VI. PREVENTIVE AND MITIGATION MEASURES FOR ENVIRONMENTAL IMPACTS

VI.1. DESCRIPTION OF THE MITIGATION OR CORRECTIVE MEASURE OR PROGRAM OF MITIGATION OR CORRECTIVE MEASURES FOR EACH ENVIRONMENTAL COMPONENT

Chapter V identifies and assesses the environmental impacts which may be caused in the different development stages of the "Tres Mesas" Wind Farm project by Oak Creek Energy Inc.; in this regard, measures proposed in this chapter correspond to **negative** impacts. It must be clearly mentioned that as demonstrated in chapter of this EIS-S, the Project will not cause relevant environmental impacts; however, the petitioner will implement actions to guarantee compliance with the environmental regulations, as well as to prevent and mitigate significant impacts likely to be generated. Thus, the Project conforms to the provisioned in section 30 of the LGEEPA, with regards to:

[SECTION 30.- In order to obtain the authorization referred to in section 28 hereof, interested parties shall submit to the Department the Environmental Impact Statement, which shall contain at least a description of the possible effects on the ecosystem(s) which may be disturbed by the works or activities in question, considering the group of elements composing said ecosystems, ***as well as the preventive and mitigation measures, and other measures necessary to reduce to minimum the negative effects on the environment.]***

In this regard, we assume the fact that after identifying the environmental impacts the measures allowing mitigation, prevention or compensation of the same must be defined. Therefore, under a comprehensive and ecosystemic perspective, an **Environmental Quality Follow-up Plan** (**PSCA**) is suggested as an instrument that considers the measures proposed altogether and allows visualizing the comprehensive approach so as to understand the negative effects on the environment under the following core objectives:

- To build and operate the wind farm within a framework of conservation and sustainable use of ecosystems, goods and environmental services involved, so that the project may be characterized for being an environmentally feasible, responsible and sustainable development strategy.
- To implement the impact management measures to prevent, mitigate and restore, as the case may be, the possible effects derived from potential environmental impacts expected at each implementation stage of the project, within a framework of conservation and sustainable use of goods and environmental services.
- To implement the actions that will allow responding and strictly complying with the terms and conditions set by SEMARNAT should the project be authorized.
- To facilitate the verification of strict compliance with the legislation and federal and state environmental regulations applicable to the project.

With the aforementioned, we intend that the measures proposed be oriented and integrated to conservation of the structure and features of ecosystems to be used, in such a way to comply with section 44 of the rules in this matter with regards to:

[II. The use of natural resources so as to respect the functional integrity and carrying capacities of ecosystems to which said resources belong, for indefinite periods;...]

Based on this information, an Environmental Quality Follow-up Plan was structured consisting of 5 basic Programs. From these Programs, some specific Subprograms, Plans and Procedures are derived with the purpose of covering the most important areas for mitigation and/or compensation of adverse environmental impacts related to this project.

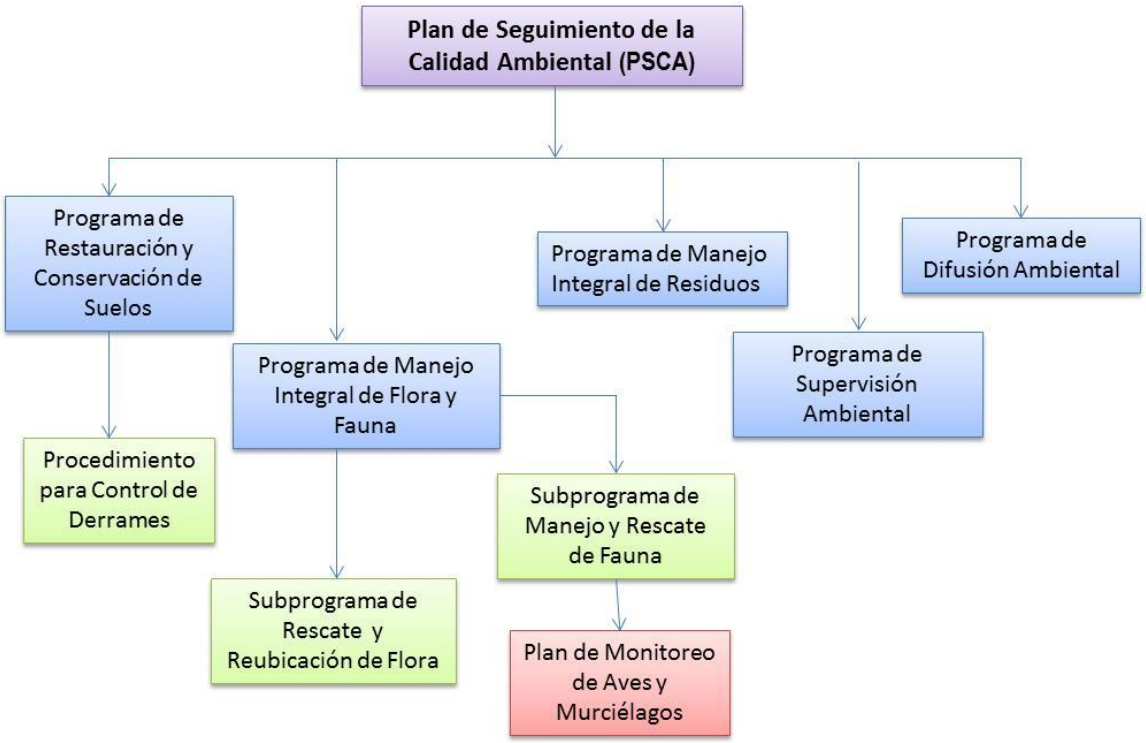

Figure VI.1. Structure of the Environmental Quality Follow-up Plan (PSCA)

[T.N.
Environmental Quality Follow-Up Plan (PSCA)

- *Land Restoration and Conservation Program → Procedure for Spill Control*
- *Flora and Fauna Comprehensive Management Program*
  - *→ Flora Rescue and Relocation Subprogram*
  - *→ Fauna Management and Rescue Subprogram → Birds and Bats Monitoring Plan*
- *Program on Comprehensive Management of Waste*
- *Environmental Supervision Program*
- *Environmental Training and Awareness Program]*

On the other hand, it is important to mention that approximately 180 days before beginning the abandonment stage (considering a project lifespan of approximately 50 years), an **Abandonment Program** will be developed including the Facilities Dismantling Plan, in addition to the rehabilitation activities for disturbed areas as per the conditions existing at the moment in the site.

Next we mention the impacts with different programs and propose general mitigation measures so as to demonstrate the response to the same and consequently, after putting the Project works and activities subject to mitigation measures we will guarantee the lack of environmental disturbance, maintaining impacts in levels that will not jeopardize the integrity of ecosystems. This fact should be demonstrated through the lifespan of the Project with monitoring actions to evaluate the environmental efficiency for each program.

Table VI.1. Environmental impacts and mitigation measures for the site preparation stage

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
Climate	• IP 1. Alteration of local microclimate due to modification on the proportion of latent and sensible heat of radiation in deforested premises	• The clearing and clearance activity will be scheduled and gradual, and only the surface necessary according to the work program for each stage will be disturbed. • We will try to the extent possible to respect all areas with vegetation well preserved. • After finishing the construction of the wind farm, the necessary zones will be leveled and restoration activities at the site will be carried out, so that the vegetation may be restored to its previous state, trying to avoid species which roots may be disturbed by underground lines for electrical conduction.	• Land Restoration and Conservation Program • Environmental Supervision Program
Air	• IP 2. Emissions of combustion gas and dust and/or particles	• Petitioner should ensure, through agreements with contractors and periodical inspections that the machinery and vehicles used during site preparation stages do not generate relevant smoke or emissions into the atmosphere. • Contractors will be requested to have a machinery and equipment maintenance program to ensure their good conditions. • Circulation of vehicles in specific working areas will be restricted and trucks transporting dirt or material which may be blown over will be demanded, to the extent possible, to circulate with canvas or else transport the material moisten so as to avoid spreading dust. • Dirt roads will be periodically irrigated (when necessary) • Clearing and grubbing of the land will be scheduled and gradual, as per the progress of the work schedule. Only after the area has been cleared, they can begin the construction activities, and so on and so forth, in order to avoid that these areas remain without vegetation and therefore exposed to the effects of wind causing, in turn, spreading of powder and particles. • In the event of delay to begin the construction after having removed the vegetable coverage, the activities of soil retention should begin to control erosion according to the Land Restoration and	• Environmental Supervision Program • Land Restoration and Conservation Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
		Conservation Program.	
	• IP 3. Noise emissions	• Petitioner should ensure, through agreements with contractors and periodical inspections that the machinery and vehicles used during site preparation stages do not generate relevant noise levels. • Before using explosives, fauna displacement techniques will be implemented with the Fauna Management and Rescue Subprogram. • During rock crushing and explosives use activities the staff will be requested to use earplugs. • Vehicle circulation will be restricted to specific working areas • Should relevant noise levels be identified, the staff working in said activities should use hearing protective equipment.	• Environmental Supervision Program • Fauna Management and Rescue Subprogram
Land	• IP 4. Land Erosion	• Clearing and grubbing of the land will be scheduled and gradual, as per the progress of the work schedule. Only after the area has been cleared, they can immediately begin the construction activities, and so on and so forth, in order to avoid that these areas remain without vegetation and therefore exposed to erosion due to the effects of wind and water. • In the event of delay to begin the construction after having removed the vegetable coverage, the activities of soil retention should begin to control erosion according to the Land Restoration and Conservation Program. • Storm rain works necessary to avoid water accumulation and land erosion will be carried out. • The elements for erosion and sediments control should be kept until the land is covered with permanent vegetation. • The vegetable soil layer removed will be kept separately from the rest of the material produced from excavation to be used later in filling-in and leveling. The remnants of vegetation removed will be "crushed" and stored at a specific site, for subsequent reincorporation into the land and/or use in reforestation areas or	• Land Restoration and Conservation Program • Environmental Supervision Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
		local plant nurseries.	
	• IP 5. Land pollution	• Petitioner will ensure, through agreements and periodical inspections, that contractor's authorized vehicles do not show leaking of fuel and/or oil. • Giving maintenance to equipment and machinery in unpaved areas not determined for that purpose will be avoided to the fullest extent possible. If possible, machinery and equipment will be moved to specialized workshops in the area; however, if this is not possible, maintenance will be on site or at the area of Offices for construction, warehouses and temporary parking, following safety protocols and avoiding at all times spills to the land, for which they must place trays or plastic to contain possible leaking or spills. • Contractors will be requested to have a maintenance program for machinery and equipment ensuring their good conditions, so as to avoid to the fullest extent possible carrying out major and minor maintenance on site. • Contractors will be bound to implement Procedures for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage. • All waste generated during the different stages of the project should be stored and made available in accordance with the Program for Comprehensive Management of Waste. • The storage area for machinery and equipment should preferably be paved and have the appropriate material and equipment for spill control. • Should there be any spill of hydrocarbons (oil, grease and fuels), polluted soil will be removed and managed as hazardous waste.	• Environmental Supervision Program • Environmental Training and Awareness Program • Program for Comprehensive Management of Waste • Land Restoration and Conservation Program ◦ Procedure for Spill Control

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
	• IP 6. Modification of geological formations	• The design of roads to be rehabilitated and/or extended will take into account that the alteration of geological formation at the site be minimized to the fullest extent possible. • Material removed during rehabilitation and extension of roads will be used for filling-in and leveling, trying to preserve the original topographic conditions.	• Land Restoration and Conservation Program • Environmental Supervision Program
Surface water	• IP 7. Modification of surface hydrological pattern	• During site preparation activities, storm rain works necessary to avoid water accumulation and land erosion will be carried out. • Material generated from clearing, grubbing and excavation tasks should be temporarily stored at sites determined for that purpose, thus avoiding the modification of land run-off patterns by berms. This material will be used for filling-in and leveling, and in the event of excess, this may be used for legally authorized dumps or sites for final disposal. • It is strictly forbidden to store material in areas where there could be matter sweeping risks, due to wind or run-off, to the valleys located next to the plateaus.	• Land Restoration and Conservation Program • Program for Comprehensive Management of Waste • Environmental Supervision Program
	• IP 8. Pollution of water bodies	• Material resulting from clearing and grubbing, as well as that from rehabilitation and extension of roads will be reused for filling-in and leveling. In the event of excess, this may be used for legally authorized dumps or sites for final disposal. • It is strictly forbidden to store waste or materials such as oil or hydrocarbons in surrounding areas where there could be a risk of spill and/or sweeping of material due to wind or run-off to rifts or valleys. • Contractors will be required to implement Procedures for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage.	• Environmental Supervision Program • Environmental Training and Awareness Program • Program for Comprehensive Management of Waste • Land Restoration and Conservation

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
			Program ◦ Procedure for Spill Control
Groundwater	• IP 9. Reduction of recharging capacity of aquifers	• To carry out necessary works to harvest and divert rainwater to absorption wells.	• Land Restoration and Conservation Program • Environmental Supervision Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
Flora	• IP 10. Loss of vegetable coverage • IP 11. Loss of individuals from vegetable species listed in NOM-059-SEMARNAT-2010, specifically the elephant's foot (*Beucarnea recurvata)*	• Only areas specified for extension of roads, laying foundations for turbines, provisional works and electric conduction lines will be disassembled as per the specific needs for each stage of the project, and gradually according to the stages of development of the project. • During disassemble work, vegetation will not be burnt and the use of agrochemical should be avoided to the extent possible. • Slopes will be covered with material obtained from grubbing. Vegetable waste will be "crushed" for subsequent incorporation into the land. Vegetation waste which may not be incorporated into the land may be buried or managed as waste. Such management and final disposal will be subject to the provisions of the competent authority or, if any, the corresponding management plan. • Species listed in NOM-059-SEMARNAT-2010, likely to be transplanted and located within the area to be cleared should be relocated to surrounding areas. In this case, the only species which may be found is elephant's foot (*Beucarnea recurvata)*. • There will be priority for the use of native species in restoration activities of the site, using preferably individuals rescued. • Workers in charge of the rescue and relocation of vegetable species will be duly trained. • It is strictly forbidden to collect, traffic or damage flora species, especially if under status of protection according to NOM-059. • The natural vegetable repopulation of herbaceous and bushy species with surface roots will be permitted. • The paperwork with the competent authority will be processed so that timber-yielding products obtained from clearing and grubbing activities be used directly by neighboring communities and ejidos. Otherwise, the authorities will be specifically informed about the use and final destination of such waste	• Flora and Fauna Comprehensive Management Program ◦ Flora Rescue and Relocation Subprogram • Environmental Training and Awareness Program • Environmental Supervision Program • Land Restoration and Conservation Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
Fauna	• IP 12. Modification and fragmentation of habitat due to loss of vegetable coverage • IP 13. Species displacement • IP 14. Loss of individuals of animal species within any category of NOM-059-SEMARNAT-2010	• The clearing and grubbing of the land will be scheduled and gradual, according to the progress of the work schedule. • Prior to clearing and grubbing activities, techniques in order to drive away the fauna, modification of habitat and capture will be implemented focused on slow-displacement fauna species or species listed in NOM-59, according to the Fauna Management and Rescue Subprogram. • Within the Fauna Management and Rescue Subprogram all species listed in NOM-059 will be included so that workers know them and notify the environmental responsible person should they find any of them. • During site preparation activities no wild fauna species living in the area of study will be captured, chased, hunted, collected, traffic or harmed. • In response to the Environmental Training and Awareness Program, training courses will be given to workers to promote care of wild fauna in the area.	• Flora and Fauna Comprehensive Management Program ◦ Subprogram for Rescue and Relocation of Flora ◦ Fauna Management and Rescue Subprogram • Environmental Training and Awareness Program • Environmental Supervision Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
Ecosystem	• IP 15. Loss of biodiversity in terms of individuals	• The rescue of flora species classified as slow-growing, of biological, cultural and economic relevance, or those found in the list of NOM-059 will be a priority and be reincorporated into the conservation areas. Technical data sheets of species likely to be rescued will be prepared for that purpose and the staff will be trained on that matter. • There will be priority for the use of native species in reforestation activities, using especially individuals rescued. • It is strictly forbidden to collect, traffic or damage flora species, especially if under some kind of category of protection.	• Flora and Fauna Comprehensive Management Program ◦ Subprogram for Rescue and Relocation of Flora ◦ Fauna Management and Rescue Subprogram • Environmental Training and Awareness Program
Landscape	• IP 16. Modification of original landscape	• During the site preparation stage, tasks will be performed gradually and according to the stages established in the work schedule. • For the presence of machinery and equipment in the area, no mitigation measure is considered; however, it is estimated that once the works are finished, all machinery and equipment will be removed from the site to recover its initial landscape quality. The only machinery that will remain in the site is the machinery necessary for the operation and maintenance of the wind farm. • After finishing the construction of the wind farm, a Land Restoration and Conservation Program will be implemented for the entire surface disturbed. This Program includes restoration activities for the site to restore the soil and grow natural vegetation to the fullest extent possible. There will be special care on the areas where there are underground electric conduction lines to avoid species which roots may cause them some kind of damage.	• Environmental Supervision Program • Flora and Fauna Comprehensive Management Program ◦ Subprogram for Rescue and Relocation of Flora • Land Restoration and Conservation Program

Component	Identified Impact	Mitigation Measure	Program/ Subprogram
Socioeconomic	• IP 17. Modification of land use in disturbed premises	• Petitioner will have to negotiate with the owners of each premise in order to pay them rent. It is noteworthy that most premises are covered by natural vegetation (82.66%) and are currently not being used for cultivation or other economic purpose, while only 17.34% are used for agricultural and/or farming purposes. • Only after the wind farm is in operation, the owners of the land may use their premises for farming or agriculture, for the operation of wind turbines does not interfere with these activities.	• Land Restoration and Conservation Program • Flora and Fauna Comprehensive Management Program ◦ Subprogram for Rescue and Relocation of Flora
Services	• IP 21. Water demand	• Water supply during site preparation stage will be through water tank trucks. The installation of storage tanks at strategic sites is considered, where if necessary water will be transported by gravity up to the working places through surface pipes or by means of water tank trucks.	• Environmental Supervision Program
	• IP 22. Energy demand	• Portable diesel generators of 5 to 100 kV will be used.	• Environmental Supervision Program •
	• IP 23. Waste management services demand	• Portable toilets will be installed at working areas for exclusive use by workers. The same supplier of the service will be in charge of cleaning said toilets. • Waste generated during the different stages of site preparation will be managed according to their characteristics, differentiating hazardous and non-hazardous waste and taking into consideration the corresponding environmental legislation. Said waste will be disposed of at duly authorized sites with enough capacity. The corresponding permits, agreements and/or contracts will be processed. All this will be contemplated in the Program for Comprehensive Management of Waste. • Companies for recycling and/or reuse of solid waste will be contracted as part of the Program for Comprehensive Management of Waste.	• Program for Comprehensive Management of Waste • Environmental Supervision Program

Table VI.2. Environmental impacts and mitigation measures for the construction stage

Component	Identified Impact	Mitigation Measure	Program or Subprogram
Air	• IC 1: Emissions of combustion gas and dust and/or particles	• Petitioner should ensure, through agreements with contractors and periodical inspections that the machinery and vehicles used during site preparation stages do not generate relevant smoke or emissions into the atmosphere. • Contractors will be requested to have a machinery and equipment maintenance program to ensure their good conditions. • Circulation of vehicles in specific working areas will be restricted and trucks transporting dirt or material which may be blown over will be demanded, to the extent possible, to circulate with canvas or else transport the material moisten so as to avoid dispersion of dust. • Dirt roads will be periodically irrigated (when necessary) • Construction activities will begin immediately after clearing and grubbing of areas designated to avoid that cleared land be exposed to the wind effect and therefore cause spreading of dust and particles. In the event of delay to begin the construction after having removed the vegetable coverage, the activities of soil retention should begin to control erosion according to the Land Restoration and Conservation Program • The concrete plant should have anti-pollution equipment to capture particles.	• Environmental Supervision Program • Land Restoration and Conservation Program
	• IC 2. Noise emissions	• Contractors will be requested to have a machinery and equipment maintenance program to ensure their good conditions. • Vehicle circulation will be restricted to specific working areas • We will supervise that the staff in charge of blowing up and staff working around the area where this will take place use hearing protective equipment specified during the same. • Should relevant noise levels be identified, the staff working in said activities should use hearing protective equipment.	• Environmental Supervision Program

Component	Identified Impact	Mitigation Measure	Program or Subprogram
Soil	• IC 3. Land Erosion	• Construction activities will begin immediately after clearing and grubbing of areas designated to avoid that cleared land be exposed to the wind effects and therefore cause spreading of dust and particles. In the event of delay to begin the construction after having removed the vegetable coverage, the activities of soil retention should begin to control erosion according to the Land Restoration and Conservation Program • The necessary storm drain works will take place to avoid water accumulation and land erosion, mainly in excavations for laying foundations for wind turbines, and other infrastructure works, as well as the ditch for underground electric cabling. • We should keep the elements for erosion and sediments control until the land is covered with permanent vegetation. • The vegetable soil layer removed will be used to the fullest extent possible in filling-up and leveling. The remnants of vegetation removed will be "crushed" and stored at a specific site, for subsequent reincorporation into the land and/or use in reforestation areas or local plant nurseries.	• Land Restoration and Conservation Program • Environmental Supervision Program
	• IC 4. Land pollution	• Petitioner will ensure, through agreements and periodical inspections, that contractor's authorized vehicles do not show leaking of fuel and/or oil. • Giving maintenance to equipment and machinery in unpaved areas not determined for that purpose will be avoided to the fullest extent possible. If possible, machinery and equipment will be moved to specialized workshops in the area; however, if this is not possible, maintenance will be on site or at the area of Offices for construction, warehouses and temporary parking, following safety protocols and avoiding at all times spills to the land, for which they must place trays or plastic to contain possible leaking or spills.	• Environmental Supervision Program • Environmental Training and Awareness Program • Program for Comprehensive Management of

Component	Identified Impact	Mitigation Measure	Program or Subprogram
		• Contractors will be requested to have a maintenance program for machinery and equipment ensuring their good conditions, so as to avoid to the fullest extent possible carrying out major and minor maintenance on site. • Contractors will be bound to implement Procedure for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage. • All waste generated during the different stages of the project should be stored and made available in accordance with the Program for Comprehensive Management of Waste. • The storage area for machinery and equipment should preferably be paved and have material and equipment for spill control. • Should there be any spill of hydrocarbons (oil, grease and fuel), polluted soil will be removed and managed as hazardous waste.	Waste • Land Restoration and Conservation Program ◦ Procedure for Spill Control
	• IC 5. Modification of geological formations	• Material removed during blowing up, cuts and excavations will be used for filling-in and leveling, trying to preserve the original topographic conditions of the site to the fullest extent possible.	• Land Restoration and Conservation Program • Program for Comprehensive Management of Waste • Environmental Supervision Program
Surface water	• IC 6. Modification of surface hydrological	• The necessary storm drain works will take place to avoid water accumulation and land erosion, mainly in excavations for laying foundations for wind turbines, and other infrastructure works, as well	• Land Restoration and Conservation Program

Component	Identified Impact	Mitigation Measure	Program or Subprogram
	pattern	as the ditch for underground electric cabling. • Material generated from blowing up, cuts and excavations for foundations should be temporarily stored at sites determined for that purpose, thus avoiding the modification of land run-off patterns by berms. This material will be used for filling-in and leveling, and in the event of excess, this may be disposed of at legally authorized dumps or sites for final disposal. • It is strictly forbidden to store material in areas where there could be matter sweeping risks, due to wind or run-off, to the valleys located next to the plateaus.	• Environmental Supervision Program • Program for Comprehensive Management of Waste
	• IC 7. Pollution of water bodies	• Material resulting from removal and rock blowing up, as well as from cuts and excavations, will be used for filling-in and leveling. • It is strictly forbidden to store waste or materials such as oil or hydrocarbons in surrounding areas where there could be a risk of spill and/or sweeping of material due to intermittent riverbeds in the area. • Contractors will be required to implement Procedures for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage.	• Environmental Supervision Program • Program for Comprehensive Management of Waste • Land Restoration and Conservation Program ◦ Procedure for Spill Control • Environmental Training and Awareness Program

Component	Identified Impact	Mitigation Measure	Program or Subprogram
Groundwater	• IC 8. Reduction of recharging capacity of aquifers	• Only areas specified for extension of roads, foundations for turbines, provisional works and electric conduction lines will be disassembled as per the specific needs for each stage of the project. • If necessary, at areas built such as buildings for operation and maintenance, the necessary works for rain water harvesting and diversion towards absorption wells will be performed.	• Environmental Supervision Program
Fauna	• IC 9. Species displacement	• Prior to construction activities, techniques in order to drive away the fauna, modification of habitat and capture will be implemented focused on slow-displacement fauna species or species listed in NOM-59, in accordance with the Fauna Management and Rescue Subprogram. • Construction activities will be scheduled and gradual, according to the work schedule progress. • During construction activities no wild fauna species living in the area of study will be captured, chased, hunted, collected, traffic or harmed. • In response to the Environmental Training and Awareness Program, training courses will be given to workers to promote care of wild fauna in the area.	• Flora and Fauna Comprehensive Management Program ◦ Fauna Management and Rescue Subprogram • Environmental Training and Awareness Program • Environmental Supervision Program
Landscape	• IC 10. Modification of original landscape	• During construction stage, tasks will be performed gradually and according to the stages established in the work schedule. • For the presence of machinery and equipment in the area, no mitigation measure is considered; however, it is estimated that once the works are finished, all machinery and equipment will be removed from the site to recover its initial landscape quality. • After finishing the construction of the wind farm, a Land Restoration and Conservation Program will be implemented for the entire surface	• Flora and Fauna Comprehensive Management Program ◦ Subprogram for Rescue and Relocation of Flora • Land Restoration

Component	Identified Impact	Mitigation Measure	Program or Subprogram
		disturbed. This Program includes restoration activities for the site to restore the soil and grow natural vegetation. There will be special care on the areas where there are underground electric conduction lines to avoid species which roots may cause them some kind of damage.	and Conservation Program
Services	• IC 13. Water demand	• Water supply during site preparation stage will be through water tank trucks. The installation of storage tanks at strategic sites is considered, where if necessary water will be transported by gravity up to the working places through surface pipes or by means of water tank trucks.	• Environmental Supervision Program
	• IC 14. Energy demand	• During the construction stage, portable diesel generators of 5 to 100 kV will be used.	• Environmental Supervision Program
	• IC 15. Waste management services demand	• Portable toilets will be installed at working areas for exclusive use by workers. The same supplier of the service will be in charge of cleaning said toilets. • Waste generated during the different stages of site preparation will be managed according to their characteristics, differentiating hazardous and non-hazardous waste and taking into consideration the corresponding environmental legislation. Said waste will be disposed of at duly authorized sites with enough capacity. The corresponding permits, agreements and/or contracts will be processed. All this will be contemplated in the Program for Comprehensive Management of Waste. • Companies for recycling and/or reuse of solid waste will be contracted as part of the Program for Comprehensive Management of Waste.	• Program for Comprehensive Management of Waste • Environmental Supervision Program

Tabla VI.3. Environmental impacts and mitigation measures for the operation stage

Component	Identified Impact	Mitigation Measure	Program or Subprogram
	• IO 2. Emissions of combustion gas and dust and/or particles	• Petitioner will make sure that machinery and vehicles used during maintenance activities do not generate smoke or relevant atmospheric emission. • Circulation of vehicles in specific working areas will be restricted and trucks transporting dirt or material which may be blown over will be demanded, to the extent possible, to circulate with canvas or else transport the material moisten so as to avoid dispersion of dust. • Dirt roads will be periodically irrigated (when necessary)	• Environmental Supervision Program
	• IO 3. Noise emissions	• Currently, noise generation due to operation of wind turbines has been reduced with the design of modern turbines; besides, nacelles have sound isolation devices. • The wind farm is located at a considerable distance from the closest population, which is a small town called San Francisco, at the east border of the project's polygon of impact, but at a distance of approximately 3 km from the closest wind turbine; therefore, it is estimated that the population will not be affected. • It is worth mentioning that the accurate measurement of sound from wind turbines is very difficult, since at wind speeds of 8 m/s and above, background noise fully masks any noise from the turbine, so carrying out measurements of background noise is not considered. • Petitioner will make sure, through agreements with contractors and periodical inspections, that machinery and vehicles used during maintenance activities do not generate noise levels which may affect workers, and workers will be required to used earplugs.	• Environmental Supervision Program

Component	Identified Impact	Mitigation Measure	Program or Subprogram
Soil	• IO 4. Land pollution	• Contractors will be requested to carry out inspections and maintenance activities, a program for maintenance of machinery and equipment to ensure their good conditions. • Contractors will be bound to implement Procedures for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage. • Management of waste generated mainly during preventive and corrective maintenance activities for facilities will fulfill the requirements of the Program for Comprehensive Management of Waste and be supervised through the Environmental Supervision Program. • Petitioner will make sure, through agreements and periodical inspections that authorized vehicles of contractors doing the maintenance do not show fuel and/or oil leak, as well as the prohibition of carrying out maintenance to vehicles or machinery within the work area of the Project. • Should there be any spill of hydrocarbons (oil, grease and fuels), polluted soil will be removed and managed as hazardous waste.	• Environmental Supervision Program • Environmental Training and Awareness Program • Program for Comprehensive Management of Waste • Land Restoration and Conservation Program ◦ Procedure for Spill Control
Fauna	• IO 6. Risk of mortality of birds and bats due to collision with turbines • IO 7. Species displacement	• The birds and bats monitoring plan will continue measuring the intensity of the migratory phenomenon at the area disturbed by the project and analyze its possible interaction with wind turbines installed. This program will accurately determine the nesting zones, trajectories, altitudes, seasons and flight peak hours. • Anti-perching and flight diverter devices will be installed in the wind farm. • Prevent the presence of carrion near wind turbines which may attract predatory birds and maintain the surrounding of wind turbines bases clean (with no high vegetation) so as to prevent it from becoming a shelter for preys of predatory birds. • Foresee the possibility of momentary stoppage, when birds migration is	• Flora and Fauna Comprehensive Management Program ◦ Fauna Management and Rescue Subprogram ◦ Birds and Bats Monitoring Plan

Component	Identified Impact	Mitigation Measure	Program or Subprogram
		massive. • The supervision by the environmental responsible person of the work will entail a log of dead individuals and species resulting from collision with blades of wind turbines.	• Environmental Supervision Program
Landscape	• IO 8. Modification of original landscape	• Wind turbines will be located at the highest areas of the plateaus, and will be visible from considerable distances. There is no mitigation measure for this purpose.	
Services	• IO 11: Demand of cleaning services and waste disposal sites	• Waste generated during the operation of the project and mainly during maintenance activities will be managed according to their characteristics, differentiating hazardous and non-hazardous waste and taking into consideration the corresponding environmental legislation. Said waste will be disposed of at duly authorized sites with enough capacity. The corresponding permits, agreements and/or contracts will be processed. All this will be contemplated in the Program for Comprehensive Management of Waste. • Companies for recycling of solid waste which may be recycled and/or reused will be contracted, to the fullest extent possible, considering the volume generated, through the Program for Comprehensive Management of Waste.	Program for Comprehensive Management of Waste Environmental Supervision Program

Table VI.4. Environmental impacts and mitigation measures for the site abandonment stage

Component	Identified Impact	Mitigation Measure	Program or Subprogram
Air	• IA 1. Emissions of combustion gas and dust	• Petitioner will make sure that machinery and vehicles used during this stage do not generate relevant atmospheric emissions. • Vehicles circulation will be restricted to specific working areas and trucks will be requested to circulate with canvas so as to avoid dust spreading. • Dirt roads will be periodically irrigated (when necessary) • Dismantling and demolition of structures will be scheduled and gradual	Dismantling plan
	• IA 2. Noise emissions	• We will make sure that machinery and vehicles used during structures dismantling and demolition do not generate noise levels which may affect workers. The use of earplugs will be requested if necessary. • Vehicle circulation will be restricted to specific working areas	Dismantling plan
	• IA 3. Land pollution	• A dismantling plan will be prepared including management of liquid waste which may be generated by wind turbines and including the assessment of elements which may be reused or recycled and those which have to be definitely eliminated in a controlled manner.	Dismantling Plan
	• IA 4. Pollution of water bodies	• A Dismantling plan will be prepared including assessment of elements which may be reused or recycled. Elements not comprised in this category will be stored and eliminated in a controlled manner, thus avoiding that they be swept by rain to cliffs and valleys with risk of polluting water bodies in the area. • It is strictly forbidden to store waste or materials such as oil or hydrocarbons in surrounding areas where there could be a risk of spill and/or sweeping of material due to wind or run-off, to intermittent riverbeds within the areas disturbed by the project. • Contractors will be required to implement Procedures for Spill Control, as well as the Environmental Training and Awareness Program to ensure that the staff is aware of the procedures to avoid and solve spillage.	Dismantling plan
Landscape	• IA 8. Landscape	• Structure dismantling and demolition tasks will be performed gradually	Dismantling plan

Component	Identified Impact	Mitigation Measure	Program or Subprogram
	modification during demolition and dismantling of structures	and according to the work schedule. • For the presence of machinery and equipment in the area, no mitigation measure is considered; however, it is estimated that once the works are finished, all machinery and equipment will be removed from the site to recover its initial landscape quality. • After concluding the lifespan of the wind farm, we are considering the execution of a Dismantling program for the wind farm including activities necessary for restoration of the site in order to restore the land and grow natural vegetation in the areas affected to the fullest extent possible. With the latter, the site will recover as much as possible the landscape quality it had before the project.	
Services	• IA 12. Water demand	• If necessary, water supply during abandonment stage will be through water tank trucks.	Dismantling plan
	• IA 13. Energy demand	• If necessary, energy generated in the wind farm or portable generators will be used.	Dismantling plan
	• IA 14. Waste management services demand	• A Dismantling plan will be prepared including assessment of elements which may be reused or recycled and those which have to be eliminated in a controlled manner. • Portable toilets will be installed at working areas for exclusive use by workers. The same supplier of the service will be in charge of cleaning said toilets. • Waste generated during the site abandonment stage will be managed according to their characteristics, differentiating hazardous and non-hazardous waste and taking into consideration the corresponding environmental legislation. Said waste will be disposed of at duly authorized sites with enough capacity. The corresponding permits, agreements and/or contracts will be processed. All this will be considered in the Dismantling Plan.	Dismantling plan

VI. 2. ENVIRONMENTAL QUALITY FOLLOW-UP PROGRAM (PSCA)

In order to orient, integrate and coordinate each and every activity for mitigation and compensation of environmental impacts, we will have an Environmental Quality Follow-up Program including several programs which are in turn divided into Subprograms, Plans and Procedures. It is worth mentioning that these Programs will be developed in detail once the Project is authorized, after having the results of all prior studies at the site and having the detailed engineering of the project.

For the appropriate implementation of PSCA, we will have a permanent Environmental Manager during the stages of site preparation, construction and operation of the wind farm, who will be responsible for following up all Programs contained in the same.

The Programs that are a part of PSCA will include at least the following:

- Objectives
- Scope
- Human resources, machinery and equipment requirements
- Investment required
- Definition of responsible persons
- Specific activities of responsible persons
- Activities schedule
- Procedure for review and adaptation of activities
- Technical procedure (if applicable)

The following table summarizes the main adverse impacts identified, classifying them according to the environmental factor on which they have an impact, and mentioning the Programs including mitigation and/or compensation mechanisms or strategies:

Table VI.5. List of main environmental impacts identified and programs including the corresponding mitigation and/or compensation measures

	ELEMENT	IDENTIFIED IMPACT	STRATEGY OR PROGRAM
Abiotic Factors	**Air**	- Generation of total suspended particles (dust) - Generation of combustion gas	Land Restoration and Conservation Program Environmental Supervision Program
	Noise	- Increase of noise levels within the area of disturbance of the project	Environmental Supervision Program
	Soil	- Loss of soil due to erosion - Pollution of soil due to hydrocarbons spills - Pollution of soil due to generation of waste	Land Restoration and Conservation Program - Procedures for Spill Control Program for Comprehensive Management of Waste Environmental Supervision Program Environmental Training and Awareness Program
	Surface hydrology	- Modification of natural run-off patterns on the land - Pollution of water bodies due to wrong management of waste	Land Restoration and Conservation Program - Procedures for Spill Control Program for Comprehensive Management of Waste Environmental Supervision Program Environmental Training and Awareness Program
	Underground hydrology	- Loss of recharging capacity of the aquifer	Land Restoration and Conservation Program Environmental Supervision Program
	Landscape	- Transformation of local landscape	Environmental Supervision Program Flora and Fauna Management Program - Flora Rescue and Relocation Subprogram Land Restoration and Conservation Program
	Services	- Water, Energy demand, Sites authorized for waste disposal	Program for Comprehensive Management of Waste Environmental Supervision Program
Biotic Factors	**Flora**	- Loss of vegetable coverage in the premises - Loss of vegetable species individuals listed in NOM-059	Flora and Fauna Comprehensive Management Program - Flora Rescue and Relocation Subprogram Environmental Supervision Program Environmental Training and Awareness Program
	Fauna	- Modification and fragmentation of habitat - Displacement of fauna in the area of study - Loss of individuals from animal species listed in NOM-059 - Hunting and collection of individuals by staff - Risk of resident and migratory birds collision - Risk of resident bats collision	Flora and Fauna Comprehensive Management Program - Flora Rescue and Relocation Subprogram - Fauna Management and Rescue Subprogram · Birds and Bats Monitoring Plan Environmental Supervision Program Environmental Training and Awareness Program

In addition, as has been already mentioned, when concluding the lifespan of the project, an **Abandonment Program** will be prepared including the Dismantling Plan and specific rehabilitation measures for disturbed areas. The objective of such measures will be that the land disturbed may recover its purpose and, to the fullest extent possible, recover the landscape quality it had prior to the project. It is worth mentioning that the design of activities to be performed depends on the subsequent use assigned to the affected area.

Next we describe in general the objectives, activities and methodology to be considered for each Program, Subprogram, Plan and Procedure composing the PSCA.

VI.2.1. Land Restoration and Conservation Program

- **Objectives**

  - To identify and define practices applicable to erosion control during the stages of site preparation and construction of the wind farm.
  - To establish the necessary measures for the land to return to its initial characteristics in temporary works involving the resource, and to repair or compensate damages in permanent works.

- **Activities**

The activities or strategies to be developed must be problem-oriented during each of the different stages of the "Tres Mesas" Wind Farm Project.

Activities for site preparation and construction necessarily involve direct impact on the land and vegetable coverage resources, causing erosion and disturbance of the surface drain patterns. In this regard, it is necessary to propose a series of strategies and measures to minimize damages caused by these resources, and that to fulfill such objective will be focused on protecting the land surface and avoiding the particles from being swept by rain or wind. The main techniques and measures to be considered are described below in general, but they should be developed in detail each time the Program is prepared in detail, which might include other supplementary measures or strategies.

  - **Delimitation of working zones.** Working zones for transit and storage must be clearly marked out according to the project design and the work program, so that the loss of vegetable coverage and land is minimum; therefore, there must be a perimeter demarcation at such areas restricting the access to other areas within the affected zone of the project.

- **Drainage and water harvesting systems.** Considering the nature of the project, mainly during excavation activities for laying foundations for wind turbines and civil works, as well as during the installation of the underground electrical grid, there will be an issue of water accumulation during rain season. In order to avoid this, it will be necessary to build temporary dams and drains. Ditches must be kept dry and if necessary accumulated water will be extracted through pumping or any other alternative method.

- **Barriers**. In order to avoid the erosion of excavated areas, barriers should be used such as: mesh, sand bags, duffel, agave or coconut fiber, local natural fibers, etc.

- **Use of mulches in areas to be restored.** Mulches are an excellent technique to preserve lands and to allow their reestablishment and persistence. In this regard, once the areas to be restored are decompacted through the use of special machinery, the mulches will be set using debris from organic material obtained during clearing and cleaning (bark, vegetable debris product of the clearing and grubbing) in the areas prone to erosion, in order to cover the naked soil, prevent surface run-off, regulate the soil temperature, preserve humidity and avoid weed.

- **Planting the Vegetable Coverage** Native plants will be used, mostly those rescued at cleared and grubbed areas; this will be done as the areas disturbed are free. Plants presenting features which may help reduce wind speed, and also help the reestablishment of the edaphic coverage.

- **Methodology**

To perform the aforementioned activities you must have specialized staff who will define the techniques and methodology to be used in the different affected areas, taking into consideration the problem during each of the project stages. The staff in charge of these tasks should:

- Mark out on a plan the different working areas.
- Analyze the geological, edaphological and hydrological information in the site.
- Identify the specific areas which may be affected as a consequence of the activities of site preparation and construction.
- Define and develop the necessary techniques during each project stage and at each affected area, taking into account the project Schedule.
- Take into consideration the provisioned in the Subprogram for Rescue and Relocation of Flora, so as to coordinate the activities to be carried out according to the original purposes at disturbed areas and subsequent use. With this, the purpose is to rehabilitate all areas where there was natural vegetation and that the lands recover their original purpose or even their productive capacity so as not to affect the interests of the owners who leased their property.

VI.2.1.1 Procedure for Spill Control

During the different stages of the project, there is risk of pollution of the site due to spill of grease, lubricant, solvent, paint and other materials. This, in turn, may cause pollution issues if not solved promptly. Therefore, as part of the Land Restoration and Conservation Program, we must develop a "Procedure for Spill Control" containing at least the items described hereunder, in order to prevent land and water pollution in the area disturbed by the project:

- Contractor must implement an emergency plan in response to spills, as well as have the appropriate equipment for spill control (absorbent material and pads, trays, etc).

- In the event of spill of hydrocarbons to the soil or any water body, the soil polluted should be removed and managed as hazardous waste. If necessary, a soil remediation program will be implemented.

- Upon conclusion of construction works, the sites where machinery and equipment were stored should be dismantled and the land used should be subject to an environmental rehabilitation or remediation program, as the case may be.

VI.2.2. Flora and Fauna Comprehensive Management Program

This Program is subdivided into two Subprograms (see Figure Vi.2), one focused on Rescue and Relocation of Flora and the other one focused on Management and Rescue of Flora. In turn, the last Subprogram includes a Birds and Bats Monitoring Plan, considering that this type of fauna is more vulnerable to be affected by the development of this project:

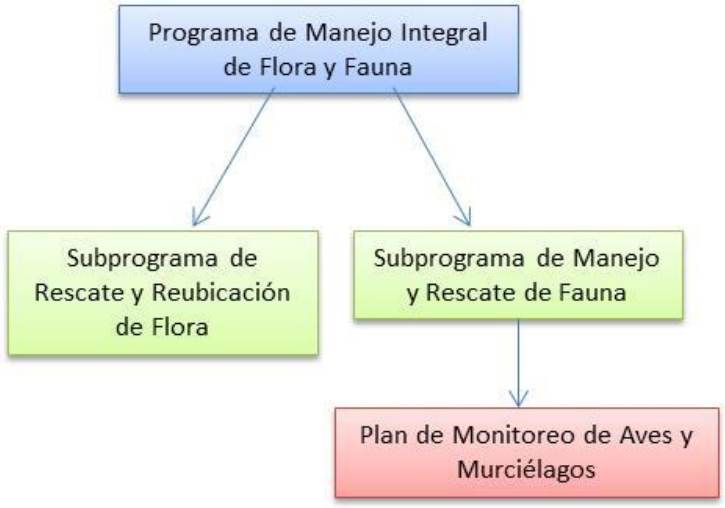

Figure VI.2. Structure of the Flora and Fauna Comprehensive Management Program

[T.N.
- *Flora and Fauna Comprehensive Management Program*
  - *→ Flora Rescue and Relocation Subprogram*
  - *→ Fauna Management and Rescue Subprogram → Birds and Bats Monitoring Plan]*

It is worth mentioning that the project will affect mostly land covered by submontane scrub. Considering that the area has a registry of a species classified in NOM-059 as endemic (*Beucarnea recurvata,* commonly called elephant's foot), the priority will be to ensure the appropriate conservation should any individual of this species be found.

The purpose of the Program is to establish in general the actions to be followed to preserve, rescue and maintain ecosystems so that the project be naturally incorporated into the environment, generating conditions which allow maintaining the capacity of ecosystems to supply environmental goods and services, improve their ecological integrity and foster tangible benefits to local and/or regional communities.

The specific purpose of this Program is to mitigate environmental impacts caused by the loss of vegetation and habitat, as well as by displacement of animal species, and ensure maintaining conservation areas.

Next, the general items to be considered within the subprograms integrating it are described:

VI.2.2.1. Subprogram for Rescue and Relocation of Flora

- **Objectives**

    - To rescue and protect vegetable species, mainly those with biological, cultural or economic relevance or under any status of protection as per NOM-059-SEMARNAT-2010, such as the elephant's foot (*Beucarnea recurvata*).
    - To rehabilitate disturbed sites by means of **Restoration** strategies, understanding this term as the group of activities aimed at rehabilitating a degraded ecosystem, to partially or fully recover the original purpose of the same and maintain the conditions fostering their persistence and evolution

- **Activities**

This Subprogram includes the areas that were affected during the activities of site preparation and construction and which will not be occupied by elements from the project during the operation of the wind farm, including all sites taken by courtyards for maneuvering and material storage zones, as well as roads and dirt tracks which will no longer be used during inspection and/or maintenance tours.

The activities to be included as part of this Subprogram are described below:

- A plant nursery will be set up so as to have a suitable space for temporary storage of plants that will be transplanted and, if any, carry out the reproduction of species if necessary.
- To identify the grass species that may be sowed over the areas to be restored in order to achieve the stabilization of the soil and decrease laminar and wind erosion that may occur in open spaces.

- To describe and schedule the activities to be developed, highlighting those needed to guarantee the survival of specimens used.
- To reforest with native species from each type of vegetation.
- To take into account during the transplant the biological features, sizes and ages suitable to guarantee their development and survival.
- To submit the list of species to be used indicating the organisms name per species and their conservation status, according to NOM-059-SEMARNAT-2010.
- To prohibit the sale and purchase of the specimens and parts of the species rescued of terrestrial flora, allowing only their scientific collection.
- To indicate in the corresponding cartography the location and dimensions of the sites that will be used to distribute transplanted species, whether at sites needing reforestation and/or any educational center for regional research.
- To select the sites to reforest, giving priority to areas surrounding the works which need these actions, as well as planting and protection activities for species to be used.

- **Methodology**

To carry out the activities above mentioned, staff specialized in rescue and relocation of flora is needed to perform the following activities:

- Before starting any activity on clearing and weeding, there should be previous tours in order to perform the exploration and identification work for species of flora which may be at some kind of risk. In case of finding individuals of flora species considered slow-growing species or included in NOM-059-SEMARNAT-2010, they should be rescued and relocated at sites with similar environmental conditions than those where they were originally.
- Determine and implement rescue, transportation, transplant and revegetation techniques at the areas selected for their conservation, focused mainly on slow-growing species or those in the NOM-059.
- Identify species which, even if not presenting the aforementioned characteristics, are representative of the regional flora and, therefore, will also be rescued to be used in the area that is going to be reforested, with the purpose of incorporating the project into the natural landscape.
- Follow the scientific measures and protocols during the development of the studies and the implementation of rescue measures.
- Prepare reports and records documenting the activities carried out and the methods employed.

VI.2.2.2. Fauna Management and Rescue Subprogram

- **Objectives**

  - To rescue and protect fauna which may be disturbed by the project activities, as well as slow-displacement fauna species and those included under any status of the NOM-059-SEMARNAT-2010.

- **Activities**

With respect to terrestrial fauna to be displaced, the subprogram establishes mainly the following:

  - To determine sensitivity priorities and, therefore, conservation and management priorities for organisms.
  - To determine the threatened degree of species.
  - To use techniques in order to drive away the fauna and for habitat modification, as well as capture and management techniques, focused on avoiding damage and/or stress on wild fauna in order to decrease the number of wild fauna individuals of the project disturbance area; these techniques will be focused mainly on small birds, reptiles, and mammals, through fostering their displacement to surrounding areas with similar vegetation found in the area of direct disturbance of the project.
  - To preserve ecosystemic units in their current state which will serve as biological shelters for food, protection, reproduction and nesting of related and migratory wild fauna.
  - To guarantee the rescue and subsequent distribution of animal species throughout the biological corridors within the Project area.
  - In case of finding individuals of fauna species considered slow-growing species or included in NOM-059-SEMARNAT-2010, they should be rescued and relocated at sites with similar environmental conditions than those where they were originally.

- Methodology

For the development of activities contemplated in this Program, the participation of experts in this matter will be required to:

  - Define sampling and analysis techniques to be used according to the species identified as priority species due to the possible disturbance they may suffer due to the project.
  - Prepare periodical reports describing in detail the activities performed, including the corresponding results from sampling and analysis.
  - Assess the impact caused by the project on birds and bats populations, seeking for specific mitigation measures to decrease such impact. Therefore, it is necessary to know with further detail the behavior of birds and bats in the area, for which the Monitoring Plan for resident and migratory bats and birds population needs to continue in the project area.

It is worth mentioning that the probability of migratory birds collisioning with wind turbines will depend on several factors, especially on the species, the place topography, meteorology of the

day, the time species fly over the wind farm (migration altitude varies depending on the time), the amount and quality of habitat for rest, migration density for each area, etc. Therefore, these factors may be considered within the Monitoring Plan described below:

VI.2.2.2.1 Birds and Bats Monitoring Plan

- **Objectives**

The main objective of this Plan is to classify the community of birds and bats living in this area of study to have accurate information in order to assess the project impact on said area and, thus, determine the actions required for mitigation of this impact.

Specific objectives are:

- To know the biodiversity of birds and bats living in the site, as well as their richness, frequency, abundance, density, flight patterns, space use and habitat conditions in the area of interest.
- To classify the potential and actual impact caused by the project on the community of birds and bats living within the area of influence of the project.
- To design and implement relevant mitigation measures to avoid affecting their population dynamic and migration patterns.

- **Activities**

The study will include two stages, one prior to operation in order to have a base line of the site's conditions, and one after beginning the operation in order to carry out the monitoring, asses the magnitude of impact produced by collision of birds and bats with wind turbines and apply additional measures if necessary.

Stage 1: During this stage, biological and behavioral information will be collected to establish the efficient implementation of mitigation measures proposed. Therefore, we consider the following activities:

- To identify birds and bats species existing in the area
- To identify nesting and reproduction places for resident birds
- To identify bats' caves and reproduction sites
- To identify migratory routes of birds and bats
- To determine preferences in the use of habitat and behavioral responses (flight heights and trajectories)

Note: This stage has already began and results are presented in Appendix IV.3

Stage 2: We will assess the magnitude of the impact produced by collision of birds and bats with wind turbines, through development of the following activities:

- To observe the behavior of birds and bats in the area during operation of wind turbines
- To determine the intensity of the site use by birds and bats
- To determine the mortality percentage of species of birds and bats in each wind turbine
- To determine the yearly terms of risk

This last stage will be carried out at least during the first five years of operation of wind turbines, and specialists in birds and bats will participate.

- **Methodology**

In order to obtain and analyze all information regarding birds and bats behavior at the site, experts in this matter will consider the following methodological steps:

- Sampling

  To collect biological and behavioral information required for the evaluation, we will plan the establishment of observations points and radars, telemetry studies, ultrasonic detectors with recording, sound monitoring, UV lights and digital recording cameras to accurately determine nesting areas, trajectories, heights, seasons and peak flying hours. As for bats, the use of radars may be evaluated.

- Classification and Analysis

  Information obtained will be used to determine: the classification of species, conservation category, mobility, risk status, relative frequency and abundance, use of space (direction, use of vertical axis), activity developed (displacement or stay) and estimate of collision risk.

- Impact Classification

  After beginning the operation stage for the wind farm, there will be tours to search for injured birds and bats, to identify the wind turbines of higher risk according to flight patterns and compare indicators obtained in stage 1 (prior to operation) to stage 2 (after beginning operation and for up to 5 subsequent years).

- Reports

  An initial report will be prepared to be considered as the basis, and after beginning the project monthly reports will be prepared for the first year, quarterly reports for the second year and biannual report for the third, fourth and fifth year.

  It is worth mentioning that the results in reports of Monitoring Plan will consider a mortality underestimation factor, considering that in reports of the tour, we only specify the minimum mortality detected in the field without applying a correction due to disappearance of bodies (carrion effect) or due to efficiency of the observer in body detection. Likewise, we must

consider that tours do not cover the entire surface where we can find bodies, and this entails another underestimation factor of mortality.

VI.2.3. Program for Comprehensive Management of Waste

- **Objectives**

The main objective of the Program for Comprehensive Management of Waste is to make sure that waste management is performed on a sanitary and environmentally correct manner, according to minimization, environmental risk prevention and public health protection principles.

- **Activities**

Activities or strategies to be considered to fulfill the objective of the Management Plan include:

- To promote minimization, reuse and recycling of waste through trade and sale of byproducts.
- To guarantee that waste is not a risk factor for human health and the environment.
- To separate waste from its generation source.
- To identify and/or install the necessary infrastructure for comprehensive waste management.
- To define policies and mechanisms for trade of byproducts with commercial value.
- To inform about actions and responsibilities derived from PGMIR and raise awareness among users and workers.

- **Methodology**

Considering the type of waste to be generated during the different stages of this project, in order to fulfill the previous objectives, the program is divided into two main branches:

- non-hazardous solid waste
- hazardous waste

Next we describe basic aspects to be considered within the methodology of the Management Plant, according to the type of waste in question:

a) Non-hazardous solid waste

Non-hazardous solid waste generated during site preparation, construction and operation of the project, consist basically in:

I. domestic (food scraps, paper and plastic),
II. non-hazardous industrial (wood, pipes, tubing, mesh, steel, sheet, cement, rocky materials)
III. earthy materials product of excavations (vegetable and soil matters generated from excavations, cuts and leveling)

Containers for waste generated by staff will be placed at working sites, preferably sorting organic from inorganic waste. Industrial waste and waste from excavation material will be stored at specific sites so that they can be subsequently reused if possible or disposed of at duly authorized sites.

The following table shows the list of main types of waste, indicating the management of the same and final disposal.

Table VI.6. Sources and management of solid waste potentially generated in the different stages of the project

Description	Generating Source	Collection and Confinement	Final Disposal
Domestic Waste	Staff working at the site	Duly signalized 200-liter containers will be placed at the site. Organic waste will be sorted and used to make compost. The removal of said waste will be performed by the municipal service and if this is not possible, the contractor will be responsible for removing them every day from the site and disposing of them at legally authorized sites.	Legally authorized municipal garbage dump and/or Compost
Plastic (PET), aluminum, paper and cardboard	Staff working at the site	This waste will be sorted and compressed, to the fullest extent possible, for their future subsequent reuse or sale. The removal of this material will be the contractor's responsibility.	Company authorized for recycling or reuse
Earthy materials resulting from excavations	Clearing and grubbing	Excavation material will be reused for filling in and leveling. This material may not be stored near cliffs. Remaining excavation material will be stored next to access road and disposed of at dumps or final disposal sites duly authorized. Contractor's will be responsible for the final disposal of this waste.	Dumps or final disposal sites duly authorized.
Industrial waste	Foundation and assembly of wind turbines, Installation and construction of provisional works, Electric installations, Operation and maintenance Offices and supplementary works.	Industrial waste will be stored in premises duly signalized next to access roads, avoiding at all times storing this material near cliffs. The removal of this material will be the contractor's responsibility.	Final disposal sites duly authorized.

b) Hazardous waste

Hazardous waste generated during stages of site preparation and construction, consisting mainly in remnants of paint and coating, residual solvents, used greases and oils, and tows soaked in grease, oil or solvents.

In the events of drilling (for example blowing up rocks) requiring lubrication material for rotary systems and to avoid collapse of the space drilled, this material must be biodegradable, and can be foam which, besides rising the formation cuts produced by the drill, works also as lubricant and cooler.

Contractor should limit the use of products generating hazardous waste and will be responsible for storing temporarily waste generated as well as making sure that their transport and final disposal is carried out by legally authorized companies.

Within this framework, at working areas or at machinery and equipment storing courts, a space will be determined to work as warehouse for due management and temporary confinement of this hazardous waste, which will meet all indications stated in the applicable standards, with special attention to the following aspects:

- It must be separated from working areas, utilities, offices and storage of raw material or finished products.
- It must be located at areas where possible emissions, leak, fire, explosion and flooding risks are reduced.
- It must have retaining walls as well as indications and signs regarding the riskiness of the same in visible places and forms.
- It must be located at areas where possible emissions, leak, fire, explosion and flooding risks are reduced.

With regards to hazardous waste generated during operation of the wind farm, this consist mainly in used oils, residual solvents and tows soaked in solvents, grease and oil from maintenance tasks. The staff in charge of maintenance tasks generated by this waste will be responsible for removing it from the site and manage and dispose of it according to the corresponding standards.

Oil used in rotary equipment, such as turbines will be collected in a confined drainage system and disposed of in a container for temporary storage, to be subsequently managed as hazardous waste and moved to authorized disposal sites. Waste removal will be carried out by an authorized company.

VI.2.4. Environmental Supervision Program

- **Objectives:**

The general objective of the Environmental Supervision Program is to supervise and regulate all activities of contractors during different stages of the project, in order to guarantee compliance with environmental obligations.

- **Activities:**

The environmental supervision of the project is considered a direct verification tool for planned and managed aspects of the Environmental Quality Follow-up Plan, and is based on the following activities:

  - To supervise strict compliance with all environmental obligations of each participant and supervise prevention, control and mitigation measures of environmental impacts identified in the stages of site preparation, construction, operation and maintenance and abandonment, including conditions determined in the resolution of the corresponding environmental impact. Therefore, weekly follow-up reports will be prepared.

  - To establish clauses and agreements with contractors including environmental protection sections, binding them to comply with and follow all programs included in the Environmental Quality Follow-up Plan, as well as the programs that belong to such plan.

  - Establishment of specific agreements to guarantee compliance with environmental obligations during site preparation and construction stages and their follow up by the responsible of the work, so the details contemplated in planning and management processes follow the routes foreseen, giving special attention to identification of changes requiring prior official authorization and/or implementation of additional environmental measures ensuring the lowest environmental disturbance.

  - To make sure that all machinery and equipment is included in the maintenance program and in ideal conditions. This program will be the contractor's responsibility and emerges as a measure for prevention of atmospheric pollution due to the emission of gas and noise from machinery and equipment used in activities of the different stages; although it is aimed also at guaranteeing that there is no soil pollution risk due to leaks on equipment or to performing maintenance tasks of said equipment at working areas. The contracting company will be requested to have this program and it will be supervised at all times that all units, equipment, and machinery be in good operational conditions, supervising the report of inspections results in the corresponding Maintenance Log. All machinery not complying with the legal emissions limits will be substituted.

- **Methodology:**

In order to supervise and regulate all activities of contractors during the different stages of the project, bimonthly supervision visits will be carried out so as to verify due fulfillment of all environmental commitments by contractors. Inspection visits require filling in compliance logs, recording the minutes and appointing the responsible person for follow up and correction of any change, establishing commitment dates. With all information available the person responsible for supervising will prepare biannual supervision reports.

VI.2.5. Environmental Training and Awareness Program

- Objectives

The main objective of the Environmental Training and Awareness Program is to inform the staff involved in the project about the value and relevance of preservation of ecosystems and resources, as well as the methods for prevention of adverse impacts on environmental factors, highlighting the appropriate management of waste, and the control and prevention of spills and management of flora and fauna.

The development of this Program intends to achieve changing habits and conducts with respect to nature, and avoiding that the lack of information be one of the causes of adverse impacts related to the project. In this way we raise awareness about the responsibility of conservation and decrease impacts generated because of human activities.

- Activities

    - To give courses to the staff to inform them about the programs that belong to the Environmental Quality Follow-up Plan.
    - To train builders about the application and compliance of standard and environmental instruments applicable to the project.
    - To inform the staff about environmental obligations acquired when becoming part of the project workforce.
    - To promote a responsible attitude regarding the use and management of natural resources, diffusing the environmental value of ecosystems and regional resources, as well as their sustainable management.

- Methodology

In order to achieve the objectives of the program, staff trained in the matter will focus on the following activities:

    - To identify the environmental topics to be addressed.
    - To prepare the program objectives and goals.

- To evaluate the profile of the staff who will focus on the Environmental Training and Awareness Program and define the training needs of the same.
- To research and design educational content for training of workers and employees on prevention of pollution and management of sustainable resources.
- To prepare a calendar to give courses and workshops where, according to the tasks of the staff involved in the project, said staff will be trained in order to be aware of the environmental obligations acquired.
- To design brochures allowing workers to be well informed about several environmental topics involved in the project; for example, about the importance of sorting waste generated to be reused or recycled and, hence, decrease the volume of generated waste, or about the relevance of preserving the flora and fauna under special protection.
- To maintain a schema of constant feedback and continuous improvement regarding environmental information and education.

VI.2.3. RESIDUAL IMPACTS

As set forth in fraction V of Section 13 of the RLGEEPAMEIA, residual impacts must be identified, assessed and described; therefore, one special section of this chapter is dedicated to their analysis. With the application of prevention and mitigation measures, an impact is likely to alter the features or structure of a certain component or ecosystemic process of the SA, reducing its effect or significance. However, there are impacts which effects continue even with the application of measures and such impacts are called residual impacts

The identification and assessment of such type of environmental impacts is fundamental, for in the last instance they represent the inevitable and permanent effect of the project on the environment; consequently, the result of this section provides the definition and analysis of the project "environmental cost"; understanding environmental cost as the actual and permanent decrease in terms of quality and/or amount of environmental goods and services in the SAR. The identification of said factors was carried out based on the attribute of **reversibility**; therefore, impacts graded 3 where considered residual impacts, which means that their effect on environmental factors will be practically permanent, not allowing such factors to go back to their original status, even with the application of said measures.

As a result, we know that the project will generate 3 residual impacts classified as adverse impacts during the site preparation stage, 2 of them are adverse low and 1 is adverse moderate and is related to the loss of vegetable coverage.

Likewise, 2 residual impacts classified as adverse will be generated during operation stage, 1 is adverse low and 1 is adverse moderate. The adverse moderate impact is related to the modification of the landscape because of the visual impact of wind turbines.

The following table describes such residual impacts.

Table VI.7. Description of residual impacts detected in the Project stages

IMPACT	DESCRIPTION
Preparation of the site Stage	
IP 4: Land erosion due to loss of vegetable coverage	Clearing and grubbing activities imply that in the worst case scenario (installing maximum 433 wind turbines), vegetation will be removed in a surface of 508.51 hectares and temporarily removed in 398.72 hectares. During the site preparation stage these areas are exposed to erosion processes, but it is necessary to take into account that different erosion control procedures will be considered until the land is covered with permanent vegetation. After the construction of the wind farm and only after beginning the operation of the farm, a Land Restoration and Conservation Program and a Program for Comprehensive Management of Flora and Fauna will be implemented for all surface cleared and grubbed, which contemplate activities such as restoration of the site with the purpose of regenerating the land and allowing growth of natural vegetation and reforestation, thus preventing the land from continue being exposed to erosive processes.
IP 6: Modification of geological formations	In general, specific areas where wind turbines will be located are flat zones; however, during rehabilitation and extension of roads, it will be necessary to make some cuts and leveling in the area where the topography is slightly irregular. The impact generated will be of very low magnitude and it is necessary to consider that the design of the road network to be rehabilitated and/or extended intends to minimize the alteration of geological formations at the site and the material removed during rehabilitation and extension of roads will be used for filling in and leveling, always trying to preserve to the extent possible the original topographic conditions of the site.
IP 10: Loss of vegetable coverage	Clearing and grubbing activities involve permanent removal of vegetation in 508.51 hectares and temporary removal in 398.72 hectares, if we consider the worst case scenario (433 wind turbines maximum). Approximately 68.93% of the polygon where the project will be located is covered by submontane scrub, 7.81% by deciduous lowland forest, 4.51% by tropical mezquital and 3.35% by low thorny deciduous forest. It is worth mentioning that after the construction stage, a Land Restoration and Conservation Program and a Program for Comprehensive Management of Flora and Fauna will be implemented for all surface cleared and grubbed (except for the surface occupied by permanent works), which contemplate activities such as restoration of the site with the purpose of regenerating the land and allowing growth of natural vegetation and reforestation of disturbed areas.
Operation Stage	
IO 6: Mortality of birds and bats due to collision	One of the main risks during operation of the wind farm is mortality of birds and bats because of collision with turbines, thus disturbing the

IMPACT	DESCRIPTION
with turbines	dynamic population, as well as their migratory patterns. We will take into account some measures such as painting the turbines blades to increase to the maximum level their visibility by birds, but with the purpose of measuring the actual intensity of the migratory phenomenon present in the area affected by the project and analyze its possible interaction with wind turbines installed, we will develop a Birds and Bats Monitoring Plan that will use the necessary tools to accurately determine nesting zones, trajectories, heights, seasons and flight peak hours. The results of such Plan will be the basis to design appropriate measures to decrease this risk to minimum.
IO 9: Landscape modification	The most notorious visual impact will be the presence of wind turbines, which will be between approximately 120 and 180 meters high and an approximate extension of 4 to 10 meters of base, depending on the technology available during the project development. In order to harness the wind maximum potential, wind turbines will be located at the highest areas of the plateaus, and will be visible from considerable distances.