

Additional Information Requested

1. ...This DGIRA identified inconsistencies with respect to the surface of forest land affected, as well as the state of preservation and/or alteration of the forest vegetation affected by the project:

With regard to the power transmission line, petitioner stated that it will occupy a surface of arborous vegetation of 85,347.90m² (12,425m² correspond to natural mid-altitude jungle forest vegetation and 71,591.65m² to agro forest single crops), and that the sum of the last two surfaces is 84,016.65m² and not 85,347.90m² as indicated by petitioner.

In accordance with the statement of the authority with respect to the sum of the surfaces with arborous vegetation contemplated for the transmission line, the breakdown of the information was analyzed and a mistake was found in the sum of the surfaces to be affected, pursuant to the following:

The transmission line based on the information contained in the EIR (MIA-P) of the project will have a total surface area of 262,552 m², which divided between the 25m right of way totals 10,502.08 m, which is the effective length of the transmission line.

In order to find the mistake, the table presented in chapter II of the EIR (MIA-P) was taken as a basis and certain columns were added to show the differences that the authority made evident. For such purpose, the length was calculated inversely by dividing the surface of each concept by the 25m right of way, and was set forth in the respective column, as established below.

Transmission Line	In accordance with the information in the EIR (MIA-P)		In accordance with the observations of the authority	
	Surface in m ²	Length Surf. / R. of way 25 m	Surface in m ²	Length Surf. / R. of way 25 m
Without vegetation	28,991.66	1,159.66	28,991.66	1,159.66
*Arborous	85,347.90	3,413.91	84,016.65	3,360.66
**Non arborous (herbaceous and grasses)	148,212.50	5,928.5	148,212.50	5,928.5
Total	262,552.06	10,502.07	261,220.81	10,448.82

Note: Although irrelevant, it is necessary to indicate that the amounts in decimals may vary due to the automatic rounding and discrimination in the results obtained from the equipment used in the calculations.

As can be seen, the results showed that the surface 85,347.90 m² of arborous area correspond to the correct data provided in the EIR, which added with the other items conforms to the total surface of the transmission line of 262,552m² and to the length

of 10.5 km calculated. Therefore, the error was due to one of the components that was not included in the sum of the arborous surfaces.

Considering the analysis and after the mistake was found, the list of sections that make up the transmission line layout was verified. It was determined that the sum did not include a 53.25m long section corresponding to the arborous federal zone, which when multiplied by the respective right of way yields an area of 1331.25m², equivalent to the shortage indicated by the authority. The distribution table and sum of the surfaces is shown in the T.L.

DISTRIBUTION AND SUM OF SURFACES IN THE TRANSMISSION LINE

SECTION	USE OF LAND	CODE	TYPE OF SURF.	LENGTH	*SUP. m ²	
1	Fed. Zone, Forest, Frag. jungle	ZF	Arborous	53.25	1331.25	Curtain Zone ↓ Sebastopol
2	La Sal Stream	CA	Without vegetation.	106.50	2662.50	
3	Livestock	PE	Non-arborous	71.00	1775.00	
4	Livestock	PE	Non-arborous	106.50	2662.50	
5	Forest fragment. jungle	FO	Arborous	213.00	5325.00	
6	Livestock	PE	Non-arborous	142.00	3550.00	
7	Forest fragment. jungle	FO	Arborous	284.00	7100.00	
8	La Sal Stream	CA	No Vegetation	355.00	8875.00	
9	Agricultural	AG	Non-arborous	532.50	13312.50	
10	Agro forest	AF	Arborous	319.50	7987.50	
11	Rural	RU	Non-arborous	461.50	11537.50	
12	Agro forest	AF	Arborous	142.00	3550.00	
13	Agricultural	AG	Non-arborous	390.50	9762.50	
14	Agro forest	AF	Arborous	390.50	9762.50	
15	Agricultural	AG	Non-arborous	213.00	5325.00	
16	Agro forest	AF	Arborous	781.00	19525.00	
17	Agricultural	AG	Non-arborous	1775.00	44375.00	
18	Rural	RU	Non-arborous	426.00	10650.00	
19	Agricultural	AG	Non-arborous	177.50	4437.50	
20	Agricultural	AG	Non-arborous	1065.00	26625.00	
21	Río	CA	No Vegetation	177.50	4437.50	
22	Agricultural	AG	Non-arborous	568.00	14200.00	
23	Agro forest	AF	Arborous	1230.67	30766.65	
24	Urban	UR	No Vegetation	520.67	13016.66	
TOTAL				10502.08	62,552.05	

* Surface in m² = longitude X right of way (25m)

Pursuant to the foregoing, the origin of the mistake is clarified and the information contained in the abovementioned table of chapter II of the EIR is reconsidered as follows:

Transmission Line

Type of Surface	Surface in m ²	Percentage with respect to the total surface of the project
No Vegetation	28,991.66	10.79
*Arborous	85,347.90	31.77
**Non-arborous (shrubs, herbaceous vegetation and grass)	148,212.50	55.17

*Arborous Surfaces: Fragmented mid-altitude jungle, mainly secondary vegetation (13,756.25 m²) and agro forest plantations (71,591.65m²)

** Non-arborous surfaces: includes urban, rural, agricultural and livestock areas.

...petitioner must clarify and/or rectify the total surface the project will affect (hydroelectric central, electric substation and power transmission line)

Considering the authority's observation and since the correction made and set forth above does not affect the final result obtained, the following table is presented in order to identify the total temporary and permanent surfaces the project will affect.

It should be pointed out that in the tables presented in chapter II of the EIR, a greater break-down of the surfaces was made to provide details to the authority of the areas and the percentage each of them represents with respect to the property and infrastructure to which they are directly related.

Surfaces that will be temporarily and permanently affected and percentages

Item	Surface in m ²	% with respect to the total project area	Surf.m ² Temporary Effect	Surf. m ² Permanent Effect
Engine room (includes outlet channel and trench of pressure pipeline)	2,687	1.00	0	2,687
Electric substation (includes perimeter fencing)	1,200	0.45	0	1,200
Access to the H. C. and E.S.	325	0.12	0	325
Warehouse	600	0.22	0	600
Support work (camps, workshops, office, etc.)	1,260	0.47	1,260	0
Transmission line	262,552	97.74	*261,144	**1,408
TOTAL OF THE PROJECT	268,624	100.00	262,404	6,220
			97.68%	2.32%

* The use of land in the right of way of the line will not have any restrictions, except for constructions that could affect the operation and security of the line, for which it is being considered as temporarily affected.

** Corresponds to the total of the actual surface to be occupied by the 22 transmission towers.

...the forest vegetation surface that will be affected by each infrastructure developed for the project, including a request for change of land use in forest areas...

The following table presents the relevant information for each work:

Forest vegetation that will be affected by the work

Work	Forest surface affected in m ²	Percentage*
Trench pressure pipeline	0	0
Engine room	500	0.19
Outlet channel	1930	0.72
Electric Substation	120	0.05
Access for the C.H. and S.E.	0	0
Storage	0	0
Support work (camps, workshops, offices, etc.)	0	0
Transmission Line	13,756.25	5.12
Total area affected	16,306.25	6.08

* With respect to the total project surface (268,624m²)

Based on the foregoing and as indicated by the authority, an authorization is requested to change the land use in forest areas for a surface of 16,306.25 m² (1-63-06 has) of mid-altitude fragmented forest, corresponding to 6.08% of the total surface affected by the Cerro de Oro hydroelectric project.

...surfaces and volumes of vegetable material that will be permanently and temporarily affected.

Considering the areas affected by the work of the project, the table below sets forth the corresponding surfaces and volumes.

Forest vegetable material

Infrastructure	Temporary effect surface (m ²)	Vol. Forest vegetable material temporarily affected	Temporary effect surface (m ²)	Vol. Forest vegetable material permanently affected

		(m ³)		(m ³)
Hydroelectric central (includes substation and outlet channel)	0	0	2,550	8.91
Transmission line	13,500.25	73.86	256	1.40
TOTAL	13,500.25	73.86	2,806	10.31

To calculate and determine the vegetable material volume, all the trees within the section of the right of way of the transmission line were counted.

2. *With respect to chapter III of the EIR, referring to the relationship with applicable environmental legal provisions, the applicant did not include the technical, legal and/or administrative basis to evidence that the project is compatible with the ecologic policies, guidelines or criteria corresponding to it with respect to the application of the Urban Development Plan of the San Juan Bautista Strategic Population Center (Plan de Desarrollo Urbano del Centro de Población Estratégico de San Juan Bautista Oaxaca (Tuxtepec Plan 2010)), (hereinafter, "PDUCPESJB") and only provided a limited description and examples of such regulatory instruments.*

Therefore, the applicant must carry out and present the following:

- ***With basis on the PDUCPESJB, locate the site where the project will be developed.***

With basis on the PDUCPESJB, the location of the Cerro de Oro hydroelectric project was determined. The area where the Engine Room and Electric Substation are intended to be developed is a federal zone of the Miguel de la Madrid Hurtado dam, for which they are excluded from the area considered in the plan since they are located outside the population center. It should be pointed out that the Strategic Plan applies to the San Juan Bautista Tuxtepec population center and that the majority of the transmission line layout is outside the PDUCPESJB, except for the last 2,040 meters. A [Location drawing of the layout](#) with respect to the polygon of the Plan and the drawing of the [polygon "Tuxtepec Plan 2010"](#) are attached hereto.

- ***Identify and describe the applicable environmental policy, criterion, provisions, permitted uses and non-permitted uses in connection with the project site.***

The PDUCPESJB was published in the State Official Gazette in 1994. Such plan is mainly related to its condition as a priority and services population center for the South Pacific regional system. It does not contain environmental policies or criteria applicable to the project at hand. It was developed in general terms for the Tuxtepec population center. The provisions established for the land uses of the areas through which the transmission line will pass are listed below and a copy of the plan is attached hereto.

...Land Uses

In accordance with the development strategy provided in this Plan, for the regulation of the land uses in the Tuxtepec population center, regulatory packages have been defined for each of the different areas in which it is structured.

Rural Community

Single-family residential uses combined with agricultural uses and supplementary facilities are allowed in this area; one dwelling per each 400m² of land is accepted and a footprint area equal to 30% of the surface of the property.

Residential Medium Density

Only residential uses with a maximum of one dwelling per each 150m² are allowed with a footprint area of not more than 50% of the area of the property.

Mixed Uses

In this area, residential uses combined with commercial, services and private and public office uses are allowed; a maximum of one dwelling or commercial or services establishment per each 200m² of land will be allowed with a footprint area of not more than 60% of the area of the property.

Industrial Area

In this zone, diverse facilities will be allowed, from industrial plants relating to the packaging, processing and bottling of agricultural and livestock products to metal-mechanic, textile, bottling and general manufacturing industrial facilities, allowing facilities such as slaughterhouses, storage, refrigeration and any others related with any phase of the productive processes of the established facilities; the authorization of any industrial facility application, whose productive process implies managing or pouring highly toxic chemical products, explosives or requires a special treatment of liquid or solid waste, or represent a significant impact to the environment, will be conditional on a technical feasibility, compatibility with intended installations and environmental impact study that the applicant itself must carry out.

Urban Park

In these areas, only uses relating to the enablement of garden areas will be allowed, particularly, those pertaining to urban furnishings and generally, kiosks, auditoriums, [etc.]. In addition, palapas (palm tents) with commercial uses, food services and sports and recreational areas may be allowed, which must not cover more than 30 % of the surface of each polygon.

Ecologic Preservation Zones

In these areas, only agricultural-livestock activities and the construction of the facilities required for such activities, as well as the necessary work and installations to introduce natural vegetation and protect the soil and fauna will be allowed.

It should be pointed out that the PDUCPESJB contemplates granting construction and specific land use licenses.

Most of the transmission line layout crosses over agricultural areas, is outside the San Juan Bautista Tuxtepec population center and thus, from the PDUCPESJB, except for the last 2040 meters, which cross the rural community along 85m, mixed uses areas along 374m, urban park along 208m, ecologic preservation zone along 142m, industrial zone along 976m and medium density residential zone along 255m.

Both the engine room and electric substation will be located within the federal zone of the Miguel de la Madrid Hurtado dam, for which the permitted uses of the site are hydraulic and electric infrastructure, which are compatible with the Cerro de Oro hydroelectric project.

- ***Based on the foregoing, petitioner must submit the analysis and resulting conclusions to support with technical and/or legal arguments the project's factual or figurative compliance with each of the guidelines established in the program under consideration and evidence the compatibility of the work and/or activities with such regulatory instrument, since the purpose of chapter III of the EIR is to determine the legal environmental viability of the project with the different land use regulatory instruments in effect that may be applicable.***

Because it is an urban development plan for the town of San Juan Bautista, such plan does not contemplate electric power transmission activities. In this sense, the plan does not specifically prohibit the installation of transmission lines, for which the respective land use change applications will be filed.

It is important to emphasize the compatibility of the Cerro de Oro hydroelectric project with the general purposes of the PDUCPESJB, particularly the purpose relating to infrastructure, since it contemplates creating the necessary basic infrastructure conditions to expand the industrial park to the southwest of the current urban area and promote private sector participation in the urban infrastructure networks' improvement and expansion works and to provide the corresponding services.

The Cerro de Oro hydroelectric project is compatible with the following articles of the PDUCPESJB decree.

Article 3° section i

Improve the general conditions of potable water, drainage and public lighting infrastructure of the west, southwest and east of the population center, establishing the conditions for the efficient articulation thereof with the areas projected for urban growth.

Article 4° section I sub-section c

Start negotiations to obtain patrimonial land reserve in favor of the municipal government [of] properties around the industrial park, in order to have land available to promote growth programs for small, medium and large industries.

Article 4° section III sub-section c

Create the basic infrastructure conditions necessary to expand the industrial park to the southwest of the current urban area.

Article 4° section III sub-section d

Promote the participation of local and regional private investment in the urban infrastructure networks' improvement and expansion works and to provide the corresponding services.

Article 4° section IV sub-section b

Promote the creation of two services sub-centers, one to the west and one to the southwest of the current urban area, fostering the construction of public equipment in the areas destined for such purpose.

Article 5° section II

Impulse the productive base, consolidate the dynamic of tertiary activities and create conditions that allow promoting industrial activities, establishing for such purpose the necessary land reserve, infrastructure and equipment conditions.

Article 6° section VIII

Improvement and expansion of the basic and core infrastructure to satisfy the current demand and plan the future potable water, drainage, public lighting and electric energy requirements.

The *PDUCPESJB* was published in the Official State Gazette in 1994 and is in effect.

On June 12th, 1999, a decree was published in the Official Gazette of the State of Oaxaca which approved the modifications to the *PDUCPESJB*.

Additionally, the information indicated above must contain evidence with which this DGIRA may verify the compatibility of the project with the abovementioned legal instrument (attaching a copy of the Program in effect as well as other regulatory instruments analyzed is recommended).

A copy of the [Urban Development Plan](#) of the Strategic Population Center *San Juan Bautista Tuxtepec* is included.

A copy of the 1994 version of the decree approving the [amendments to the Urban Development Plan](#) of the Strategic Population Center *San Juan Bautista Tuxtepec* is attached.

A [plan](#) with thematic symbols is included.

- 3. With respect to chapter IV, relating to the description of the environmental system and indication of the environmental problems detected in the project's area of influence, this DGIRA observed that although the applicant delimited its environmental system based on the project's dimensions, the description of the environmental characterization presented lacks objectivity, since there are incongruences in the total surface that will be affected by the project. Additionally, in the description of the environmental components, the applicant did not specify the characteristics and the preservation and/or alteration state of the ecosystem or ecosystems where the project will be located, considering among others, the type of vegetation that applicant will affect (mid-altitude jungle) and the habitats presented for the fauna species identified in the ecosystem involved.***

By virtue of the foregoing and once the information required under section 1 hereof is provided, the applicant must include the following:

- a) Describe the state or degree of preservation and/or alteration of the land (mid-altitude jungle) and riparian vegetation occurring in the area where the different works and/or activities of the project will be carried out;***

Preservation state of land vegetation

The photograph shows the area projected for the development of the engine room and electric substation, which lacks vegetation typical of the mid-altitude jungle due to the alteration it previously underwent with the construction of the Miguel de la Madrid Hurtado dam. The only [vegetation] dominating the area are *Brachiara brizantha* species grass, insurgent grass and some species representing the *acahual* or secondary vegetation of mid-altitude forest, such as *Ficus padifolia*, *Ficus benjaminea*, *Ipomoea murucoides* and *Lysiloma acapulcensis*.



The following photo shows the site planned for the construction of the portal of the tunnel. As can be seen, the site is considerably altered as it lacks original vegetation and floristic richness.



Immediately after the bridge structure is the slope of the promontory and the bank of the curtain, where the support infrastructure for the construction of the project will be located and which lacks natural vegetation, for which it is evident the site has been completely altered.



This photo shows the site projected for the construction of the engine room and its conduction pipeline. The site shows signs of frank alteration of the original vegetation (mid-altitude jungle). Towards the end, to the right, there is a small patch of secondary or *acahual* vegetation. Its physiognomy is extremely contrasting to that of the medium jungle, since it is dominated by a small variety of species, including *Ficus spp*, *Bursera fagaroides*, *Cedrela odorata*, *Enterolobium cyclocarpum* and *Sabal mexicana*.



Another view of the place projected for the construction of the engine room, which shows the frank alteration suffered by the mid-altitude jungle.



Aspect of the land through which the transmission line will pass. As can be seen, these are cultivation areas, for which they are completely altered sites in which the mid-altitude jungle has been eliminated to make way for the crops of different economic interest species.





Another view of the characteristics of the agricultural land where the transmission line will pass.





Preservation of riparian vegetation.

It is important to point out that this area is known for its intense agricultural activity. The slash burn and sowing system prevails which, together with the large portions of land destined to range land and some housing, has caused a significant deterioration of the area of study. The original vegetation has been lost, its surface area has been reduced and it is represented only by small spots and strips along the river, for which the effect to the mid-altitude jungle is considerable.

The following pages contain the exhibit with the [sectioning](#) along the course of the river, which shows the details of the vegetation.

The riparian vegetation also evidences a state of alteration since in many instances, the agricultural, livestock and housing border reaches the margins of the Santo Domingo River, as shown in the following [photo sequence](#) of the river sectioning.

The justification that supports whether areas that present habitats with a high environmental quality exist or not, and the ecological function of such habitats in connection with the fauna species existing in the SA

In accordance with the observations derived from the field rounds and as can be seen in the photo sequence above, it is possible to conclude that there are no land habitats with a high environmental quality, since the agricultural-livestock border covers the majority of the surface of the Cerro de Oro hydroelectric project. It is important to mention that in the sites where grass predominates, no refuge, nesting, feeding, or similar areas were found. Although some sections of the mid-altitude jungle could represent better conditions for nesting, refuge and feeding areas for reptiles and mammals, the intense agricultural-livestock activities decrease their possibilities.

In the area where there are relicts of mid-altitude jungle, it was possible to observe the following fauna species during the field rounds, detecting few dens, nests and feeding sites:

Reptiles: *Crotalus sp.* (rattlesnake), *Ficimia publia* (bejuquillo), *Bathrops otroxasper* (nauyaca), *Microrus niyrocinctus* (coralillo snake).

Birds: *Eagle sp.* (eaglet), *Chisostis ferallanti* (parrot), *Amazillia candida* (candid hummingbird), *Buteo jamaicensis* (red tail eaglet), *Buteo magnirostris* (caminera eaglet), *Elanus leucurus* (white-tail milano)

Mammals: *Dosyprocta mexicana* (Tepezcuincla), *Nasua narica* (badger), *Didelphys marsupiales* (possum), *Procyon lotor* (raccoon).

In areas with predominantly secondary or ahuacal vegetation, no dens, nest refuge or recreation areas were found. The following species were observed during field rounds of such areas:

Amphibians: *Bufo horribilis* (toad).

Reptiles: *Basiliscus vittatus* (lizard), *Crotalus sp.* (rattlesnake), *Ficimia publia* (bejuquillo), *Bathrops otroxasper* (nauyaca), *Microrus niyrocinctus* (coralillo snake).

Birds: *Tragon citeolus melanocephalus* (chachalaca), *Egretta candidissima* (white heron), *Bubulcus ibis* (potrero heron), *Buteo magnirostris* (sparrow-hawk), *Nictidromus albicollis* (tapacamino), *Catharisthes atratus* (buzzard).

Mammals: *Dasyprocta novemcinctus* (armadillo), *Didelphys marsupialis* (possum), *Sylvilagus floridanus* (rabbit), *Spilogale putorius* (skunk).

With respect to the habitats established on the river's edge, the riparian vegetation offers better conditions for the establishment of refuge, nesting and feeding areas. However, due to the closeness of the crop and housing areas along the river's edge,

they do not represent high-environmental quality habitats. For this kind of vegetation, it was possible to observe the presence of aquatic and semi-aquatic species, as well as some species of land fauna that approach to feed.

During the field rounds, the following species were observed:

Flora:

Inga vera, *Ficus insipida*, *Nectandra salicifolia*, *Tabebuia pentaphylla*, *Andira inermis* and *Salix* spp (important arborous species in the dominant floristic composition of the riparian vegetation).

Annona, *Astianthus*, *Licania*, *Crateva*, *Combretum*, *Sapium*, *Trichilia*, *Diospyros* and *Calyptantes* (important species that constitute part of the woody vegetation, mainly arborous, that inhabits river edges).

Ipomoea trifida, *Ibervillea millspaughii*, *Syngonium neglectum* and *Smilax spinosa* (common climbers on the tops of the trees of the riverbank)

Fauna

Amphibians; *Bufo horribilis* (toad), abundant and common species in this region *Bufo marinus* (giant toad), *Eleutherodactylus rugulosus* (thief frog) *Smilisca baudinii* (Mexican frog), *Hyalinobatrachium fleischmanni* (crystal frog).

Reptiles; *Ficimia publia* (bejuquillo snake), *Coniophanes piceivittis* (striped snake), *Drymobius margaritiferus* (running snake), *Drymarchon corais* (cinquate), *Iguana rhinolopha* (garrobo iguana), *Basiliscus vittatus* (lizard), *Microrus niyrocinctus* (coralillo snake).

Birds: *Tragon citeolus melanocephalus* (chahalaca), *Egreta candidissima* (white heron), *Bubulcus ibis* (potrero heron), *Pitangus sulfurtus* (luis or chinito), *Melanerphes phormicivorus* (woodpecker), *Dives dives* (picho), *Cassidix mexicanus* (crow), *Zenaida asiática* (white wing dove),

Mammals; *Nasua narica* (badger), *Didelphys marsupiales* (possum), *Procyon lotor* (raccoon), *Agouti paca* (tepezcuintle), *Dasyprocta mexicana* (serete).

How will the project affect these habitats, specifying whether such influence will alter or not the ecologic functions thereof and the behavioral patterns of the fauna species?

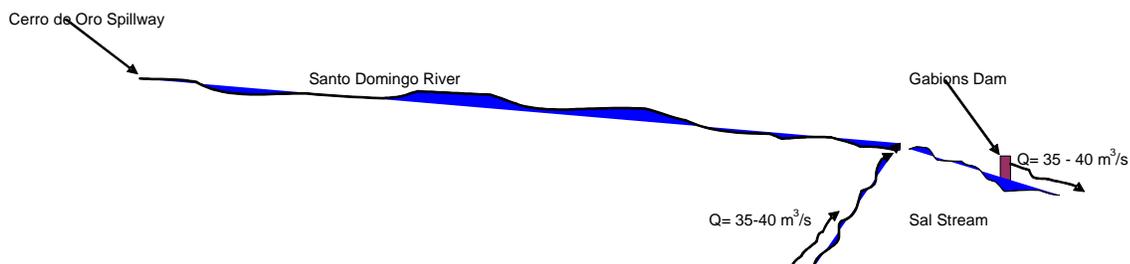
Land Habitats

Since the hydroelectric central and the engine room are intended to be built on extremely altered sites, their construction and operation do not affect high environmental quality habitats. Therefore, it is considered that the ecologic functions

thereof or the behavioral patterns of the fauna will not be altered. Additionally, no habitats with high-environmental quality are found along the trajectory of the transmission line; however, the habitats along the river's edge will suffer several repercussions when the hydroelectric central begins operating. The flow of the Santo Domingo will be eliminated along a section of 2 km from the exit of the spillway until the junction with the La Sal stream, which could have serious repercussions on the ecologic functions thereof, and consequently, the fauna species.

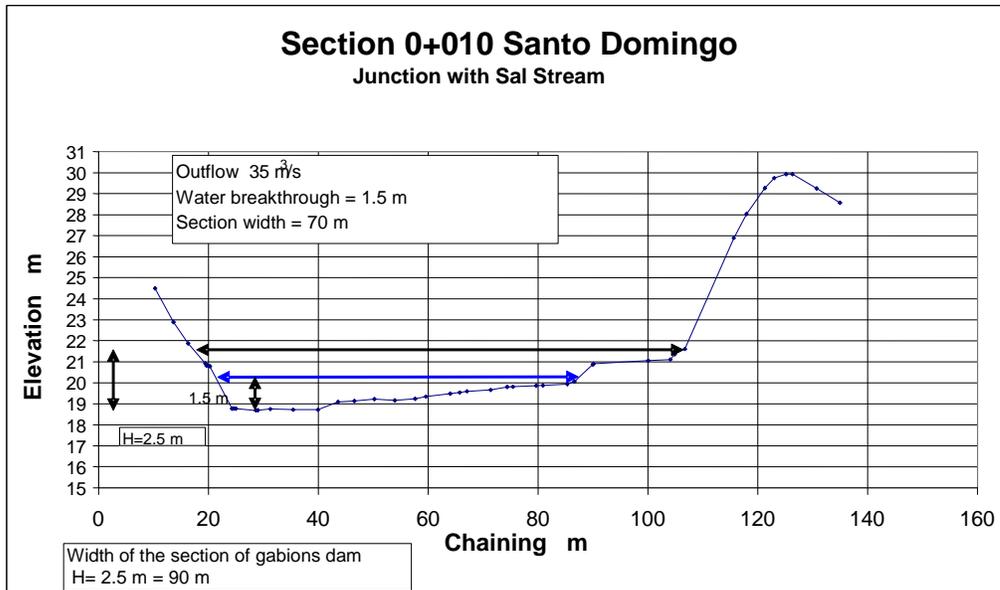
As a mitigation measure, building a gabions dam in accordance with the hydraulic management described below is contemplated.

Operation of the discharge of the hydroelectric central and the gabions dam to avoid leaving without water the section between the spillway of the Cerro de Oro dam and the gabions dam located downstream of the junction with the La Sal Stream.



The Cerro de Oro hydroelectric plant will operate with a constant outflow that will oscillate between 35 and 40 m^3/s , which will be discharged upstream of the junction of the La Sal Stream with the Santo Domingo River. Immediately downstream of this junction, a 2.5 m. gabions dam will be built.

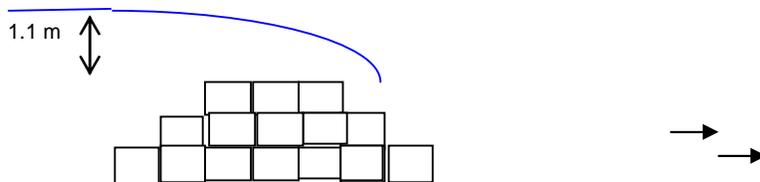
Considering the 2.5 height of the gabions dam, the length of the gabions dam will be of 90 m in the section of the Santo Domingo River over which it will be built, as shown below:



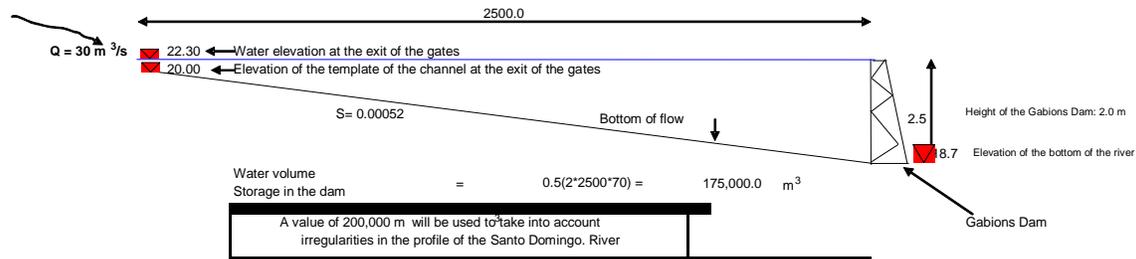
Since the gabions dam will operate as a spillway and taking as discharge coefficient the value $C= 2.0$, the charge over the peak of the spillway to discharge an outflow $35 \text{ m}^3/\text{s}$ will be:

$$h = Q / (C * L)^{2/3} = 35 / (2 * 90)^{0.66667} = 1.098 \text{ m} = 1.1 \text{ m}$$

Actually this breakthrough will be slightly smaller, since part of the outflow will infiltrate through the gabions dam:



The water level at the exit of the gates of the Cerro de Oro dam spillway will be at elevation 22.3 ($18.7 + 2.5$ gabions + 1.1 charge over the spillway - 20.0) m, that is, 2.2 m above the elevation of the floor of the outlet channel of the gates, which is at elevation 20.0 m, as can be seen below:



This way, the water breakthrough in the dam that will be formed will have a minimum of 2.2 m at the exit of the gates and will continue increasing until reaching the diversion dam with 3.6 m (2.5 + 1.1).

The volume stored in the dam is estimated as:

$$(90 \times 2.5 \times 2500) \times 0.5 = 281250 \text{ m}^3$$

This volume may be completely replaced if once a week, the gates of the spillway are opened with an outflow of $30 \text{ m}^3/\text{s}$ during:

$$T = 281250 / (30 \times 3600) = 2.6 \text{ hours}$$

Opening the gates of the spillway with an outflow of $30 \text{ m}^3/\text{s}$ for 3 hours once a week is proposed.

It is considered that with such hydraulic management, the water volume in the Santo Domingo River will not decrease along a section of 2km from the curtain of the Cerro de Oro dam to its junction with the La Sal Stream, which will allow the sustenance of the ecosystems that exist on the river's edge without alterations, since during the construction and operation of the hydroelectric central, the 2km section of the Santo Domingo River will not be without water at any time. A modification of the aquatic system is contemplated, changing from a lotic system to a lentic system. However, this will not influence or alter the ecologic functions of the habitats established on the river's edge or the behavior patterns of the fauna species.

Additionally, the environmental indicators that evidence the state of conservation of the environmental setting in which the project is located must be included.

In accordance with the characteristics of the environment where the project is intended to be developed, since it is a significantly altered system, the following indicator species were chosen, since they are representative of the secondary vegetation of mid-altitude jungle and of the agro-systems that predominate in the environmental system determined for the Cerro de Oro hydroelectric project:

Environmental Factor	Environmental Component	Environmental Indicators
Soil	Current Use	
	Hydroelectric central and engine room	Authorized under exceptionality criterion for basic infrastructure, including: hydraulic exploitation for power generation and installation of transmission lines, among others.
Vegetation	Transmission line	Authorized for agricultural and agro-forest activities
	Species representative of riparian vegetation	<i>Pontederia sagittata</i> , <i>Inga vera</i> , <i>Ficus insipida</i> , <i>Nectandra salicifolia</i> , <i>Tabebuia pentaphylla</i> , <i>Andira inermis</i> y <i>Salix</i> spp, <i>Salix chilensis</i> , <i>Inga spuria</i> , <i>Permentiera edulis</i> , <i>Spondias mombin</i> , <i>Ficus Segovia</i> , <i>Chlorophora tinctoria</i> .
	Species representative of mid-altitude jungle <i>Acahual</i> (secondary vegetation)	<i>Lysiloma</i> spp, <i>Cedrela odorata</i> (red cedar), <i>Byrsonima crassifolia</i> (plum), <i>Swietenia humilis</i> (mahogany) and <i>Enterolobium cyclocarpum</i> (parota), <i>Brachiara brizantha</i> insurgent grass
	Commercial species	<i>Zea mais</i> corn, <i>Phaseolus vulgaris</i> beans, <i>Hevea Brasiliensis</i> rubber, <i>Ananas sativus</i> pineapple, <i>Saccharum afficinatum</i> sugarcane, <i>Vainilla planifolia</i> A. vanilla
Fauna	Species with status	Absent in the environmental system under study
	Distribution	In the acahuales (secondary vegetation) areas and in the small spots of mid-altitude jungle
	Species with status	Absent in the environmental system studied
	Commercial species	Absent in the environmental system studied

- a) Considering that during the operation of the project, there will be a modification of the hydraulic flow currently existing in the Santo Domingo River, it is necessary to justify and evidence whether there will be any direct and indirect impacts on the different activities carried out along the river, indicating if such impact will be significant, cumulative or residual, and showing if there will be any alteration of the ecologic or hydraulic outflow in the Santo Domingo River or not.

During the operation of the project, there will be a considerable modification of the hydraulic outflow of the Santo Domingo River along a 2 kilometer section, from the location of the spillway of the Miguel de la Madrid Hurtado dam, until the junction with the La Sal stream. If no effective mitigation measures are applied, there would be direct, significant and cumulative impacts on the riparian vegetation along this section.

It should be mentioned that although the agricultural-livestock areas reach the riverbank, as can be observed in the pictures, crops are not irrigated with water from the Santo Domingo River. The river flows below the farming areas and there are no pumping equipments that evidence the use of water from the Santo Domingo River for irrigation along the 2 kilometer section.

Since the hydroelectric central will discharge into the La Sal stream, the flow of the Santo Domingo River will not suffer any modifications downstream of the junction of the La Sal stream with the Santo Domingo River. Therefore, no impact on the consumption uses of water will be generated. The areas that currently have supply from the CNA (abbreviation for *Comisión Nacional del Agua* – National Water Commission), will not suffer any impact either, since they are located downstream from such junction.

It is important to point out that the town of Los Reyes is established close to the 2 km. section of the River, downstream from the curtain dam. During the field rounds conducted, no aquaculture activities were observed along such section, for which no impacts on the economy are expected for such reason. However, the construction of the gabions dam and the hydraulic management intended with the hydroelectric central to avoid affecting this section of the River, will propitiate acceptable conditions to enable the population of Los Reyes to establish aquaculture activities along this section.

b) *What is the erosion risk in the sites where the project will be developed?*

- Intake Work: Within the basin, there is no erosion.
- Porthole: The platform has very small excavations, there is no erosion risk
- Tunnel Exit Portal: It will be made in rock, in the area where the portal of the inspection and drainage gallery made by CNA many years ago is already excavated. The land is stable and there is no risk of erosion.
- Engine room: The excavations will be in rock and partly in filling material and after the building is completed, the hollows will be filled and the excavated slopes will be stabilized, without representing erosion problems in the future.
- Substation: It is superficial and does not represent any risk of erosion.
- Outlet Channel: Deep excavation and with erosion possibilities in the operation stage of the project, for which the bucket thereof will be lined with concrete and the slopes with shotcrete and geotextile covering. It is essential to avoid erosion for the security and life of the project.
- Flow of La Sal stream: The bucket will be dug in silty material with possibility of erosion, for which the following preventive measures are being taken:
 - Slopes 1.5:1
 - Velocity not over 0.80m/s
 - Allow the development of native vegetation on the edges.

- Transmission line: Considering that the total surface the transmission line will cross over corresponds to the valley where the tributaries of the Papaloapan River drain, the slopes of the land do not exceed 10%, for which there are no erosion risks.

c) Indicate the current water use and the users and volumes thereof.

The current uses of the resource in the dam, in accordance with the official information set forth in the administrative resolution “*Acuerdo por el que se dan a conocer los resultados del estudio técnico para la supresión de veda de aguas superficiales y para la expedición del Reglamento de Control de la explotación, uso o aprovechamiento en doce cuencas de la región hidrológica 28 Río Papaloapan*”¹, are basically for the generation of electric power, volume which is obtained with the sum of the flows in the reservoirs of the Miguel de la Madrid Hurtado (Cerro de Oro) and Miguel Alemán Valdés (Temascal) dams, for which the Federal Electricity Commission has 14,979.657 cubic hectometers under concession, thanks to the interconnection these dams have in the “*pescaditos ditch*”.

In addition and in accordance with the information that the National Water Commission has in its Public Registry of Water Rights (*Registro Público de Derechos de Agua* (REPDA)), for the municipality of Tuxtepec there are 504 concessions, of which only 8 correspond to surface uses in the Santo Domingo River and its continuation as Papaloapan River; the others correspond to different kinds of authorizations, such as waste water discharge, stream exploitation, underground water extraction and use of federal zones.

The concessions for surface water exploitations granted in the municipality of San Juan Bautista Tuxtepec over the Santo Domingo River-Papaloapan section are set forth below, indicating users, volumes and uses.

User	Title No.	Extraction volume m ³ /year	Use
Adolfo López Mateos, S.A. de C.V. Sugar Mill	10OAX112591/28FAGR06	7,302,960	Industrial
José Luis Fernández López	10OAX126287/28AAGR06	31,268.16	Agricultural
Agro-irrigation El Ojochal, S. de P. R. de R. I.	10OAX115406/28AAGR99	972,000	Agricultural
Alejandro Niño Girón	10OAX113542/28AAGR99	127,008	Agricultural

¹ Resolution to inform the results of the technical study to suppress the prohibition of surface waters and to issue the Regulations to Control the exploitation, use and utilization in twelve basins of the Río Papaloapan 28 hydrologic region.

User	Title No.	Extraction volume m ³ /year	Use
Genaro Bravo Sobrón	10OAX126329/28AAOC07	107,789	Agricultural
Juan José Moreno Sada	10OAX110338/28AAGR98	505,440	Agricultural
Mundo Nuevo Agrícola Y Ganadera, S.P.R. De R.L. De C.V.	10OAX128453/28AAGR99	680,400	Agricultural
Victor Gumerciendo Cue Ahuja	10OAX108813/28AAGR00	299,376	Agricultural

These uses are located downstream of the area of influence of the Cerro de Oro hydroelectric project. No uses of this kind are located or detected within the section from the spillway of the dam to the junction of the La Sal Stream with the Santo Domingo River.

It is worth mentioning that due to the recent elimination of the prohibition to grant concessions and assignments of surface waters by the National Water Commission in the Papaloapan River, the number of concession titles is represented by a reduced proportion of users.

The foregoing will allow analyzing and evaluating the different kinds of habitats present in the ecosystem that the project will influence, in order to analyze their importance and distribution, as well as the role they play with respect to the fauna species identified in the project area. This is essential since with the foregoing, the applicant must evidence through scientific technical support, that the execution of the project will not cause an alteration in the homeostasis (auto-regulation capacity of a system that allows it to maintain its structure throughout time against extreme influences, in such a way that its ecologic processes are maintained) and/or resilience (ability of a system to resist changes and return to homeostasis) of the environmental conditions that have permitted the survival of the fauna species that use such habitats (whether as refuge, feeding, nesting or recreation areas).

In furtherance of the foregoing, in addition to presenting the technical arguments of the information set forth in the preceding paragraph, the applicant must present in a graphic manner, through plans, maps, drawings, photo exhibits (describe in each photo the most important aspects and their location in connection with the project) and/or using any methods that allow exemplifying and/or communicating as clearly as possible the preservation status and natural conditions of the environmental components identified in the SA of the project, such as the areas with vegetation that the project will affect (submitting a map of the trajectory of the power transmission line of the project is recommended, including the names and symbols corresponding to the types of existing vegetation and the interrelations of the environmental components identified and that are present along such trajectory and its surroundings).

(See documentary, graphic and figure exhibits)

4. *Based on the foregoing arguments, the applicant must clarify, ratify and/or develop the information contained in chapters V, VI and VII, with respect to the environmental impacts identified, the prevention, control, mitigation and/or compensation measures and the expected scenario forecasts, considering that such measures and projections must be congruent with the environmental impacts (including those that were not originally identified and/or analyzed), with respect to the environmental component that may be affected. It is important to point out that the measures proposed must define the actions that will be carried out for the execution thereof and the monitoring mechanisms (environmental performance indicators) that will be implemented, as well as the periods in which such measures will be applied.*

In this regard, the applicant must develop the environmental quality follow-up actions for the control of the measures proposed for each environmental component, which must have a set of technical criteria that based on the projection of the environmental effects of the project, allows this DGIRA and the Federal Environmental Protection Agency (Procuraduría Federal de Protección al Ambiente) to make a systematic compliance follow-up of the measures proposed, including:

- a) The measures that will be applied to prevent, avoid or minimize the environmental impacts.*
- b) The justification, arguments and/or evidence that allow foreseeing that the prevention, mitigation and/or control measures or actions will be feasible and viable, both technically and ecologically and that they will attain the intended purpose.*
- c) It is important to point out that the description and analysis of the potential environmental scenarios must consider whether or not to apply corrective or mitigation measures to the principal residual, synergic or cumulative environmental impacts and the existence of other projects in the region, in such a way that it is possible to follow-up the significant environmental impacts to corroborate the scope of the measures and the results that may be obtained with the application thereof, or otherwise, design and location alternatives thereof, among others.*

The information corresponding to chapters [V, VI and VII](#) of the EIR is attached hereto and the tables provide the required information:

Table 4.1 Forecast of the environmental scenarios expected

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
SITE PREPARATION STAGE			
<p>Environmental component affected: Surface Soil</p> <p>Installation of Transmission Lines</p> <p>A non-significant, micro, specific permanent and irreversible adverse impact is expected due to the 2.50 m deep excavation for the foundation of the 22 transmission towers planned to be installed.</p>	<p>The slash and burn method, using any defoliating substance, burning of material resulting from the clearing and stripping and/or the disposal thereof in riverbeds, streams, ravines or natural drains whether close to or far from the project zone, are strictly prohibited.</p> <p>Vegetation will be manually removed, in a directional manner, using axes, machetes and saws if necessary, leaving 0.30 m. stumps on the ground.</p> <p>Vegetable remains resulting from this activity will be cut and scattered over the cleared area in order to protect the soil and to reintegrate them into the soil as organic matter</p>	<p>A better preserved, less altered soil, beds of rivers and streams free from vegetation waste and drains free from felled vegetation.</p> <p>Soil protection during execution of work, preserving the vegetation seedlings developed on site and avoid compacting the land with the crossing of personnel.</p>	<p>Altered, degraded, exposed and eroded soils; beds of rivers and streams and/or drains with vegetation waste.</p> <p>A cumulative impact will be produced.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>Environmental component affected: Air</p> <p>Hydroelectric central: During the demolition, excavation and filling activities, dust and particles will be generated, which will cause a temporary, reversible and preventable non-significant adverse impact.</p>	<p>Water the land continuously, mainly the access road during the dry season, to keep it humid to avoid emitting particulate material into the atmosphere.</p>	<p>Air free from dust or particulate material.</p> <p>Better visibility during the execution of the work and elimination of fugitive dust outside the work area.</p>	<p>Atmospheric pollution due to dust.</p> <p>Particulate material will reach surrounding vegetation, drying it and obstructing the passing of light for photosynthesis.</p> <p>A cumulative impact will be generated.</p>
<p>Transmission line: During the excavation and concrete preparation activities for the foundations, a temporary, reversible and preventable non-significant adverse impact is expected due to the emission of dust and particles.</p>	<p>Water the land continuously to keep it humid to avoid emitting particulate material into the atmosphere.</p> <p>Preferably use a mechanical mixer to avoid mixing concrete openly and outside.</p>	<p>Air free from dust or particulate material.</p> <p>Elimination of concrete residues in the work areas.</p>	<p>Atmospheric pollution due to dust.</p> <p>Dispersion of cement dust over the nearby plants "burning them" with the setting reaction.</p> <p>A cumulative impact will be generated</p>
<p>Environmental component affected: Noise</p> <p>Hydroelectric Central: During the installation of the support infrastructure, demolition, excavation and filling activities, a temporary, reversible, non-significant adverse impact that can be mitigated will be generated, since noise between 90 and 150 decibels will be produced while the machinery is in operation.</p>	<p>Machinery operators and workers will receive ear protectors.</p> <p>Provide the machinery and equipment with noise reduction devices.</p> <p>Give periodic maintenance to noise reduction devices.</p>	<p>Workers' safety and health will be protected.</p> <p>Noise-sensitive fauna close to the construction site will not be affected.</p> <p>Major productivity of equipment and personnel.</p> <p>Increase in the effective work time and reduction of completion</p>	<p>Workers' safety and health will be affected. Noise sensitive fauna close to the construction site will be affected.</p> <p>Reduction of labor periods to comply with the maximum exposure times, as well as extension of work completion dates.</p> <p>Increase personnel to cover</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
		dates.	shifts. A synergic impact will be generated
<p>Environmental component affected: Vegetation</p> <p>Hydroelectric Central: Non-significant adverse impacts are expected on this resource since with the process of clearing and stripping, the vegetation of the site will be lost. It should be pointed out that the only vegetation in the site is grass, herbaceous vegetation and some secondary vegetation shrub types.</p>	<p>Felling vegetation for the purpose of storing and/or safekeeping machinery is strictly prohibited.</p> <p>The use of fire to eliminate vegetation (grasses, herbaceous vegetation or shrubs) is strictly prohibited.</p> <p>A vegetable covering will be preserved in sections where it is feasible.</p>	<p>Deforesting more surfaces than is strictly necessary will be prevented.</p> <p>The recovery of vegetation will be accelerated once the work concludes.</p> <p>It will be possible to have green areas that will later serve as refuge for small reptiles and birds and that will provide shade to the facilities of the Hydroelectric Central.</p>	<p>From experience in other projects, it is known that contractors fell vegetation only to store machinery until they use it, even when there is proper storage space, to avoid moving it.</p> <p>There would be more cleared surfaces with the subsequent increase in temperature and sun exposure.</p> <p>Higher surface restoration or rehabilitation costs since the vegetation will take more time to recover, even with sowing or seed dispersion.</p> <p>A cumulative impact will be generated.</p>
<p>Environmental component affected: Fauna</p> <p>Hydroelectric Central: A non-significant adverse impact is expected, since the fauna in the area will be displaced to less perturbed sites.</p>	<p>Hunting and capturing any kind of fauna is strictly prohibited.</p> <p>Consumption of wild animals of the region and that could be offered to residents of the</p>	<p>Hunting and capturing fauna for profit, consumption or collection purposes will be avoided.</p> <p>Awareness will be built to eliminate the idea of a captured</p>	<p>Effect on the fauna individuals that may be found in the place, without allowing them to escape and move to other sites if no preliminary dispelling is carried out.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>Transmission line: A non-significant, temporary, reversible adverse impact that may be mitigated will be generated due to the presence of the workers in charge of the stripping and excavation, which will cause the herpetofauna to be displaced to less perturbed sites.</p>	<p>surroundings of the project will be avoided.</p> <p>Prior to beginning this activity, rounds will be conducted to identify dens or nests and rescue and/or relocate them</p> <p>Prior to beginning the clearing activities, rounds will be carried out to dispel fauna.</p> <p>Provide and indicate to workers, mainly those in charge of personnel, the obligations and restrictions and encourage them to carry out appropriate supervision and comply with instructions, in accordance with the mechanisms that the contractors and the applicant define, with basis on the applicable legislation and the orders/directives of the competent authorities.</p> <p>Train, induce and build awareness in the personnel, mainly personnel from abroad that has not had much contact with wild fauna.</p>	<p>animal being a trophy or symbol of braveness.</p> <p>Workers will be given a responsibility for the control of activities.</p> <p>Survival of fauna will be preserved in a greater extent by giving workers another view of the repercussions they will be subject to for any violations incurred.</p> <p>Mortality, mainly of reptiles and other wild fauna species having an allegedly fearful aspect, will decrease.</p>	<p>Contractors commonly hunt fauna for recreation or capture fauna to sell it.</p> <p>Eradication campaigns and mortality of fauna falsely considered as harmful. Along roads and other sites, beheaded reptiles, squashed tarantulas and other abused wildlife species are often found. The mistreatment occurs because persons or workers fear such wildlife, do not know the species or have certain beliefs or superstitions about it.</p> <p>A cumulative impact will be generated</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>Environmental component affected: Energy and Matter Flows</p> <p>Hydroelectric Central: Hydroelectric central: A non-significant temporary adverse impact is expected due to the site preparation activities that may cause displacement of the existing fauna. With the stripping and vegetation removal, impacts are expected on the matter and energy flows</p> <p>Transmission line: When the fauna moves to less perturbed places, the energy and matter flows change, causing a non-significant adverse impact that can be mitigated and compensated.</p>	<p>The minimum necessary areas for the Engine Room and Substation will be defined.</p> <p>Fauna will be dispelled to nearby, less perturbed areas.</p>	<p>The minimum necessary surface wherein the energy and matter flows will be affected will be delimited.</p> <p>There will be better control of the activities developed on site.</p> <p>The surface affected is reduced.</p>	<p>The surface affected is much larger.</p> <p>A cumulative impact will be generated</p> <p>The affected surface is much larger.</p> <p>A residual impact is produced.</p>
<p>Environmental component affected: Landscape</p> <p>Transmission line: A non-significant, temporary, reversible adverse impact that can be auto-mitigated is expected during the stripping activities.</p>	<p>The soil will only be removed in the places determined to bury the towers that is, only where the trenches will be opened.</p>	<p>The affected surface is reduced.</p> <p>Rapid recovery of the sites where the installation works were made is promoted.</p> <p>Surrounding vegetation improves and the landscape aspect is maintained without the structures being visible to the naked eye.</p>	<p>The affected surface is much larger.</p> <p>It takes more time for surfaces with vegetation to recover and consequently, the installation is more noticeable.</p> <p>A synergic impact will be generated with the agricultural activities.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
CONSTRUCTION STAGE			
<p><i>Environmental component affected: Agua superficial</i></p> <p>Hydroelectric Central: A non-significant adverse impact is expected with the construction of the Discharge Channel.</p>	<p>Construction of a cofferdam to prevent exchange of water with dissolved materials from the excavation.</p>	<p>The affected surface is reduced.</p> <p>The excavation material and water are controlled within the work areas.</p> <p>The dispersion of material outside the excavation site is prevented and the work is protected during the rainy season.</p>	<p>The affected surface is much larger.</p> <p>Water would tend to attract the loose material from the excavation and drag it, dispersing it to the natural drains of the area, mainly in the rainy season.</p> <p>No physical barrier would exist for the machinery, for which its range of action will have effects beyond the work area due to the removal of material with the passing thereof.</p> <p>A synergic impact will be generated</p>
<p><i>Environmental component affected: Surface Soil</i></p> <p>Engine Room: Excavations will be deep and partially, in filling material with erosion possibilities.</p>	<p>After the building is completed, hollows will be filled, excavated embankments will be stabilized and it will be covered with geotextile; native vegetation seeds will be</p>	<p>Banks are preserved and erosion is avoided.</p>	<p>Embankments erode with wind and rain, becoming unstable and putting the security of the building at risk.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>Outlet Channel: Deep excavation with erosion possibilities.</p> <p>La Sal stream flow: For rectification, the basin will be excavated in silty material with erosion possibilities.</p>	<p>planted or dispersed.</p> <p>The basin will be lined with concrete and the slopes with shotcrete and geotextile carpets. Avoiding erosion is essential for the safety and life of the project.</p> <p>Slopes will be formed 1.5:1</p> <p>A velocity of not more than 0.80m/s will be maintained.</p> <p>The development of native vegetation along the banks will be promoted.</p>	<p>The basin of the channel is preserved and erosion is prevented.</p> <p>Erosion is prevented.</p> <p>Erosion is prevented.</p> <p>Landscape is preserved.</p>	<p>A cumulative impact will be generated</p> <p>The basin of the channel erodes, causing insecurity conditions for the channel.</p> <p>Erosion and material dragging occurs.</p> <p>The speed of the current would surpass 0.80m/s, causing landslides and erosion.</p> <p>A significant impact will be generated</p>
<p>Transmission line: The potential land use will be affected in the tower foundation areas (isolated footings having a 64m² surface per tower), for which a significant cumulative, permanent, irreversible adverse impact that may be compensated is expected in each place where the footings are located.</p>	<p>After the trenches where the towers will be installed are dug, a perimetral fence will be set up to prevent domestic and wild animals from falling into them.</p> <p>At the end of the workday, an adequate size log will be placed over each of the open trenches to allow any small animal or reptile that may have fallen in a trench to escape.</p>	<p>The number of animals that fall into open trenches is reduced</p>	<p>More animals fall into the open trenches, which work as traps.</p> <p>A residual impact is produced.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p><i>Environmental component affected: Air</i></p> <p>Hydroelectric Central: During the performance of the activities of this stage, non-significant, temporary adverse impacts will be generated due to the excavation of the conduction channel, the pipeline trench and the engine room.</p>	<p>Water the land continuously, especially the access to the work area, to keep it humid and avoid emitting particulate material into the atmosphere.</p> <p>Place a wet cloth filter at the end of the air extractor in the tunnel to trap particulate material.</p>	<p>Particulate material in the atmosphere is reduced.</p> <p>Dispersion of dust over the vegetation surrounding the project is eliminated.</p>	<p>Particulate material in the atmosphere increases, affecting the workers' health, safety and hygiene.</p> <p>A cumulative impact will be generated</p>
<p><i>Environmental component affected: Noise</i></p> <p>Hydroelectric Central: During this stage of the project, the noise produced will be caused mainly by the power generators and the pneumatic compressors. Such noise will be up to 105 decibels, which is above the limits established by the legal standards. This will cause a minor temporary adverse impact that can be mitigated to the personnel working in this area.</p>	<p>Provide security equipment to workers such as: ear protectors, helmets, boots, gloves, etc.</p> <p>Encourage personnel to use the personal protection equipment adequately and continuously.</p>	<p>Safety and health of workers is fostered</p> <p>Productivity increases.</p> <p>Acceptable costs for the project are maintained, considering the time to execute the works and hiring a determined number of personnel members.</p>	<p>Workers' health is affected, the safety and health level of workers decreases.</p> <p>Reduction of work periods to comply with the exposure limits and increase the number of hired personnel to cover shifts.</p> <p>The costs of the project increase and completion dates are extended.</p> <p>A synergic impact will be generated</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>Environmental component affected: Vegetation</p> <p>Transmission line: The properties where the foundations of the transmission towers will be built are currently used for crops or have spots of secondary vegetation with some elements of evergreen tropical forest. Therefore, a cumulative, permanent, irreversible adverse impact that can be compensated is expected.</p> <p>Additionally, due to the installation of 10.5 km of the line, it will be necessary to prune or remove the vegetation that may be growing in the relevant areas. Thus, a non-significant, temporary, reversible adverse impact that can be auto-mitigated is expected.</p>	<p>In agricultural areas, affected crops will be paid; in secondary vegetation areas, the easy recovery thereof will be allowed plowing the land that was compacted due to the passing of personnel or equipment, for its rapid regeneration.</p>	<p>Good relationships with local residents are secured and affected farmers are compensated for the temporary effect caused to, or loss of, their crops if any.</p> <p>In the secondary vegetation area and in the mid-altitude jungle fragments, the homeostasis of the system is promoted.</p>	<p>Strong disagreements with farmers may occur that could prevent the development of the project.</p> <p>The resilience of the system is affected.</p> <p>A residual impact is produced.</p>
<p>Environmental component affected: Energy and Matter Flows</p> <p>Hydroelectric Central: Because during this stage of the project the movement of machinery, equipment, workers and materials is continuous, a non-significant, temporary, reversible adverse impact that</p>	<p>The minimum indispensable surfaces will be established for the purpose of delimiting and reducing this impact to the bare minimum.</p>	<p>The energy and matter flows are limited to a minimum affected surface.</p>	<p>Contractors tend to cover large surfaces for operations with machinery, for which the effect is greater.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
<p>may be mitigated is expected.</p> <p>Transmission line: With the insertion of the transmission towers and due to the removal of the scarce existing vegetation, energy and matter flows are expected to be affected, causing a non-significant adverse impact.</p>	<p>The minimum indispensable surfaces will be established for the purpose of delimiting and reducing this impact to the bare minimum.</p> <p>The installation of camps or storage in the work area will be avoided and private property will be used for such purposes.</p>	<p>The energy and matter flows are limited to a minimum affected surface.</p>	<p>Contractors tend to cover large surfaces for operations with machinery, for which the effect is greater.</p> <p>A residual impact is produced.</p>
<p>Environmental component affected: Landscape</p> <p>Hydroelectric Central: By virtue of the fact that during excavation and filling movement of soils will occur, a non-significant, temporary, irreversible adverse impact that may be mitigated and compensated is expected.</p> <p>Transmission Line: Since the infrastructure of the transmission towers is not part of the natural landscape and during the construction thereof materials will be moved and the tower structures will be installed, a non-significant adverse impact</p>	<p>It is a fact that with the development of the engine room and electric substation, the landscape will change. However, the land around the hydroelectric central will be cleaned and plowed to propitiate rapid vegetation growth.</p> <p>It is a fact that with the development of the transmission line, the landscape will change. However, the secondary vegetation or mid-altitude jungle spots in the surroundings of the line will be respected and the passing will be made through existing access points and the right of way. At the end of the construction, an</p>	<p>Rapid regeneration of vegetation is expected on the places unoccupied by the hydroelectric central.</p> <p>Rapid regeneration of vegetation is expected on the places unoccupied by the transmission line towers or crops.</p> <p>A natural barrier that will hide the structures will be obtained.</p>	<p>Material residues from the construction of the hydroelectric central will remain on the site and the land will remain compacted, preventing the development of vegetation.</p> <p>Material residues from the edification of the transmission towers will remain on the site and the land will remain compacted, preventing the development of vegetation.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
is expected.	inspection will be conducted to verify that the surfaces are clean and free from construction residues.		A residual impact is produced.
<p><i>Environmental component affected: Population</i></p> <p>Hydroelectric central: Since the activities carried out during this stage of the project will be performed within the federal zone, the only disturbance to the residents will be the constant passing of pick-up and dump trucks, which is considered as a non-significant, temporary, reversible and preventable adverse environmental impact.</p>	<p>Advise residents or owners of the properties involved in advance of the day or days scheduled for the movement of heavy machinery or equipment.</p> <p>On the day the machinery will be moved, place signs and personnel to ensure the persons of the community do not suffer any accidents and prevent cattle from during maneuvers.</p> <p>Encourage workers to respect persons and domestic and wild animals that cross the roads they drive through and to observe speed limits in asphalt and dirt roads, indicating the penalties they will be subject to and the liability they may incur with the potential claimant.</p> <p>Keep record of the vehicles used in the project, mainly those that leave the site and their customary drivers, checking the speeds they normally drive at.</p>	<p>Accidents and disturbances to the residents will be avoided.</p> <p>The instructions of the applicant and the chiefs of the contractor companies will be more closely and responsibly observed.</p> <p>The applicant will not be responsible for handling claims or paying extreme compensations for the complaints of the affected parties.</p> <p>Any claims that may arise will be properly handled.</p>	<p>Accidents and disturbances to residents may be caused.</p> <p>Justified or unjustified claims may arise, which may cause problems for the applicant.</p> <p>The harmony between the residents and the parties involved in the construction of the project would be compromised.</p> <p>A cumulative impact will be generated</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
MAINTENANCE AND OPERATION STAGE			
<p><i>Environmental component affected: Surface Water</i></p> <p>Hydroelectric Central: During the operation activities of the hydroelectric central, a significant, preventable environmental adverse impact that may be mitigated is expected on the flow of the Santo Domingo river, since it will decrease in a section of 2 km, from the Miguel de la Madrid Hurtado dam discharge structure to its junction with the La Sal stream, as the hydroelectric will discharge water into the La Sal stream.</p>	<p>A gabions ditch is intended to be established immediately after the junction of the Santo Domingo river with the La Sal stream. This will avoid the riverbed from drying out by keeping it flooded and with flowing water, that is, the riverbed will have enough water without becoming stagnant, since this volume may be totally replaced if the spillway gates are opened once a week with an outflow of 30 m³/s. Opening the spillway gates once a week with an outflow of 30 m³/s during 3 hours is suggested.</p>	<p>The same water level is maintained along the 2km of the Santo Domingo River.</p> <p>The necessary humidity conditions for riparian vegetation and any fauna located therein are maintained.</p> <p>The water will receive additional oxygen as it falls when passing through the gabions ditch.</p>	<p>The flow of the Santo Domingo River will be drastically reduced, affecting the humidity level along such section.</p> <p>A significant impact will be generated</p>
<p><i>Environmental component affected: Vegetation</i></p> <p>Hydroelectric Central: A relevant or significant adverse impact is expected on the riparian vegetation during this stage of the project since the decrease in the flow of the Santo Domingo River will drastically diminish the water level. Consequently, the vegetation established at the river's edge will be severely affected along a section of</p>	<p>It is considered that with this hydraulic management, the water volume of the Santo Domingo River will not decrease along a strip of 2km from the curtain of the Cerro de Oro dam until its junction with the La Sal Stream.</p>	<p>Riparian vegetation will not be affected.</p> <p>There is better control over the erosion processes due to presence of a vegetable covering along the riverbanks.</p>	<p>Riparian vegetation would dry out causing a massive death of individuals.</p> <p>An erosion process could be triggered due to the dryness of the ground and the lack of vegetable covering along the</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
2km, causing the riparian vegetation of this section to disappear.	Maintain strict supervision and control of the outflow discharged and the water level managed in the relevant section, to ensure and maintain the humidity conditions that applicant intends.	It is possible to ensure that humidity conditions will be maintained within an adequate level for the development and survival of the vegetation that grows along the riverbanks.	riverbanks. A significant impact will be generated
<p>Environmental component affected: Fauna</p> <p>Hydroelectric Central: A significant adverse impact that may be mitigated is expected since the desiccation of the riparian vegetation will cause the disappearance of the habitats of land and semi aquatic species that use such places for feeding, nesting, recreation, etc. If no preventive and mitigation measures are taken, a synergic impact would be generated, causing an environmental effect greater than the sum of the individual effects contemplated separately.</p>	<p>Hydraulic management through the gabions dam.</p> <p>Maintain strict supervision and control of the outflow discharged and the water level managed in the relevant section, to ensure and maintain the humidity conditions that applicant intends.</p>	<p>The water level along the 2 km. of the River will not decrease. Therefore, the aquatic and semi aquatic fauna and the recreation, nesting and feeding places of this habitat will not be affected.</p> <p>By maintaining the humidity along this section of the flow, wild fauna that rests on riparian vegetation will continue to have water for its sustenance.</p>	<p>The habitats with ecologic value will be drastically affected.</p> <p>The resident fauna will gradually migrate to more humid sites, decreasing their survival possibilities and increasing the competition for available spaces suitable for its development.</p> <p>A significant impact will be generated</p>
<p>Environmental component affected: Energy and Matter Flows</p> <p>Hydroelectric Central: A significant adverse impact that may be mitigated will be caused to the energy flows of the ecosystems of the riverbanks.</p>	<p>Hydraulic management through the gabions dam.</p>	<p>With the hydraulic management proposed, there will be no repercussions on the energy and matter flows.</p>	<p>By decreasing the hydraulic outflow, the communities along the riverbank will be affected and so will energy flows.</p>

Adverse Impact Determined	Prevention, Mitigation, Control and/or Compensation Measure	Projection of the expected scenario	
		With the application of the mitigation measures	Environmental dynamic without applying the mitigation measures
			A significant impact will be generated
<p><i>Environmental component affected: Landscape</i></p> <p>Hydroelectric Central: Riverbanks will be modified when the riparian vegetation dries out and the river's flow will decrease drastically in a section of 2 km. However, this is considered as a significant adverse impact that may be mitigated.</p>	Hydraulic management through the gabions dam.	No changes in the landscape	<p>The riverbank will turn into a no vegetation zone.</p> <p>A significant impact will be generated</p>

Table 4.2 Environmental quality follow-up actions

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
Surface Soil	<p>The slash and burn method, using any defoliating substance, burning of material resulting from the clearing and stripping and/or the disposal thereof in riverbeds, streams, ravines or natural drains whether close to or far from the project site, are strictly prohibited.</p> <p>Vegetation will be manually removed, in a directional manner, using axes, machetes and saws if necessary, leaving 0.30 m. stumps on the ground.</p> <p>Vegetable remains resulting from this activity will be cut and scattered over the cleared area in order to protect the soil and reintegrate them into the soil as organic matter.</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p> <p>10% of the estimate presented will not be paid for the measure not executed.</p> <p>The item of the estimate submitted will be withheld due to the unexecuted measure.</p> <p>10% of the estimate presented will not be paid for the measure not executed</p>	<p>The management of the project will have two environmental experts (Biologist or Environmental Engineer) who each week, will verify compliance with this measure and record it in the logbook.</p> <p><i>Performance indicator:</i> The current conditions of the soil.</p> <p>Preparation of a photo report with the sequence of the activities developed.</p> <p><i>Performance indicator:</i> Presence of herbaceous vegetation and stumps at the ground level in the right of way area.</p> <p>Presence and strong development of the vegetation to the sides of the right of way, demonstrating the limits of the strip that integrate it.</p> <p><i>Performance indicator:</i> Existence of chopped and scattered vegetable material.</p>	Site preparation stage
Air	Water the land continuously to keep it humid to avoid emitting particulate	A clause will be included in the contract for the application of	<i>Performance indicator</i> The specialized supervisor will	Site preparation stage, mainly during the dry

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	material into the atmosphere.	<p>economic penalties for failure to comply with this measure.</p> <p>15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance.</p>	<p>record in the logbook the number weekly irrigations.</p> <p>Evidence of the adequate humidity in the surface course of the access road (without presence of talcum and without passing vehicles raising dust) in images.</p> <p>File of images to evidence proper attention and compliance.</p>	season of the year.
Noise	<p>Machinery operators and workers will receive ear protectors.</p> <p>Provide the machinery and equipment with noise reduction devices.</p> <p>Give periodic maintenance to noise reduction devices.</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p> <p>15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance.</p> <p>Contractors will be encouraged to provide personal protection equipment based on the legal requirements relating to safety and health in the workplace.</p>	<p><i>Performance indicator</i> The specialized supervisor will record in the logbook the number of workers that do not have protectors and the machinery and equipment that lacks noise reduction devices and will monitor periodic maintenance of the devices.</p> <p>Monthly inspection to verify the machinery and equipment have the adequate silencing devices.</p> <p>Documentary evidence of acquisition and/or delivery of personal protection equipment to workers in accordance with their duties; preparation of a report.</p>	<p>Site preparation stage.</p> <p>Provide and deliver personal protection equipment when personnel begin working on site.</p> <p>Verification of machinery and equipment before introducing it to the project.</p> <p>Inspection during the dates in which preventive maintenance of machinery and equipment should be performed.</p>
Vegetation	<p>Felling vegetation for the purpose of storing and/or safekeeping machinery is strictly prohibited.</p> <p>The use of fire to eliminate</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p>	<p><i>Performance indicator</i> The specialized supervisor will record in the logbook any unnecessary felling of vegetation and prepare a photo report.</p>	Site preparation stage

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	<p>vegetation (grasses, herbaceous vegetation or shrubs) is strictly prohibited.</p> <p>A vegetable covering will be preserved in sections where it is feasible.</p>	<p>25% of the estimate submitted will not be paid due to the unexecuted measure.</p> <p>Request the executing contractor to provide photo evidence of the site before and after it was intervened.</p>	<p>Verification of the strip of the right of way intervened to ensure the work was carried out as indicated.</p>	
Fauna	<p>Hunting and capturing any kind of fauna is strictly prohibited.</p> <p>Consumption of wild animals of the region and that could be offered to residents of the surroundings of the project will be avoided.</p> <p>Prior to beginning this activity, rounds will be conducted to identify dens or nests and rescue and/or relocate them</p> <p>Prior to beginning the clearing activities, rounds will be carried out to dispel fauna.</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p> <p>25% of the estimate submitted will not be paid due to the unexecuted measure.</p> <p>The contractors will be required to implement programs to train and inform workers on wildlife protection.</p>	<p><i>Performance indicator</i> The specialized supervisor will verify the placement and preservation of signs in good condition that refer to the prohibitions.</p> <p><i>Performance indicator</i> The specialized supervisor will make the rounds with the rescue brigades the contractor determines for such purpose.</p> <p><i>Performance indicator</i> The specialized supervisor will make rounds together with the brigades the contractor determines for such purpose.</p> <p>Evidence of talks with the project workers.</p>	Site preparation stage
Energy and Matter Flows	<p>The minimum necessary areas for the Engine Room and Substation will be defined.</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p>	<p><i>Performance indicator</i> The specialized supervisor will verify that the surface to be used corresponds to the surface</p>	Site preparation stage

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	Fauna will be dispelled to nearby, less perturbed areas.	15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance	established in the plans. Prepare a photographic report with the work development sequence.	
Landscape	The soil will only be removed in the places determined to bury the towers that is, only where the trenches will be opened.	A clause will be included in the contract for the application of economic penalties for failure to comply with this measure. 15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance Only the number of trenches established in the item catalogue will be paid.	<i>Performance indicator</i> The specialized supervisor will verify that the surface that will be used corresponds to the surface established for the trenches. Verification of the surfaces intervened, evidencing that the surrounding areas are in good preservation condition.	Site preparation stage Weekly inspection by section and work front in accordance with the contractor's work schedule.
Surface Water	Construction of a cofferdam to prevent exchange of water with dissolved materials from the excavation.	A clause will be included in the contract for the application of economic penalties for failure to comply with this measure. 15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance	<i>Performance indicator</i> The specialized supervisor will verify the existence of the cofferdam.	Construction stage
Surface Soil	After the building is completed, hollows will be filled, excavated embankments will be stabilized, it will be covered with geotextile and	A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.	<i>Performance indicator</i> The specialized supervisor will verify the filling of hollows, stabilization of banks and the	Construction stage

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	<p>native vegetation seeds will be planted.</p> <p>The basin will be lined with concrete and the slopes with shotcrete and geotextile carpets. Avoiding erosion is essential for the safety and life of the project.</p> <p>Slopes will be formed 1.5:1</p> <p>The development of native vegetation along the banks will be promoted.</p>	<p>A penalty equal to 10% of the total estimate submitted will be applied</p> <p>The lining of the basin and banks item will not be paid. Additionally, a penalty equal to 15% of the unit price for such item will be applied to the contractor.</p>	<p>presence of geotextile with vegetable covering.</p> <p><i>Performance indicator</i> The specialized supervisor will verify the presence of the basin lining, the shotcrete in banks and the geotextile.</p> <p><i>Performance indicator</i> The specialized supervisor will verify that embankments are 1.5:1</p> <p><i>Performance indicator</i> The specialized supervisor will verify the presence of vegetation.</p>	
Surface Soil	<p>After the trenches where the towers will be installed are dug, a perimetral fence will be set up to prevent domestic and wild animals from falling into them.</p> <p>At the end of the workday, an adequate size log will be placed over each of the open trenches to allow any small animal or reptile that may have fallen in a trench to escape.</p>	<p>A clause will be included in the contract for the application of economic penalties for failure to comply with this measure.</p> <p>15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance.</p>	<p><i>Performance indicator</i> The specialized supervisor will conduct the inspection and verify the absence of animals in the trenches, applying intensive inspection during the rainy season.</p> <p>Review and control of the contractor's work schedule to avoid delays in the opening of trenches and completion of the foundation footings.</p>	<p>Construction stage</p> <p>Verification by quintans during the time each trench remains open.</p> <p>Daily inspection during the rainy season.</p>
Air	<p>Water the land continuously, especially the access to the work area, to keep it humid and avoid emitting particulate material into the atmosphere.</p>	<p>Application of penalties in accordance with the concepts contemplated during the site preparation stage.</p>	<p>Verification of the project site and surrounding areas [to ensure such are] free from particulate material and talcum deposits.</p>	<p>Construction stage, principally in the dry season of the year.</p>

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	Place a wet cloth filter at the end of the air extractor in the tunnel to trap particulate material.	Application of safety and health measures without causing additional costs for the company.		
Vegetation	In agricultural areas, affected crops will be paid; in secondary vegetation areas, the easy recovery thereof will be allowed plowing the land for its rapid regeneration.	Electricidad de Oriente will cover the payment of the affected crops.	<i>Performance indicator</i> The specialized supervisor will verify that the required payments are made on time.	Construction stage
Landscape	<p>It is a fact that with the development of the engine room and electric substation, the landscape will change. However, the land around the hydroelectric central will be cleaned and plowed to propitiate rapid vegetation growth.</p> <p>It is a fact that with the development of the transmission line, the landscape will change. However in the secondary vegetation areas or mid-altitude jungle spots in the surroundings of the line, the soil will be plowed to propitiate rapid vegetation growth.</p>	A clause will be included in the contract for the application of economic penalties for failure to comply with this measure. 15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance	<i>Performance indicator</i> The specialized supervisor will verify the cleanliness of the areas. <i>Performance indicator</i> The specialized supervisor will verify vegetation growth in the unoccupied areas.	Construction stage
Population	Advise residents or owners of the properties involved in advance of the	A clause will be included in the contract for the application of economic penalties for failure	<i>Performance indicator</i> The specialized supervisor will verify the adequate execution of the	Construction stage

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
	<p>day or days scheduled for the movement of heavy machinery or equipment.</p> <p>On the day the machinery will be moved, place signs and personnel to ensure the persons of the community do not suffer any accidents and prevent cattle from during maneuvers.</p>	<p>to comply with this measure.</p> <p>15% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance.</p> <p>Registration of all vehicles to have adequate control of the units that abandon the project site.</p>	<p>protective actions.</p> <p>Generation of logbooks and verification of maximum speed in the roads that lead to the project site.</p>	
Surface Water	<p>A gabions ditch is intended to be established immediately after the junction of the Santo Domingo river with the La Sal stream. This will avoid the riverbed from drying out by keeping it flooded and with flowing water, that is, the riverbed will have enough water without becoming stagnant, since this volume may be totally replaced if the spillway gates are opened once a week with an outflow of 30 m³/s. Opening the spillway gates once a week with an outflow of 30 m³/s during 3 hours is suggested.</p>	<p>A clause will be included in the contract of the operator company (Operadora de Centrales Hidroeléctricas) for the application of economic penalties for failure to comply with this measure.</p> <p>35% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance</p>	<p><i>Performance indicator</i></p> <p>The same water level as the current level along the 2km of the Santo Domingo River must be observed.</p>	<p>Operation and Maintenance stage</p>
Vegetation	<p>It is considered that with this hydraulic management, the water volume of the Santo Domingo River will not decrease along a strip of 2km from the curtain of the Cerro de Oro dam until its junction with the La Sal Stream.</p>	<p>A clause will be included in the contract of the operator company (Operadora de Centrales Hidroeléctricas) for the application of economic penalties for failure to comply with this measure.</p>	<p><i>Performance indicator</i></p> <p>Development and preservation of riparian vegetation</p>	<p>Operation and Maintenance stage</p>

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
		<p>In addition to the amount withheld, a penalty equal to 15% of the estimate will be applied for failure to comply with this measure.</p>		
Fauna	Hydraulic management through the gabions dam	<p>A clause will be included in the contract of the operator company (Operadora de Centrales Hidroeléctricas) for the application of economic penalties for failure to comply with this measure.</p> <p>In addition to the amount withheld, a penalty equal to 15% of the estimate will be applied for failure to comply with this measure</p>	<i>Performance indicator</i> Riverbank fauna	Operation and Maintenance stage
Energy and Matter Flows	Hydraulic management through the gabions dam	<p>A clause will be included in the contract of the operator company (Operadora de Centrales Hidroeléctricas) for the application of economic penalties for failure to comply with this measure</p> <p>5% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance</p>	<i>Performance indicator</i> Impact on the aquatic and riverbank habitats.	Operation and Maintenance stage
Landscape	Hydraulic management through the gabions dam	A clause will be included in the contract of the operator	<i>Performance indicator</i> Impact on the aquatic and riverbank	Operation and Maintenance stage

Environmental Component	Prevention, mitigation, control and/or compensation application measure	Justification, argument and/or evidence of technical viability or feasibility	Actions for execution and monitoring mechanisms (Environmental Performance Indicators)	Application Periods
		<p>company (Operadora de Centrales Hidroeléctricas) for the application of economic penalties for failure to comply with this measure.</p> <p>5% of the estimate submitted will be withheld for the unexecuted measure, which will be paid upon compliance.</p>	landscape	