrastructure
This section of the EIA addresses impacts of transportation and traffic patterns on existing roads. The impacts of new and existing roads on water quality, biological resources and land use should be addressed in those respective sections. The EIA shall assess potential impacts to transportation systems including but not limited to the following:
- 6.12.1.1. Potential changes to traffic patterns, densities, and traffic safety issues in area affected by project
- A determination of vehicular traffic density in the project area (before, during, and after the proposed activities)
 - Potential for traffic accidents
 - Congestion
 - Noise
- 6.12.1.2. Potential impacts to previously inaccessible areas from improvement of roads
- 6.12.2 Public health infrastructure
- 6.12.2.1. Increased need for public health infrastructure
- 6.12.2.2. Alterations to public health infrastructure
- 6.12.3 Communications infrastructure
- 6.12.3.1. Increased need for communications infrastructure
- 6.12.3.2. Alterations to communications infrastructure
- 6.12.4 Energy infrastructure
- 6.12.4.1. Increased need for energy infrastructure
- 6.12.4.2. Alterations to energy infrastructure
- 6.12.5 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.13 Cultural, Archeological, Ceremonial and Historic and Resources

- 6.13.1 Destruction during construction
- 6.13.2 Damage and alteration
- 6.13.3 Removal from historic location
- 6.13.4 Introduction of visual or audible elements that diminish integrity
- 6.13.5 Neglect that causes deterioration
- 6.13.6 Loss of medicinal plants
- 6.13.7 Loss of access to traditional use areas
- 6.13.8 Damage to resources due to increased visitation promoted by the project
- 6.13.9 Impacts to previously inaccessible resources from development/improvement of roads
- 6.13.10 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.14 Land Use

- 6.14.1 Temporary and permanent changes in land use by both area and location
- 6.14.1.1. Immediate project area
- 6.14.1.2. Surrounding areas (induced by economic development)
- 6.14.1.3. In previously inaccessible areas now accessible due to improvement of roads
- 6.14.2 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context
- 6.14.3 Social infrastructure (schools, cemeteries, churches, other public buildings, communication systems and housing)
- 6.14.3.1. Increased need for additional infrastructure
- 6.14.3.2. Alterations to social infrastructure
- 6.14.4 Existing tourism and recreation infrastructure
- 6.14.4.1. Change in tourist activities
- 6.14.4.2. Increased need for tourism and recreation infrastructure
- 6.14.4.3. Alterations to tourism and recreation infrastructure

**E.4.2 Infrastructure:
Systems,
Equipment,
Capacity,
Performance
Table E-7**

**F.9 Socio-Economic
Conditions,
Infrastructure and
Land Use**

**E.4.3 Cultural,
Archeological,
Ceremonial and
Historic Resources
Table E-8**

**F.10 Cultural,
Archeological,
Ceremonial and
Historic Resources**

E.4.4 Land Use

**F.9 Socio-Economic
Conditions,
Infrastructure and
Land Use**

- 6.14.5 Housing market (during construction and operation and after closure)
- 6.14.6 Identification of any components of the proposed project that would fall within 25- or 100-year flood plains
- 6.14.7 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

7 Mitigation and Monitoring Measures

This section of the EIA must include measures designed to mitigate potential adverse impacts to physical, biological and social-economic-cultural resources from construction, operation and closure of the proposed project and alternatives. These shall include measures to avoid and prevent, and if needed, to reduce or minimize adverse impacts. The project proponent must include measures considered to be "best practices" in the design of all alternatives.

Here and/or in the Environmental Management Plan section, proposed mitigation shall be described in auditable terms and at a level of detail sufficient to demonstrate its effectiveness in addressing the concern or performance criterion, including its anticipated level of effectiveness and/or measurable performance, and design specifications.

The monitoring plan must include monitoring throughout the life of the project for each potential mitigation to confirm the effectiveness of the measure and support contingency plans to provide assurance that the project, at the site preparation, construction, operation, expansion, and closure stages will meet applicable environmental requirements/standards by law, and fall within the limits of impacts deemed acceptable upon approval of the EIA. Some important items to address in the mitigation plan and associated monitoring plans include, but are not limited to the following:

Physical Impacts

7.1 Geologic Resources and Hazards

- 7.1.1 Pre-excavation, onsite geological inspection and geotechnical study protocols to determine slope stability and landslide risks
- 7.1.2 Slopes built and maintained to avoid landslides and favor revegetation and soils formation
- 7.1.3 Slope stabilization by constructing retaining walls, using vegetation, geotextile membranes, or other mechanical methods
- 7.1.4 Use of signage to mark areas where slopes are not stable as a preventive measure in the event of a landslide
- 7.1.5 Mitigation measures unique to specific alternatives

7.2 Soil Resources

- 7.2.1 Erosion and sedimentation control measures (temporary and permanent) including when each will be installed or implemented, how often it will be checked and the process for and timing of removal of temporary measures
- 7.2.2 Spoil and debris disposal measures
- 7.2.3 Best management practices to minimize soil disturbance
- 7.2.4 Decommissioning/Rehabilitation Plan-if needed (summary of relevant measures with full document in Annex)
- 7.2.5 Restrictions on discharge of pollutants to soil
- 7.2.6 Mitigation measures unique to specific alternatives
- 7.2.7 Water Resources
- 7.2.8 Quality
 - 7.2.8.1. Water Quality Management Plan (summary of relevant measures with full document in Annex)
 - Sewage and domestic wastewater
 - Nonpoint sources – runoff, erosion and sediment control prevention measures
 - 7.2.8.2. Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
 - 7.2.8.3. Solid Waste Management Plan (summary of relevant measures with full document in Annex)
 - 7.2.8.4. Hazardous Waste Management Plan (summary of relevant measures with full document in Annex)

G. Mitigation and Monitoring Measures
Tables G-1, G-2 & G-3

Tables G-1, G-2 & G-3

Appendix D

- 7.2.8.5. Transport system construction and maintenance to avoid erosion and sedimentation including:
 - Elevation or rerouting
 - Design for proper run-off control and catchment
 - Provision of culverts to allow flow that might otherwise be impeded by roadways or other rights of way
 - Appropriate traffic control
- 7.2.8.6. Off-road vehicle use restrictions
- 7.2.8.7. Waste minimization practices
- 7.2.9 Quantity
 - 7.2.9.1. Water conservation practices
- 7.2.10 Mitigation measures unique to specific alternatives
- 7.3 Air and Climate**
- 7.3.1 Dust control measures
- 7.3.2 Energy conservation measures
- 7.3.3 Emissions control measures
 - 7.3.3.1. Emissions reduction equipment
 - 7.3.3.2. Maintenance and inspection of equipment and vehicles using combustion engines to reduce emissions
- 7.3.4 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- 7.3.5 Hazardous Materials Management Plan (summary of relevant measures with full document in Annex)
- 7.3.6 Mitigation measures unique to specific alternatives
- 7.4 Noise and Vibration**
- 7.4.1 Noise control measures
 - 7.4.1.1. Noise reduction technologies (suppression equipment, sound-absorbing structures, vibration dampening devices, berms, noise barriers, etc.)
- 7.4.2 Mitigation measures unique to specific alternatives
- 7.5 Aesthetic Resources**
- 7.5.1 Relocation of project to another site
- 7.5.2 Redesign of placement of project structures on site
- 7.5.3 Redesign height and location of structures blocking view or producing light pollution
- 7.5.4 Lighting minimization
- 7.5.5 Visual/Landscape Management Plan (summary of relevant measures with full document in Annex)
- 7.5.6 Mitigation measures unique to specific alternatives
- Biological Impacts**
- 7.6 Vegetation/Flora and Associated Ecosystems**
- 7.6.1 Control of noxious and invasive weeds
- 7.6.2 Restoration/Rehabilitation Plan for disturbed areas (summary of relevant measures with full document in Annex)
- 7.6.3 Mitigation measures unique to specific alternatives
- 7.7 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems**
- 7.7.1 Fish and Aquatic Resources
 - 7.7.1.1. Scheduling construction to avoid critical or important fish life history periods (e.g., spawning)
 - 7.7.1.2. Relocation of sensitive, threatened or endangered species
 - 7.7.1.3. Mitigation measures unique to specific alternatives
- 7.7.2 Wildlife Resources
 - 7.7.2.1. Controls on hunting within the project area
 - 7.7.2.2. Modify locations of structures and locations and timing of activities to avoid critical ecosystems, migratory routes and breeding areas
 - 7.7.2.3. Scheduling construction to avoid critical or important wildlife history

Table G-5

Tables G-1, G-2 & G-3

Appendix F

Table G-4

- periods (e.g., breeding, nesting)
- 7.7.2.4. Relocation of sensitive, threatened or endangered species
 - 7.7.2.5. Mitigation measures unique to specific alternatives

Social-Economic-Cultural Impacts

7.8 Socio-Economic Conditions

- 7.8.1 Selection of an alternate site for the project, and if not possible then adhering to requirements of an internationally recognized Resettlement Action Plan (RAP)
- 7.8.2 Rehabilitation Program for people displaced by the project (summary of relevant measures with full document in Annex)
- 7.8.3 Training local residents for employment in the project
- 7.8.4 Development of a “Code of Conduct” (with associated training program) for workers to show respect to the local populations and their culture and social rules
- 7.8.5 Public Health Program to protect local population from potential health problems caused by the project operation (summary of relevant measures with full document in Annex)
- 7.8.6 Development of an Occupational Health, Industrial Safety and Accidents Prevention Program with appropriate accident prevention program, reporting and periodic review (summary of relevant measures with full document in Annex) including provision of routine training and testing, and proper safety equipment such as hearing protection, hardhats, steel-toed shoes, safety railings and fall arrestors
- 7.8.7 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- 7.8.8 Hazardous Materials Management Plan (summary of relevant measures with full document in Annex)
- 7.8.9 Mitigation measures unique to specific alternatives

7.9 Infrastructure

- 7.9.1 Transportation infrastructure
This section of the EIA addresses mitigation measures for transportation and traffic patterns on existing infrastructure (roads, airports, air strips, harbors, etc.). Mitigation of impacts of new and existing transportation infrastructure on water quality and biological resources and land use should be addressed in those respective sections.
 - 7.9.1.1. Transportation Plan (summary of relevant measures with full document in Annex)
 - Placement of traffic signals
 - Establishing, posting and enforcing speed limits for the vehicles that transport material
 - Training employees, contractors and subcontractors on measures to reduce or avoid potential accidents
 - Hiring and training security personnel devoted exclusively to preventing accidents in the access road and controlling the speed of the vehicles transporting project material
- 7.9.2 Mitigation measures unique to specific alternatives

7.10 Cultural, Archeological, Ceremonial and Historic and Resources

- 7.10.1 Modify structure and activity locations to avoid significant archeological, cultural, ceremonial and historic sites
- 7.10.2 If avoidance is not possible, conduct appropriate resource recovery operations before disturbing the sites
- 7.10.3 Clearly delineate boundaries and post signs identifying existing archeological, cultural and historic sites on roadsides and within the project area boundaries so that they are easily recognized by machinery operators, workers and tourists
- 7.10.4 Development of a training program so that staff recognize and respect

- culturally and archeological sensitive areas
- 7.10.5 Development of a code of conduct for activities in indigenous and local communities with the consent of and in collaboration with the community
- 7.10.6 Provide guests with information about and interpretation of the local culture and cultural heritage, as well as explaining appropriate behavior while visiting living cultures and cultural heritage sites
- 7.10.7 Development protocols for use during construction and operation stages for identifying and responding to archeological, cultural, ceremonial and historic sites not identified during the preliminary surveys
- 7.10.7.1 In the event such a site is found, they will stop activities at the site and report to the government relocation of cultural or historical resources, for their physical protection.
- 7.10.8 Mitigation measures unique to specific alternatives

7.11 Land Use

- 7.11.1 Criteria and method for calculating compensation for loss of land and crops
- 7.11.2 Compensation to farmers and ranchers for crop or forage losses and restore lost agricultural lands at the end of the project.
- 7.11.3 Compensation to property owners for relocation of their homes in the event the relocation is unavoidable
- 7.11.4 Mitigation measures unique to specific alternatives

8 Environmental Management Plan

The EIA shall include an Environmental Management Plan to prevent, mitigate and monitor each impact identified in the EIA. Plans will describe actions to be taken in sufficient detail to provide a basis for subsequent auditing of compliance with commitments made in the EIA process including who is responsible, how and when it will be implemented, what will be done and what results will be achieved, why it is being done, and how to know whether it is effective in addressing the underlying concerns. The Environmental Management Plan shall have the following elements:

8.1 Overview of Environmental Management Plan Organization and Policy

- 8.1.1 Describe the project management and how environmental management and organization relates to overall project responsibility. Describe the personnel and performance accountability system for design, operation, maintenance and closure for implementation of mitigation and monitoring measures
- 8.1.2 Describe the environmental policy that will govern the Project throughout its implementation, including at least the objectives, scope, commitment to continuous improvement, control and environmental monitoring and good relationship with neighboring populations and countries, as well as the commitment to internal controls such as compliance and environmental monitoring and routine audits
- 8.1.3 Identify the persons responsible for the implementation of mitigation measures, in each phase

8.2 Project-wide Mitigation Plan including an implementation schedule. It has two elements:

- 8.2.1 Environmental resource mitigation (such as air, water)
- 8.2.2 Socio-economic-cultural mitigation (relocation, etc.)

8.3 Project-Wide Monitoring Plan (usually specific to monitoring of surface and ground water)

- 8.3.1 Short-term and long-term monitoring of resource condition, including but not limited to:
- 8.3.1.1 Slope stability
- 8.3.1.2 Water Quality Monitoring Program
- Where, how and when monitoring shall be conducted
 - Parameters to be monitored
 - Monitoring frequencies
 - Sampling and analytical protocols to be used
- 8.3.1.3 Noise and Vibration
- 8.3.1.4 Cultural, ceremonial archeological and historic resources in the vicinity of

H. Environmental
Management Plan
Table H-1

Appendix E

the project

8.4 Short-term and long-term monitoring to ensure that the mitigation measures are functioning as predicted and that rehabilitation is working

8.5 Management of Other On- or Off-Site Environmental Pollution Control and Infrastructure

This section should address management of critical elements of pollution control and infrastructure that are not otherwise included in the mitigation plan because they were considered an essential part of the proposed project.

8.6 Contingency Plans

Contingency plans shall be prepared and described to address a) failure to meet specific performance criteria established by law or necessary for the project to meet its commitments in the EIA and b) respond to natural and other risks previously identified and mitigated in the EIA in the event reasonable and feasible mitigation measures to address the risks are inadequate.

- 8.6.1 Performance-related Contingency Plans, indicating the steps that will be taken should monitoring indicate that:
 - 8.6.1.1. Environmental standards are not being met
 - 8.6.1.2. Impacts are greater than predicted
 - 8.6.1.3. The mitigation measures and/or rehabilitation are not performing as predicted
- 8.6.2 Natural Disaster Risk Response Plan (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)
- 8.6.3 Other Risks Response Plans (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)
- 8.6.4 Contingency plans for maintaining service or reducing downtime in the event of accidents or natural catastrophes that disrupt project operation

9 Signed Commitment Statement

The EIA shall contain a legally binding signed letter of commitment to meeting the terms of the EIA. The statement must be signed by the authorized representative of the proponent company with assurance that all financial surety measures as required by the regulatory agency have been met.

10 Annexes

These shall be numbered and duly referenced in the text

10.1 Public Consultation

- 10.1.1 Public consultation plan
- 10.1.2 A summary of public outreach activities including: audience, number of persons, organizations involved, concerns raised, responses to comments
- 10.1.3 Summary of response to comments
- 10.1.4 Actual copies of written comments

10.2 Technical Supporting Documents

- 10.2.1 Include maps, plans, charts and figures in the sequence mentioned in the EIA document
- 10.2.2 Zoning maps with resources and results of impacts
- 10.2.3 Special Studies if relevant but not readily accessible
- 10.2.4 Detailed materials on predictive tools/models and assumptions used for the assessment but too detailed for the body of the EIA

10.3 References

Submit a list of all references, (books, articles, technical reports and other information sources) cited in the various chapters of the EIA study with full biographic references, and the following conventional procedures cited in the literature: author, year, title, source, number of pages, and city of publication or issuance.

B.2 Public Participation

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3 TERMS OF REFERENCE (TOR) FOR COASTAL AND MARINE DEVELOPMENT PROJECTS

A. OVERVIEW

These terms of reference (TOR) describe the minimum requirements for the preparation of the Environmental Impact Assessment (EIA) for proposed coastal and marine tourism. Both the TOR and the cross referenced “*EIA Technical Review Guidelines for Tourism Projects*” should be used to establish minimally acceptable conditions for satisfying the requirement to submit an EIA. There are three different TORs for tourism projects. Part A, Overview, is common to all three TORs but Part B is tailored respectively to: 1. Hotel and Resort Developments, 2. Concessions, and 3. Marine and Coastal Tourism. The three TORs are structured to facilitate mixing and matching as appropriate to the purpose and need for a proposed project and alternatives.

These TORs are focused on specific types of coastal and marine tourism activities such as:

- Docks
- Marinas
- Developed beaches
- Marine recreational activities (boating, sailing, jet skiing, diving, snorkeling, etc.)
- Sport fishing

Many marine and coastal tourism developments may also include hotels, restaurants, campgrounds and other such components. These components are covered by the TOR for Hotel and Resort Developments.

The basic format for the EIA document that should be followed is:

- Table of Contents
- Acronyms and Abbreviations
- Executive Summary
- Project and Alternatives Description
- Environmental Setting
- Assessment of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Commitment Statement
- Annexes

In general, the EIA must identify and address:

- Applicable environmental standards, norms, and requirements set forth at the international, national, regional and/or local levels including those designed to meet the objectives of resource management and/or land use plans that may be in effect in and around the jurisdiction(s) in which the proposed project is located. In the absence of such standards, the EIA should establish a set of benchmarks that can be used in the analysis and selection of an alternative. The Guidelines identify standards in use by various countries and international organizations in Appendix C.
- Public/Stakeholder concerns related to impacts in and around the proposed project and alternatives at least for stakeholders within the geographic scope of potential impact. The project proponent should document specific steps taken to engage the public and other stakeholders, and engage these publics as early as possible before undertaking to prepare the EIA. Concerned publics include: local governments, persons living and working in the vicinity of the project, those with interests in resources that may be affected i.e., indigenous peoples, and those concerned about protected areas and prime agricultural lands. A summary of public outreach activities, audience, number of persons,

organizations involved, concerns raised, responses to comments and actual copies of written comments received should be included in the Annex.

- All relevant plans related to the proposed tourism project, for example, engineering and site preparation plans, operations and decommissioning/closure, environmental management, and mitigation in whatever form these may take.
- All phases of the project from feasibility studies to site preparation to operations to closure and also plans to expand capacity at the current or adjacent sites.
- Alternative approaches to meeting the purpose and need for the proposed tourism project, including siting, designing, constructing, operating and closing the project firstly to avoid and prevent, or secondly to reduce or minimize adverse or improve beneficial environmental or socioeconomic impacts. The EIA should assess as appropriate the impacts of a range of reasonable and technically feasible alternatives as well as the proposed project. The alternatives to the project must include a “no action” alternative, as well as consideration of best practices that may not otherwise have been incorporated in the proposed project. Other alternatives should be developed as needed to avoid or minimize significant adverse impacts associated with the proposal.
- Direct, indirect and cumulative impacts and their significance level.
- Uncertainty and how that uncertainty will be addressed through monitoring and contingency plans as may be needed to reduce risk of adverse impacts in the future.
- Specific commitments, including who is responsible, what will be done, when and how it will be monitored, reported and audited to confirm that commitments are met.

Finally, a key part of the TOR is obtaining a legally binding commitment from the project proponent that the approved EIA will be implemented as presented. Such a commitment adds to the legal enforceability of the outcomes of the EIA process.

B. DETAILS FOR COASTAL AND MARINE DEVELOPMENT PROJECTS

0 Table of Contents

A general Table of Contents for the Environmental Impact Assessment (EIA) shall be provided. The Table of Contents shall be organized in such a manner as to facilitate the use of the EIA by reviewers and project implementers. EIAs for larger projects should have a more detailed Table of Contents than those for smaller projects. At a minimum, the Table of Contents shall include the following:

- Acronyms and Abbreviations
- Executive Summary
- General Information
 - Objectives and Justification
 - Project Proponents
 - Project Team
 - Legal and Regulatory Framework
- Project and Alternatives Description
- Environmental Setting
 - Physical Environment
 - Geologic Resources
 - Soil Resources
 - Water Resources
 - Air and Climate
 - Noise and Vibration
 - Aesthetic Resources
 - Biological Environment
 - Vegetation/Flora
 - Aquatic and Terrestrial Wildlife/Fauna
 - Ecosystems: Terrestrial, Wetlands, Aquatic, Marine
 - Endangered or Threatened Species and Habitat
 - Protected Areas
 - Social-Economic-Cultural Environment
 - Socio-Economic Conditions
 - Infrastructure
 - Cultural, Archeological, Ceremonial and Historic Resources
 - Land Use
- Assessment of Impacts to resources described in the Environmental Setting
- Mitigation and Monitoring Measures
- Environmental Management Plan
 - Overview of Environmental Management Plan Organization and Policy
 - Project-wide Mitigation Plan
 - Project-wide Monitoring Plan
 - Management of Other On- or Off-Site Pollution Controls and Infrastructure
 - Contingency Plans
 - Performance-related Contingency Plan
 - Natural Disaster Risk Response Plan
 - Other Risk Response Plans
- Signed Commitment Statement
- Annexes
 - Public Consultation
 - Public Consultation Plan
 - Summary of Public Outreach Activities
 - Summary of Responses to Comments
 - Copies of Written Comments
 - Technical Supporting Materials
 - Maps and Plans, in the sequence mentioned in the EIA document
 - Charts and Figures
 - Details about predictive modeling used, calculations and assumptions
 - Special Studies
 - References

1 Acronyms and Abbreviations

All acronyms and abbreviations used in the EIA must be clearly and succinctly defined and described in this section. This can relieve the reader of the need to search for the first occurrence of a word and the citing of the acronym or abbreviation in the text.

2 Executive Summary

A general summary of the EIA shall be provided in this section. The summary shall be written using a vocabulary that can be easily understood by the public. It shall include at least the following information about the project from the EIA:

- Objectives and Justification
- Location
- Project Proponents
- Project Description
- Other Project Alternatives
- Environmental Setting
- Evaluation of Impacts
- Mitigation and Monitoring Measures
- Environmental Management Plan
- Issues raised by stakeholders and any outstanding issues

3 General Information

3.1 Objectives of and Justification for the Proposed Project

- 3.1.1 **Objectives:** A statement of the general and specific objectives (purpose) of the proposed project, including whether it is a new project, an expansion of an existing project (e.g., increase in land area or increase in visitor capacity) or modernization of an existing operation.
- 3.1.2 **Justification for the Project:** Provide a justification for the proposed project (need) highlighting the benefits to surrounding communities and economic development of the region and country.

3.2 Project Proponents

- 3.2.1 Names, addresses, telephone numbers, and applicable legal documentation of proponents (including developers, major equipment suppliers if part of project team, shareholders and providers of financing, and representatives).
- 3.2.2 Names and contact information for responsible parties within the organization.
- 3.2.3 Financial viability of the company (including a certified banking statement indicating that the company is financially stable and reputable).
- 3.2.4 Bonding requirements and proof of ability to meet bonding requirements sufficient to cover the anticipated costs of environmental management during all phases, as well as the costs, by a third party, of decommissioning and long-term post-closure liabilities associated with the project.

3.3 Project Team

This section shall provide information on the multidisciplinary team that prepares the EIA. The types of professionals included in the team shall be appropriate to the type of project and the type of environment in which the project is located and may include (but not be limited to) engineers, architects, biologists, geologists, hydrologists, air quality experts, archeologists, anthropologists, sociologists and economists. The information provided for each member of the EIA project team includes the following:

- 3.3.1 Names, addresses and registry numbers of contractors.
- 3.3.2 Names, contact information, qualifications and registry numbers of key personnel involved in the study; as well as an affidavit indicating their area of participation.
- 3.3.3 List of professionals/experts participating in the EIA, their areas of expertise, degrees, experience, professional registrations and stamps, seals and signatures.

3.4 Legal and Regulatory Framework

This section of the EIA shall define the legal framework under which the EIA is being completed listing and summarizing requirements or alternatives used as benchmarks, and evidence of non-applicability or compliance, including:

- 3.4.1 Information that demonstrates rights and access:

C.2 Documentation of Purpose and Need

C.3.1 General Information

G.6 Financial Assurance

C.3.1 General Information

C.3.1 General Information

- 3.4.1.1 Ownership with written authorization
- 3.4.1.2 Governmental authorization (if required)
- 3.4.1.3 Period of lease/permit/concession agreement
- 3.4.1.4 Maps showing the lease/permit/concession area
- 3.4.2 Applicable environmental standards, norms and requirements set forth at the international, national, regional and/or local levels
 - 3.4.2.1 In the absence of such standards, identify a set of benchmarks used in the analysis
- 3.4.3 Required regulatory approvals and/or permits for all stages and their status
- 3.4.4 Applicable land use requirements (demonstrate conformity and compliance with applicable plans)
- 3.4.5 Applicable tourism strategies and plans – national, regional, and local
- 3.4.6 Applicable natural resource management or protected area management plans and responsible agency(ies) (demonstrate conformity and compliance with all applicable plans)

4 Project and Alternatives Description

The project proponent shall submit a full description and location of the proposed project and reasonable alternatives including ancillary facilities and operations such as the camp/housing for construction and operation phases, borrow and disposal areas, sanitary services, waste disposal and transportation infrastructure, etc. as addressed through 4.1 to 4.3 below. It shall include at a minimum:

4.1 Location

The general location of the project and associated activities in terms of:

- 4.1.1 Political-administrative location (region, district, town or other relevant political-administrative units) with accompanying location map
- 4.1.2 Means of site access – i.e., by air, river, road, train or vehicle
- 4.1.3 Latitude and longitude of project area
- 4.1.4 Maps of project area at a scale of no less than 1:50,000 or as required by the regulatory agency
 - 4.1.4.1 Project plat plan and location on a fold-out 11" X 17" page.
 - 4.1.4.2 Indicate the project area and the direct and indirect areas of influence for the physical, biological and social-economic-cultural impacts
 - 4.1.4.3 All drawings should present scale and key coordinates or benchmarks as latitude/longitude, Universal Transverse Mercator (UTM) coordinates, or local survey plate that can be cross-referenced to latitude/longitude or UTM coordinates
- 4.1.5 Has the area of the project ever been a tourist destination before?
 - 4.1.5.1 If so, show other tourist facilities in the area on the maps, including those under construction and, if known, those in the design phase

4.2 Summary of Proposed Project and Alternatives

All project alternatives that are reasonable and feasible and meet the purpose and need for the proposed project shall be identified, summarized in this section, and evaluated in the EIA as appropriate. In addition to the proposed project, such alternatives include alternative locations, alternative site configuration of elements of the project, alternative size, and alternative plans for construction, operation and decommissioning of the project including best practices that may avoid and/or reduce the adverse impacts to the physical, biological or social-economic-cultural environments.

If the project area or the buffer zone of the project area for an alternative is in an ecologically fragile area, the description of the alternative must include a clear justification for not opting for another site. Identify which alternatives will be carried through the analysis in the EIA and the basis for that decision.

4.3 Project and Alternatives Details

The EIA shall provide specific project details for the proposed project and each alternative as identified in subsections 4.3.1 through 4.3.8. The level of detail presented shall be the same for the proposed project and each alternative evaluated. The following project details shall be provided:

- 4.3.1 Type and nature of the project
 - 4.3.1.1 Type (dock, marina, developed beach, marine recreational activities, etc.)

C. Project and Alternatives Description

C.3.2 Overall Project Description Information

C.3.5 Maps, Diagrams, Site Design and Plan

C.3.2 Overall Project Description Information

C.3.4 Project Details

C.3.5 Project Alternatives Table C-5

- 4.3.1.2 Overview of all proposed facilities and activities and their relationship
- 4.3.1.3 A detailed drawing showing access points, layout of all project components including on-site roads, walkways and paths, existing structures, topography and natural features such as water bodies, wetlands and geologic structures
- 4.3.1.4 A summary table showing the type, quantity and size of each component
- 4.3.1.5 Expected life of operation
- 4.3.1.6 Anticipated use: maximum, minimum and average by month and season for:
 - Day use
 - Overnight stays (if applicable)
- 4.3.1.7 Recreational, leisure and adventure uses by visitors of surrounding natural and cultural resources
 - Type of use (type of activities, motorized or non-motorized, etc.)
 - Anticipated use (maximum, minimum and average by month and season)
- 4.3.2 Principal project facilities
Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.
 - 4.3.2.1 Dock
 - Size
 - Uses
 - On-dock facilities (office/control point, toilets, fueling, bar/store/restaurant [refer to Resort TOR], storage, etc.)
 - On-shore facilities (office/control point, toilets, bar/store/restaurant [refer to Resort TOR], storage, etc.)
 - 4.3.2.2 Marina
 - Size
 - Number of slots/moorings
 - Breakwaters
 - Dredging requirements (if applicable)
 - In-marina facilities (office/control point, toilets, fueling, bar/store/restaurant [refer to Resort TOR], storage, etc.)
 - On-shore facilities (office/control point, toilets, bar/store/restaurant [refer to Resort TOR], storage, etc.)
 - 4.3.2.3 Dredging (if applicable)
 - Legal authorization for the dredging
 - Name of water body to be dredged
 - Dimensions of area to be dredged
 - Map showing extent of dredging operations
 - Longitudinal and transversal cross-sections of the area to be dredged
 - Operation description
 - Frequency
 - Operational hours
 - Time table for dredging
 - Equipment Roster, specifying type and quantity by: size, motor size, and fuel requirements for each type of dredging equipment
 - Disposal site to be used
 - Beneficial use of sediment or alternatives evaluation
 - Disposal site evaluation, if new site is proposed
 - 4.3.2.4 Developed beach
 - Beach uses
 - On-beach structures (recreational equipment rental/storage, bath/toilet facilities, bar, restaurant [refer to Resort TOR], lifeguard towers, sun shades, etc.)
 - Breakwaters and shoreline erosion protection
 - Type and source of beach material (if applicable)

- 4.3.2.5 Marine recreational activities (boating, sailing, jet skiing, diving, snorkeling, etc.)
 - Types of uses
 - Dock
 - Equipment roster (types, numbers and sizes of equipment made available to clients)
 - On-site facilities (equipment storage, toilets, etc.)
- 4.3.2.6 Sport fishing
 - Types of services and equipment provided
 - Facilities
- 4.3.3 Onsite support facilities

Location and design information – primary material of construction (wood, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections.

 - 4.3.3.1 On-site walkways
 - Widths and layout
 - Surface material
 - Lighting (if applicable)
 - Erosion control
 - 4.3.3.2 Storage areas and warehouses
 - Locations
 - Sizes
 - Materials to be stored
 - 4.3.3.3 Parking lots
 - Locations
 - Sizes
 - Lighting
 - 4.3.3.4 Repair shops
 - Activities
 - Locations
 - Sizes
 - 4.3.3.5 Fuel stations
 - Commercial or for operator use only
 - Locations
 - Number, size and configuration of tanks (buried or above ground, leak protection, etc.)
 - 4.3.3.6 Electrical energy
 - Consumption, including energy conservation measures
 - Source – offsite
 - Transmission lines (if necessary)
 - Substation (if necessary)
 - On-site power generation power
 - Type
 - Emissions and noise controls (if applicable)
 - On-site distribution (routes, overhead or buried)
 - 4.3.3.7 Water supply
 - Requirements (m3/day), including conservation measures
 - Rights
 - Sources
 - Treatment
 - Distribution
 - 4.3.3.8 Waste handling and disposal
 - Sewers
 - Wastewater treatment
 - Quantity
 - Type
 - Discharge
 - Solid waste

Table C-11

C.4.1 Water and Sanitation Facilities
Table C-8

C.4.2 Solid and Hazardous Waste
Tables C-9 & C-10

- Quantity (kg/day and m³/day), including waste reduction measures
 - Collection
 - Separation (if any)
 - Disposal
- 4.3.4 Access and transportation
- 4.3.4.1 Roads
- Identify all new and existing roads to be used (including closed roads that will be reopened, if applicable)
 - Traffic volume, operating speeds and trip times
 - Closed roads that will be reopened
 - Detailed information on any access and on-site roads to be constructed or upgraded
 - Location
 - Timing of construction
 - Road surface and shoulder width and barriers
 - Grade
 - Construction methods including clearing and grubbing
 - Construction materials
 - Compaction
 - Stream and wetland crossings and associated designs
 - Animal crossings
 - Sedimentation and erosion prevention and control structures and practices
 - Stabilization methods for cuts and fills
 - Typical elevations for each type and situation of road displaying construction materials, levels of compaction and erosion and sedimentation features
 - Location and size (area and volume of material) of borrow pits
 - Lighting (where applicable)
 - Operation
 - Closure plan (if applicable)
 - Traffic volume, operating speeds and trip times
 - Dust control for construction and operation
 - Maintenance
 - Roster for construction and maintenance equipment, specifying type and quantity by size, motor size, and fuel requirements
- 4.3.4.2 Other transport systems (if applicable)
- Airstrip
 - Length and width
 - Surface material
 - On-site facilities
 - Rail transport – Same as for Roads with the addition of:
 - Tightest curves
 - Track construction materials
 - Turnouts and sidings
 - Railroad communications and signaling
- 4.3.5 Best Practices
- Description of standard best practices to be incorporated into the project.
- 4.3.6 Construction phase and timetable
- 4.3.6.1 Schedule for each phase of construction for all project and ancillary facilities (including temporary structures) including, but not limited to:
- Mobilization
 - Road construction and improvements
 - Land clearing
 - Blasting
 - Erosion and sediment control
 - Dredging
 - Breakwater construction

**C.3.7 Transportation:
Roads, Pathways,
Air Strips, and Boat
Facilities**

Table C-2

**C.3.6 Details on
Construction
Procedures**

Table C-1

- Excavation and subgrade preparation
- Foundation and pilings preparation
- Concrete work
- Construction or installation of each project facility
- Stabilization of disturbed areas
- 4.3.6.2 A GANTT or critical path management chart for the entire project, from start to finish
- 4.3.6.3 Borrow and fill material
 - Locations from which fill material will be sourced
 - Locations where fill material will be placed on-site
 - Locations where fill and other construction material will be temporarily stockpiled/stored
 - Borrow and spoil disposal
- 4.3.6.4 Key areas (related to environmental sensitivity/importance) that will remain undisturbed during construction (waterways, wetlands, forested areas and other "green space," etc.)
- 4.3.6.5 Erosion control structures such as:
 - Temporary diversions for waterways
 - Erosion control barriers
- 4.3.6.6 Equipment
 - Equipment Roster, specifying type and quantity by size, weight, motor size, and fuel requirements for each piece of equipment or machinery used in each activity
 - Transportation mobilization and mobilization frequency
 - Machinery and equipment mobilization routes to be used, as well as the features of the ways on which they will be transported, including a map of routes, as applicable, and mobilization.
- 4.3.6.7 Labor during construction
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
- 4.3.6.8 Raw materials to be used for construction
 - Give a complete list of the raw materials and construction materials to be used, indicating the amounts per day, month, and the storage means
 - Include an inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.6.9 Construction camp (if applicable)
Description of the camp including but not limited to:
 - A map showing all facilities at a legible scale appropriate to the size of the project
 - Buildings by type (use) and size
 - Roads
 - Electrical transmission lines and/or substation
 - Drainage
 - Water supply and distribution
 - Distribution system
 - Use (m³/day)
 - Rights
 - Sources
 - Waste handling and disposal components
 - Sewers
 - Wastewater treatment
 - Solid waste facilities
 - Energy generation and use requirements (including fuelwood consumption and source)
 - Closure or transition from construction camp to onsite employee

**C.6 Manpower and
Local Purchases**

- housing
- 4.3.6.10 Decommissioning of temporary structures including measures for returning the area to pre-construction features
- 4.3.7 Operation phase
- 4.3.7.1 Description of how the project would operate (seasonally, monthly, daily, hourly, as appropriate)
- 4.3.7.2 Operation information
- Roster of equipment and machinery to be used during operation, specifying type and quantity by size, weight, motor size, and fuel requirements for each activity
 - Labor during operation
 - Number and type of employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
 - Raw materials to be used for operation
 - List of the raw materials to be used, indicating the amounts per day, month, and the storage means
 - Inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- 4.3.8 Closure and decommissioning plan
- If it becomes clear that closure will be required, or when the project nears the the end of its service life, the project operator shall contact the proper regulatory agency(ies) to obtain the environmental guidelines to carry out the closure or decommissioning.
- 4.3.8.1 The project description shall include at least a general Restoration and Closure Plan, recognizing that terms of closure may be very different when this phase approaches
- 4.3.8.2 The description of restoration measures should include the size of the area to be restored as well as concurrent, temporary and final restoration measures to be used and their schedules. For each measure include:
- Area to be addressed
 - Timing and schedule for executing measures
 - Equipment and structure removal or conversion
 - Remedial measures, including success indicators and contingency measures if initial efforts are unsuccessful

5 Environmental Setting

Based on information available from the literature, government and special studies or other sources, the EIA shall provide information on environmental setting for the different types of physical, biological and social-economic-cultural environments for the current situation, important trends and predicted situation in the absence of the proposed project. All sources of data must be cited in the EIA when and where they are used. Indicate the direct and indirect and cumulative impact areas of influence for physical, biological, and social-economic-cultural impacts and basis for defining area. This section shall include at a minimum, the following information:

Physical Environment

5.1 Geologic Resources and Hazards

- 5.1.1 Cross sections of the geology including soil horizons
- 5.1.1.1 Geologic characteristics at all project structure locations and in the area of influence.
- 5.1.1.2 Geological map of the project area and area of influence at a scale of 1:10,000.
- Submit a map of the area displaying all characteristics described. Include geological profiles and cuts, as well as stratigraphic columns.
- 5.1.2 Topography and slope conditions and geomorphology
- 5.1.3 Seismicity and stability characteristics

C.6 Manpower and Local Purchases

C.7 Closure

D. Environmental Setting Table D-1

D.2 Physical Environment

D.2.1 Geology and Soils

- 5.1.1.3 Indicate the general seismic and tectonic features of the surrounding areas:
 - Seismic sources close to the project area
 - Seismic history
- 5.1.1.4 Volcanic activity (must be provided by all the projects that are located within a radius of 30 km from an active volcanic emission center)
 - Indicate the general volcanic features of the area near the site
 - Historical eruptions
 - Period of recurrence
 - Type of eruptions
 - Affected areas and high risk areas
- 5.1.1.5 Describe project areas susceptible to soil liquefaction; planned, active, and abandoned mines; karst terrain; and areas of potential ground failure, such as subsidence, slumping, and land sliding

5.2 Soil Resources

The EIA shall describe baseline soil resources, and make use of maps, tables and accompanying narrative text to describe the soils at the project site and along new or reconditioned access routes associated with the project and included in the EIA.

- 5.2.1 Types, capacity and uses
- 5.2.2 Fertility and potential uses of the land for agriculture
- 5.2.3 Stability and permeability
- 5.2.4 Erosion and sedimentation potential
- 5.2.5 Quantity and quality available for revegetating and restoring the disturbed area at time of closure

5.3 Water Resources

- 5.3.1 Marine water
 - 5.3.1.1 Currents
 - 5.3.1.2 Wave patterns
 - 5.3.1.3 Bathymetry
 - 5.3.1.4 Substrate
 - Composition
 - Structure
- 5.3.2 Fresh water
 - 5.3.2.1 Names and locations on maps of all permanent and intermittent streams, rivers, wetlands, lakes and reservoirs within the area of influence
 - 5.3.2.2 Flow (only necessary if water source will be surface water or if wastewater will be discharged to surface water)
 - The monthly minimum, mean and maximum recorded flows in m³/s of the river at the diversion point
 - Location of gauging stations where data were gathered to derive the curves
 - 2-, 10-, 25-, 50- and 100-year runoff events and 100-year floodplain for streams and rivers
 - 5.3.2.3 Seasonal fluctuations in area and volume of wetlands, lakes and reservoirs
 - 5.3.2.4 Delineation of watersheds and water drainage pattern in the area of influence using cadastral/aerial/remote sensing satellite imageries (map)
 - Runoff characteristics of watersheds
 - 5.3.2.5 Inventories of consumptive and non-consumptive use
 - 5.3.2.6 Surface water balance (only necessary if water source will be surface water)
 - Existing uses by type and volume
 - Capacity
- 5.3.3 Groundwater

Provide a map and identify and describe aquifers and underground waters adjacent to the project, indicating the depth of the water table along with trend data:

 - 5.3.3.1 Hydrogeologic characteristics of the project site including fuel storage areas, wastewater discharge areas, and golf courses (vadose zone and

D.2.1 Geology and Soils

D.2.2 Water Resources

D.2.2.2 Marine Waters

D.2.2.1 Surface Water

D.2.2.3 Groundwater

- aquifers)
 - Water table levels (dry and rainy season)
 - Flow regime
 - Flow direction
 - Influences of geologic structures (faults, contacts, bedrock fracturing, etc) and surface water bodies
- 5.3.3.2 Location and characteristics of all existing springs and wells in the area of influence (on topographic map)
 - Flow/yield data for each spring and well (including water levels in wells)
 - Depth and construction information for each well
 - Existing uses by type and volume
 - Capacity available
- 5.3.3.3 Groundwater recharge data
- 5.3.3.4 Groundwater potential yield (only necessary if water source will be groundwater)
- 5.3.4 Water quality
 - 5.3.4.1 Existing water quality data
 - Locations of all water quality monitoring stations in and around the project area (with direction and distance from the site)
 - Water quality data for each station for those parameters likely to be affected by project construction, operation or maintenance
 - Physical, chemical and biological water quality characteristics, including water temperature and dissolved oxygen concentrations
 - 5.3.4.2 Supplemental sampling and analysis (if existing data is not adequate to characterize water quality)
Sampling and Analysis Program in annex
 - Proposed locations of representative monitoring stations upstream and downstream of proposed project activities
 - Monitoring program design with at least a year of baseline data being collected
 - Parameters (including as appropriate, physical, chemical and biological)
 - Frequency of collection
 - Analytic methods
 - 5.3.4.3 Water quality standards that apply to the project (marine and fresh water)
 - Current uses
 - Standards for current uses (in the absence of such standards, identify a set of benchmarks used in the analysis)

5.4 Air and Climate

Baseline information for air resources shall be collected for at least one year or as required by the regulatory agency and shall include at a minimum the following:

- 5.4.1 Climate and meteorology
 - 5.4.1.1 Source of data (meteorological station(s) from which climatological data have been obtained)
 - 5.4.1.2 Temperature variations
 - 5.4.1.3 Relative humidity
 - 5.4.1.4 Solar radiation and evaporation rates
 - 5.4.1.5 Rainfall (total precipitation, rainfall intensity, and duration by month)
 - 5.4.1.6 Wind Rose (Wind direction and speed, 24 hourly data)
 - 5.4.1.7 Statistical analysis of the data
 - 5.4.1.8 Risk of high impact storms, storm surges, hurricane levels, tropical storms frequency and seasonality

5.5 Noise and Vibration

Present a description of the noise and vibration levels for receptors near where noise generating activities of the project may occur. The EIA shall include:

- 5.5.1 Location of monitoring stations
- 5.5.2 Daytime and night time noise levels (measured in decibels)
- 5.5.3 Inventory of existing noise sources

D.2.3 Air and Climate

D.2.4 Noise and Vibration

5.6 Aesthetic and Visual Resources

- 5.6.1 Photos presenting baseline panoramic views of the project site from potential viewpoints
- 5.6.2 Viewsheds or other aesthetic or landscape resources
- 5.6.3 Existing sources of light contamination

Biological Environment

The EIA shall provide detailed information on the location and condition of ecosystems in and around the project area in the form of narrative, maps and tables, including the following:

5.7 Vegetation/Flora

- 5.7.1 Vegetative mapping of terrestrial and wetland habitats (aquatic and marine if appropriate) for project area and areas affected by the project (e.g., project site and areas around new roads)
- 5.7.2 Species and structure (abundance, density, status, plant communities, presence of invasive species, etc.)

5.8 Aquatic and Terrestrial Wildlife/Fauna

- 5.8.1 Fish and Aquatic Resources
 - 5.8.1.1 Identification of fish, mussel, macroinvertebrate and other aquatic species
 - Spatial and temporal distribution
 - Species life stage composition
 - Standing crop
 - Age and growth data
 - Spawning run timing
 - Extent and location of spawning, rearing, feeding and wintering habitat
- 5.8.2 Wildlife Resources
 - 5.8.2.1 Species (including status, i.e., endemic, migratory, exotic, endangered, threatened, keystone, etc.), life history, and seasonal use
 - 5.8.2.2 Breeding areas
 - 5.8.2.3 Mating and brooding areas
 - 5.8.2.4 Migratory corridors (if applicable)
 - 5.8.2.5 Important wildlife use areas (roosts, clay licks, etc.)

5.9 Ecosystems: Terrestrial, Wetlands, Aquatic, Marine

Much if not all that may be needed to address the environmental setting for terrestrial, wetlands, aquatic and/or marine ecosystems may have been covered in Sections 5.7 and 5.8. This section is not intended to duplicate that information; rather, it should integrate the information to ensure that the structure and function of each ecosystem is adequately presented.

5.10 Endangered or Threatened Species and Habitats

Sections 5.7 and 5.8 should identify all species in the project area. This section should highlight all endangered and threatened species and critical habitat that potentially occur in the vicinity of the project.

5.11 Protected Areas

Identify on maps the specific locations and boundaries of relevant national parks, sanctuaries, reserves, etc., as well as any areas proposed for protection. Provide a brief narrative description of each area.

Social-Economic-Cultural Environment

5.12 Socio-Economic Conditions

Identify nearby human settlements including the following information for each settlement:

- 5.12.1 Population (size, gender and age distribution)
- 5.12.2 Cultural characteristics (religion, ethnic composition, languages spoken, etc.)
- 5.12.3 Economic activities (employers, employment and incomes)
- 5.12.4 Tax base
- 5.12.5 Crime rates
- 5.12.6 Literacy rates
- 5.12.7 Community organizations
- 5.12.8 Public Health and Safety
 - 5.12.8.1 Diseases in the project area (including the sources of data and the

C.2.5 Aesthetic Resources

D.3 Biological Environment

D.3.1 Flora

D.3.2 Fauna

D.3.3 Ecosystems

D.3.4 Endangered or Threatened Species and Habitats

D.3.5 Protected Areas and Sensitive Ecosystems

D.4 Social-Economic-Cultural Environment

D.4.1 Socio-Economic Conditions and Resources

- methodology used to collect and analyze the data)
- 5.12.8.2 Level of emergency services and access to clinics, doctors and hospitals
 - 5.12.8.3 Existing practice for assessment of occupational health
 - 5.12.9 Skills, services and goods availability in the communities

5.13 Infrastructure

For each human settlement identified in subsection 5.12, describe the infrastructure in or serving the settlement, including the following information:

- 5.13.1 Transportation infrastructure
 - 5.13.1.1 Roads – Location and condition of all existing roads in the project area that may be used by the project or tourists coming to the project
 - Surface materials
 - Erosion and sediment control
 - Maintenance programs (what, when and whom)
 - Description of anticipated third-party improvements (government or entity other than the proponent)
 - Traffic capacity, patterns and densities
 - Safety levels and current circulation issues
 - Surface materials
 - Erosion and sediment control
 - Maintenance programs (what, when and whom)
 - 5.13.1.2 Airports and air strips – Locations, conditions, capacities, current uses and trends
 - 5.13.1.3 Other transportation infrastructure as applicable such as rail, bus, pipelines for fueling, harbors for cruise ships, and marinas for boats – Locations, conditions, capacities, current uses and trends
- 5.13.2 Public health infrastructure
 - 5.13.2.1 Drinking water supplies and treatment
 - 5.13.2.2 Wastewater treatment and management
 - 5.13.2.3 Solid and hazardous waste management and treatment
- 5.13.3 Communications infrastructure
 - 5.13.3.1 Types of communications systems
 - 5.13.3.2 Types of transmission (wired or wireless)
 - 5.13.3.3 Locations of transmission lines (if applicable)
 - 5.13.3.4 Locations of microwave towers and/or antennae (if applicable)
- 5.13.4 Energy infrastructure
 - 5.13.4.1 Types of energy
 - 5.13.4.2 Sources including location and description of generating facilities in the area of influence
 - 5.13.4.3 Transmission lines and/or pipelines
 - 5.13.4.4 Fuel storage facilities

5.14 Cultural, Archeological, Ceremonial and Historic and Resources

Identify all cultural, archaeological, ceremonial and historic resources within the area of influence, including the following information:

- 5.14.1 Data and maps relating to archeological, cultural, ceremonial, and historic sites in the direct vicinity of the project
- 5.14.2 Information on indigenous people or other traditional cultures, if any

5.15 Land Use

Describe actual and potential land use showing location, size and proximity within and surrounding the project area, including land use maps, and to extent possible, integrated into one map.

- 5.15.1 Population centers, including information and locations of
 - 5.15.1.1 Schools
 - 5.15.1.2 Cemeteries
 - 5.15.1.3 Churches
 - 5.15.1.4 Other public buildings
 - 5.15.1.5 Housing (including housing density)
 - 5.15.1.6 Commercial areas
- 5.15.2 Agricultural lands
- 5.15.3 Forested lands

D.4.2 Infrastructure Systems and Equipment

D.4.2.1 Transportation Infrastructure

D.4.2.2 Public Health Infrastructure

D.4.2.3 Communications Infrastructure

D.4.2.4 Energy Infrastructure

D.4.3 Cultural, Archeological, Ceremonial and Historic Resources

D.4.4 Land Use

- 5.15.4 Protected areas (including but not limited to)
 - 5.15.4.1 National parks
 - 5.15.4.2 Wildlife refuges
- 5.15.5 Wetlands and mangroves
- 5.15.6 Other environmentally sensitive areas
- 5.15.7 Tourism and recreation areas
 - 5.15.7.1 Recreation facilities
 - 5.15.7.2 Eco-cultural-tourist locations
- 5.15.8 Culturally sensitive areas
- 5.15.9 Flood plains and water bodies
- 5.15.10 Coastal zones
- 5.15.11 Other land uses as appropriate

6 Assessment of Impacts

The EIA shall provide information on potential impacts (direct, indirect and cumulative) and the magnitude and frequency of potential impacts on physical, biological, social-economic-cultural resources resulting from construction, operation and closure of the proposed project and alternatives. The assessment shall use standardized predictive methods, such as models, to determine the specific range of impacts on environmental and socio-economic resources. The EIA shall identify which impacts are significant and the criteria used to make this judgment. Critical data input from project description and environmental setting analysis projecting the conditions in the environmental setting in the absence of the proposed project shall be used as the baseline upon which potential impacts are forecast. The EIA shall also identify sources of data used in the analysis and the uncertainties associated with the outputs of each method used.

Physical Impacts

6.1 Geologic Resources and Hazards

Potential impacts to geologic resources and potential effects on project structures shall be described including but not limited to the following:

- 6.1.1 Geologic hazards and potential effects on project structures
- 6.1.2 Changes in topography and drainage patterns
- 6.1.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.2 Soil Resources

Potential impacts to soil resources shall be described. The analysis shall include, but not be limited to the following:

- 6.2.1 Soil quality
 - 6.2.1.1 Contamination (accidental spills of fuel, oil or other hazardous substances)
 - 6.2.1.2 Impacts on use
- 6.2.2 Erosion, slope alteration, vegetation removal and drainage patterns
 - 6.2.2.1 Models for soil erosion should be included using methods like USLE, defining the areas with high erosion potential
 - 6.2.2.2 Sediment accumulation and transport
- 6.2.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.3 Water Resources

Potential impacts to surface water and groundwater shall be described. The analysis shall include but not be limited to the following:

- 6.3.1 Geomorphology
 - 6.3.1.1 Location of all stream or wetland crossings by access roads
 - 6.3.1.2 Modification/diversion in the existing drainage pattern
 - 6.3.1.3 Bank and shore erosion (stream crossings, shoreline developments and dredging)
 - 6.3.1.4 Potential for increased flash flooding
- 6.3.2 Quantity
 - 6.3.2.1 Impact of water use on surface water and groundwater, including specific uses
 - Model results

E. Potential Impacts

F. Assessing Impacts

F.1 Overview of Using Predictive Tools for an EIA

F.2 General Approaches for Prediction of Impacts

Appendix C

E.2 Physical Environment

E.2.1 Geology, Soils and Ocean Topography
Table E-1

F.3 Soils and Geology Impact Assessment Tools

E.2.2 Water Resources
Table E-2

F.4 Water Resources Impact Assessment Tools
Table F-1

Table F-2
Table F-3

- Water table levels
 - Well production
 - Spring and stream flows
- 6.3.3 Quality
- 6.3.3.1 Salt water intrusion from well withdrawals
- 6.3.3.2 Runoff, erosion and sedimentation from roads, disturbed areas and stream crossings
- Sources
 - Receiving waters
 - Concentrations
 - Physical parameters
 - Chemical parameters
 - Biological parameters
- 6.3.3.3 Description of impact from wastewater discharges
- 6.3.3.4 Spills and accidents (chemicals, hazardous wastes and fuel spills)
- 6.3.4 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.4 Air and Climate

Potential impacts to air resources shall be described including but not limited to the following:

- 6.4.1 Impacts on ambient air quality
- 6.4.1.1 Sources (e.g., windblown dust, fixed and mobile equipment)
- 6.4.1.2 Concentrations
- 6.4.1.3 Receptors (e.g., communities, schools, soils, water bodies, ecosystems)
- 6.4.2 Greenhouse gas generation
- 6.4.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.5 Noise and Vibration

Potential impacts from noise shall be described including but not limited to the following:

- 6.5.1 Potential noise levels at different representative sites in the project area and in communities near the project area
- 6.5.2 Potential vibration due to blasting and movement of heavy equipment, and related damage to materials and structures
- 6.5.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.6 Aesthetic and Visual Resources

Potential impacts to Aesthetic Resources, including light pollution, shall be described including but not limited to the following:

- 6.6.1 Impacts on visual resources and landscapes
- 6.6.2 Increases in light contamination
- 6.6.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

Biologic Impacts

Potential impacts to biological resources shall be described and quantified including but not limited to the following:

6.7 Vegetation/Flora and Associated Ecosystems

Describe and quantify alterations in vegetative cover due to:

- 6.7.1 Deforestation or wetlands and mangrove destruction
- 6.7.2 Other vegetative type conversions
- 6.7.2.1 Direct vegetative removal
- 6.7.2.2 Indirect (e.g., poisoning by dust and pesticides)
- 6.7.3 Wildfires
- 6.7.4 Increased access to remote areas leading to destruction of existing vegetative

Table F-2
Table F-3

E.2.3 Air Resources
Table E-3

F.5 Air Resources
Impact Assessment
Tools
Table F-5

E.2.4 Noise and
Vibration
Table E-4

F.6 Noise Impact
Assessment Tools

E.2.5 Aesthetic
Resources

F.7 Aesthetic/Visual
Resource Impact
Assessment Tools
Table F-6

E.3 Biological
Environment
Table E-5

E.3.1 Terrestrial
Species and
Associated
Ecosystems

- cover (land use changes)
- 6.7.5 Spread of noxious or invasive species
- 6.7.6 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

Describe and quantify alterations in aquatic and terrestrial wildlife populations due to:

- 6.8.1 Fish and Aquatic Resources
 - 6.8.1.1 Loss in habitat (e.g., spawning, rearing, juvenile, or adult habitats) from changes in water quality, sea floor and destruction of coral
 - 6.8.1.2 Disturbance of aquatic resources during construction, operations, or maintenance activities, including equipment noise, erosion and sedimentation, pile driving and vehicular movements
 - 6.8.1.3 Increased fishing
- 6.8.2 Wildlife Resources
 - 6.8.2.1 Loss of habitat, migratory routes/corridors, and breeding areas due to changes in vegetative cover/wetlands loss
 - 6.8.2.2 Disturbance of habitat, migratory routes/corridors and breeding areas due to project construction, operation, and maintenance, recreational use, and human settlement associated with the project (e.g., noise, vibration, illumination, vehicular movement)
 - 6.8.2.3 Loss or contamination of drinking water for wildlife species
 - 6.8.2.4 Poisoning (e.g., direct contact with toxic wastes/substances)
 - 6.8.2.5 Animals attracted to garbage and food waste generated at construction camps, restaurants and on-site employee housing
 - 6.8.2.6 Increased hunting
- 6.8.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.9 Endangered or Threatened Species or Habitats

Describe and quantify impacts to endangered or threatened species or habitats

- 6.9.1 Biodiversity
- 6.9.2 Individual species (with special emphasis on endemic, rare, threatened and endangered species)
- 6.9.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.10 Protected Areas

Social-Economic-Cultural Impacts

The EIA shall assess potential positive and negative impacts to social-economic-cultural resources including but not limited to the following:

6.11 Socio-Economic Conditions

- 6.11.1 Increased individual incomes
 - 6.11.1.1 Direct employment at the project
 - 6.11.1.2 Indirect employment generated by project activities
 - 6.11.1.3 Increased purchases from local businesses
 - 6.11.1.4 Other economic activities stimulated in the community as a result of the project
- 6.11.2 Employment opportunities for local residents
- 6.11.3 Increased tax base
- 6.11.4 Displacement and relocation of current settlements, residents or community resources
- 6.11.5 Displacement or disruption of people's livelihoods (e.g., fishing, hunting, grazing, farming, forestry and tourism)
- 6.11.6 Public finance requirements – will more infrastructure need to be built and maintained to meet the demands of increased population in the areas of public

E.3.2 Aquatic Ecosystems

F.8 Flora, Fauna, Ecosystems and Protected Areas Impact Assessment Tools

Table F-2

E.3.3 Endangered or Threatened Species and Habitats and Protected Areas

F.8 Flora, Fauna, Ecosystems and Protected Areas Impact Assessment Tools

E. Social-Economic-Cultural Environment

Table E-6

F.9 Socio-Economic Conditions, Infrastructure and Land Use

- education and public service (water, sanitation, roads, emergency services, etc.)
- 6.11.7 Reduction in quality of life for residents from visual and noise impacts
 - 6.11.8 Change in crime rate (drugs, alcohol, prostitution, etc.)
 - 6.11.9 Change in population (temporary or permanent)
 - 6.11.10 Change in character of community
 - 6.11.11 Change in religious, ethnic or cultural makeup of community
 - 6.11.12 Impacts on public health
 - 6.11.13 Impacts on worker health and safety
 - 6.11.13.1 Identification of hazardous jobs and number of workers exposed with duration of exposure
 - 6.11.13.2 Identification of physical risks and safety aspects
 - 6.11.14 Potential for fires
 - 6.11.15 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.12 Infrastructure

- 6.12.1 Transportation infrastructure

This section of the EIA addresses impacts of transportation and traffic patterns on existing roads. The impacts of new and existing roads on water quality, biological resources and land use should be addressed in those respective sections. The EIA shall assess potential impacts to transportation systems including but not limited to the following:

 - 6.12.1.1 Potential changes to traffic patterns, densities, and traffic safety issues in area affected by project
 - A determination of vehicular traffic density in the project area (before, during, and after the proposed activities)
 - Potential for traffic accidents
 - Congestion
 - Noise
- 6.12.2 Public health infrastructure
 - 6.12.2.1 Increased need for public health infrastructure
 - 6.12.2.2 Alterations to public health infrastructure
- 6.12.3 Communications infrastructure
 - 6.12.3.1 Increased need for communications infrastructure
 - 6.12.3.2 Alterations to communications infrastructure
- 6.12.4 Energy infrastructure
 - 6.12.4.1 Increased need for energy infrastructure
 - 6.12.4.2 Alterations to energy infrastructure
- 6.12.5 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.13 Cultural, Archeological, Ceremonial and Historic and Resources

- 6.13.1 Destruction during construction
- 6.13.2 Damage and alteration
- 6.13.3 Removal from historic location
- 6.13.4 Introduction of visual or audible elements that diminish integrity
- 6.13.5 Neglect that causes deterioration
- 6.13.6 Loss of medicinal plants
- 6.13.7 Loss of access to traditional use areas
- 6.13.8 Damage to resources due to increased visitation promoted by the project
- 6.13.9 Impacts to previously inaccessible resources from development/improvement of roads
- 6.13.10 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

F.12 Health and Safety Impact Assessment Tools

E.4.2 Infrastructure: Systems, Equipment, Capacity, Performance Table E-7

F.9 Socio-Economic Conditions, Infrastructure and Land Use

E.4.3 Cultural, Archeological, Ceremonial and Historic Resources Table E-8

F.10 Cultural, Archeological, Ceremonial and Historic Resources

6.14 Land Use

- 6.14.1 Temporary and permanent changes in land use by both area and location
 - 6.14.1.1 Immediate project area
 - 6.14.1.2 Surrounding areas (induced by economic development)
 - 6.14.1.3 In previously inaccessible areas now accessible due to improvement of roads
- 6.14.2 Social infrastructure (schools, cemeteries, churches, other public buildings, communication systems and housing)
 - 6.14.2.1 Increased need for additional infrastructure
 - 6.14.2.2 Alterations to social infrastructure
- 6.14.3 Existing tourism and recreation infrastructure
 - 6.14.3.1 Change in tourist activities
 - 6.14.3.2 Increased need for tourism and recreation infrastructure
 - 6.14.3.3 Alterations to tourism and recreation infrastructure
- 6.14.4 Housing market (during construction and operation and after closure)
- 6.14.5 Identification of any components of the proposed project that would fall within 25- or 100-year flood plains
- 6.14.6 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

7 Mitigation and Monitoring Measures

This section of the EIA must include measures designed to mitigate potential adverse impacts to physical, biological and social-economic-cultural resources from construction, operation and closure of the proposed project and alternatives. These shall include measures to avoid and prevent, and if needed, to reduce or minimize adverse impacts. The project proponent must include measures considered to be "best practices" in the design of all alternatives.

Here and/or in the Environmental Management Plan section, proposed mitigation shall be described in auditable terms and at a level of detail sufficient to demonstrate its effectiveness in addressing the concern or performance criterion, including its anticipated level of effectiveness and/or measurable performance, and design specifications.

The monitoring plan must include monitoring throughout the life of the project for each potential mitigation to confirm the effectiveness of the measure and support contingency plans to provide assurance that the project, at the site preparation, construction, operation, expansion, and closure stages will meet applicable environmental requirements/standards by law, and fall within the limits of impacts deemed acceptable upon approval of the EIA. Some important items to address in the mitigation plan and associated monitoring plans include, but are not limited to the following:

Physical Impacts

7.1 Geologic Resources and Hazards

- 7.1.1 Pre-excavation, onsite geological inspection and geotechnical study protocols to determine slope stability and landslide risks
- 7.1.2 Slopes built and maintained to avoid landslides and favor revegetation and soils formation
- 7.1.3 Slope stabilization by constructing retaining walls, using vegetation, geotextile membranes, or other mechanical methods
- 7.1.4 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- 7.1.5 Use of signage to mark areas where slopes are not stable as a preventive measure in the event of a landslide
- 7.1.6 Mitigation measures unique to specific alternatives

7.2 Soil Resources

- 7.2.1 Erosion and sedimentation control measures (temporary and permanent) including when each will be installed or implemented, how often it will be checked and the process for and timing of removal of temporary measures
- 7.2.2 Spoil and debris disposal measures
- 7.2.3 Best management practices to minimize soil disturbance
- 7.2.4 Decommissioning/Rehabilitation Plan-if needed (summary of relevant measures)

E.4.4 Land Use

F.9 Socio-Economic
Conditions,
Infrastructure and
Land Use

G. Mitigation and
Monitoring
Measures

Tables G-1, G-2 & G-3
Tables G-9

Tables G-1, G-2 & G-3

Appendix D

- with full document in Annex)
- 7.2.5 Restrictions on discharge of pollutants to soil
- 7.2.6 Mitigation measures unique to specific alternatives

7.3 Water Resources

- 7.3.1 Quality
 - 7.3.1.1 Water Quality Management Plan (summary of relevant measures with full document in Annex)
 - Sewage and domestic wastewater
 - Nonpoint sources – runoff, erosion and sediment control prevention measures
 - 7.3.1.2 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.3 Solid Waste Management Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.4 Hazardous Waste Management Plan (summary of relevant measures with full document in Annex)
 - 7.3.1.5 Transport system construction and maintenance to avoid erosion and sedimentation including:
 - Elevation or rerouting
 - Design for proper run-off control and catchment
 - Provision of culverts to allow flow that might otherwise be impeded by roadways or other rights of way
 - Appropriate traffic control
 - 7.3.1.6 Off-road vehicle use restrictions
 - 7.3.1.7 Waste minimization practices
- 7.3.2 Quantity
 - 7.3.2.1 Water conservation practices
- 7.3.3 Mitigation measures unique to specific alternatives

7.4 Air and Climate

- 7.4.1 Dust control measures
- 7.4.2 Energy conservation measures
- 7.4.3 Emissions control measures
 - 7.4.3.1 Emissions reduction equipment
 - 7.4.3.2 Maintenance and inspection of equipment and vehicles using combustion engines to reduce emissions
- 7.4.4 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- 7.4.5 Hazardous Materials Management Plan (summary of relevant measures with full document in Annex)
- 7.4.6 Mitigation measures unique to specific alternatives

7.5 Noise and Vibration

- 7.5.1 Noise control measures
 - 7.5.1.1 Noise reduction technologies (suppression equipment, sound-absorbing structures, vibration dampening devices, berms, noise barriers, etc.)
 - 7.5.1.2 Rerouting of traffic and other infrastructure related activities to minimize impacts of noise and vibration
 - 7.5.1.3 Time of day limitations on blasting and movement of heavy equipment when in close proximity to houses not being operated during evening hours
- 7.5.2 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- 7.5.3 Mitigation measures unique to specific alternatives

7.6 Aesthetic Resources

- 7.6.1 Relocation of project to another site
- 7.6.2 Redesign of placement of project structures on site
- 7.6.3 Redesign height and location of structures blocking view or producing light pollution

Table G-5

- 7.6.4 Lighting minimization
- 7.6.5 Visual/Landscape Management Plan (summary of relevant measures with full document in Annex)
- 7.6.6 Mitigation measures unique to specific alternatives

Biological Impacts

7.7 Vegetation/Flora and Associated Ecosystems

- 7.7.1 Control of noxious and invasive weeds
- 7.7.2 Measures to compensate for loss or damage of forests, wetlands or other critical ecosystems, including establishment of new protected areas
- 7.7.3 Restoration/Rehabilitation Plan for disturbed areas (summary of relevant measures with full document in Annex)
- 7.7.4 Mitigation measures unique to specific alternatives

7.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

- 7.8.1 Fish and Aquatic Resources
 - 7.8.1.1 Scheduling construction to avoid critical or important fish life history periods (e.g., spawning)
 - 7.8.1.2 Relocation of sensitive, threatened or endangered species
 - 7.8.1.3 Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
 - 7.8.1.4 Mitigation measures unique to specific alternatives
- 7.8.2 Wildlife Resources
 - 7.8.2.1 Modify locations of structures and locations and timing of activities to avoid critical ecosystems, migratory routes and breeding areas
 - 7.8.2.2 Scheduling construction to avoid critical or important wildlife history periods (e.g., breeding, nesting)
 - 7.8.2.3 Relocation of sensitive, threatened or endangered species
 - 7.8.2.4 Blasting plan, if applicable (summary of relevant measures with full document in Annex)
 - 7.8.2.5 Mitigation measures unique to specific alternatives

Social-Economic-Cultural Impacts

7.9 Socio-Economic Conditions

- 7.9.1 Selection of an alternate site for the project, and if not possible then adhering to requirements of an internationally recognized Resettlement Action Plan (RAP)
- 7.9.2 Rehabilitation Program for people displaced by the project (summary of relevant measures with full document in Annex)
- 7.9.3 Training local residents for employment in the project
- 7.9.4 Development of a “Code of Conduct” (with associated training program) for workers to show respect to the local populations and their culture and social rules
- 7.9.5 Public Health Program to protect local population from potential health problems caused by the project operation (summary of relevant measures with full document in Annex)
- 7.9.6 Development of an Occupational Health, Industrial Safety and Accidents Prevention Program with appropriate accident prevention program, reporting and periodic review (summary of relevant measures with full document in Annex) including provision of routine training and testing, and proper safety equipment such as hearing protection, hardhats, steel-toed shoes, safety railings and fall arrestors
- 7.9.7 Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- 7.9.8 Hazardous Materials Management Plan (summary of relevant measures with full document in Annex)
- 7.9.9 Mitigation measures unique to specific alternatives

Tables G-1, G-2 & G-3

Appendix F
Compensatory
Mitigation for Loss
of Aquatic
Resources

Table G-4

7.10 Infrastructure

7.10.1 Transportation infrastructure

This section of the EIA addresses mitigation measures for transportation and traffic patterns on existing infrastructure (roads, airports, air strips, harbors, etc.). Mitigation of impacts of new and existing transportation infrastructure on water quality and biological resources and land use should be addressed in those respective sections.

7.10.1.1 Transportation Plan (summary of relevant measures with full document in Annex)

- Placement of traffic signals
- Establishing, posting and enforcing speed limits for the vehicles that transport material
- Training employees, contractors and subcontractors on measures to reduce or avoid potential accidents
- Hiring and training security personnel devoted exclusively to preventing accidents in the access road and controlling the speed of the vehicles transporting project material

7.10.2 Public health infrastructure

7.10.3 Communications infrastructure

7.10.4 Energy Infrastructure

7.10.5 Mitigation measures unique to specific alternatives

7.11 Cultural, Archeological, Ceremonial and Historic and Resources

7.11.1 Modify structure and activity locations to avoid significant archeological, cultural, ceremonial and historic sites

7.11.2 If avoidance is not possible, conduct appropriate resource recovery operations before disturbing the sites

7.11.3 Clearly delineate boundaries and post signs identifying existing archeological, cultural and historic sites on roadsides and within the project area boundaries so that they are easily recognized by machinery operators, workers and tourists

7.11.4 Development of a training program so that staff recognize and respect culturally and archeological sensitive areas

7.11.5 Development of a code of conduct for activities in indigenous and local communities with the consent of and in collaboration with the community

7.11.6 Provide guests with information about and interpretation of the local culture and cultural heritage, as well as explaining appropriate behavior while visiting living cultures and cultural heritage sites

7.11.7 Development protocols for use during construction and operation stages for identifying and responding to archeological, cultural, ceremonial and historic sites not identified during the preliminary surveys

7.11.7.1 In the event such a site is found, they will stop activities at the site and report to the government relocation of cultural or historical resources, for their physical protection.

7.11.8 Mitigation measures unique to specific alternatives

7.12 Land Use

7.12.1 Criteria and method for calculating compensation for loss of land and crops

7.12.2 Compensation to farmers and ranchers for crop or forage losses and restore lost agricultural lands at the end of the project.

7.12.3 Compensation to property owners for relocation of their homes in the event the relocation is unavoidable

7.12.4 Mitigation measures unique to specific alternatives

8 Environmental Management Plan

The EIA shall include an Environmental Management Plan to prevent, mitigate and monitor each impact identified in the EIA. Plans will describe actions to be taken in sufficient detail to provide a basis for subsequent auditing of compliance with commitments made in the EIA process including who is responsible, how and when it will be implemented, what will be done and what results will be achieved, why it is being done, and how to know whether it is effective in addressing the underlying

concerns. The Environmental Management Plan shall have the following elements:

8.1 Overview of Environmental Management Plan Organization and Policy

- 8.1.1 Describe the project management and how environmental management and organization relates to overall project responsibility. Describe the personnel and performance accountability system for design, operation, maintenance and closure for implementation of mitigation and monitoring measures
- 8.1.2 Describe the environmental policy that will govern the Project throughout its implementation, including at least the objectives, scope, commitment to continuous improvement, control and environmental monitoring and good relationship with neighboring populations and countries, as well as the commitment to internal controls such as compliance and environmental monitoring and routine audits
- 8.1.3 Identify the persons responsible for the implementation of mitigation measures, in each phase

8.2 Project-wide Mitigation Plan including an implementation schedule. It has two elements:

- 8.2.1 Environmental resource mitigation (such as air, water)
- 8.2.2 Socio-economic-cultural mitigation (relocation, etc.)

8.3 Project-Wide Monitoring Plan (usually specific to monitoring of surface and ground water)

- 8.3.1 Short-term and long-term monitoring of resource condition, including but not limited to:
 - 8.3.1.1 Slope stability
 - 8.3.1.2 Water Quality Monitoring Program
 - Where, how and when monitoring shall be conducted
 - Parameters to be monitored
 - Monitoring frequencies
 - Sampling and analytical protocols to be used
 - 8.3.1.3 Air Quality Monitoring Program
 - Where, how and when monitoring shall be conducted
 - The Parameters to be monitored
 - The monitoring frequencies
 - The sampling and analytical protocols to be used
 - 8.3.1.4 Noise and Vibration
 - 8.3.1.5 Cultural, ceremonial archeological and historic resources in the vicinity of the project
- 8.3.2 Short-term and long-term monitoring to ensure that the mitigation measures are functioning as predicted and that rehabilitation is working

8.4 Management of Other On- or Off-Site Environmental Pollution Control and Infrastructure

This section should address management of critical elements of pollution control and infrastructure that are not otherwise included in the mitigation plan because they were considered an essential part of the proposed project.

8.5 Contingency Plans

Contingency plans shall be prepared and described to address a) failure to meet specific performance criteria established by law or necessary for the project to meet its commitments in the EIA and b) respond to natural and other risks previously identified and mitigated in the EIA in the event reasonable and feasible mitigation measures to address the risks are inadequate.

- 8.5.1 Performance-related Contingency Plans, indicating the steps that will be taken should monitoring indicate that:
 - 8.5.1.1 Environmental standards are not being met
 - 8.5.1.2 Impacts are greater than predicted
 - 8.5.1.3 The mitigation measures and/or rehabilitation are not performing as predicted
- 8.5.2 Natural Disaster Risk Response Plan (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)
- 8.5.3 Other Risks Response Plans (assumes that risk identification and risk reduction have been addressed in other parts of the EIA)

**H Environmental
Management Plan
Table H-1**

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**Appendix E Sampling
and Analysis Plan**

8.5.4 Contingency plans for maintaining service or reducing downtime in the event of accidents or natural catastrophes that disrupt project operation

9 Signed Commitment Statement

The EIA shall contain a legally binding signed letter of commitment to meeting the terms of the EIA. The statement must be signed by the authorized representative of the proponent company with assurance that all financial surety measures as required by the regulatory agency have been met.

10 Annexes

These shall be numbered and duly referenced in the text

10.1 Public Consultation

- 10.1.1 Public consultation plan
- 10.1.2 A summary of public outreach activities including: audience, number of persons, organizations involved, concerns raised, responses to comments
- 10.1.3 Summary of response to comments
- 10.1.4 Actual copies of written comments

10.2 Technical Supporting Documents

- 10.1.5 Include maps, plans, charts and figures in the sequence mentioned in the EIA document
- 10.1.6 Zoning maps with resources and results of impacts
- 10.1.7 Special Studies if relevant but not readily accessible
- 10.1.8 Detailed materials on predictive tools/models and assumptions used for the assessment but too detailed for the body of the EIA

10.3 References

Submit a list of all references, (books, articles, technical reports and other information sources) cited in the various chapters of the EIA study with full biographic references, and the following conventional procedures cited in the literature: author, year, title, source, number of pages, and city of publication or issuance.

B.2 Public Participation