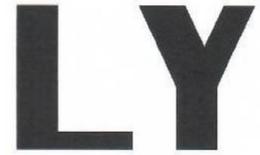


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Forestry Industry Standard of the People's Republic of China

**LY/T 2499-2015**

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# Overall design specification for wild animal farms

## 野生动物饲养场总体设计规范

*(English Translation)*

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# Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by and is under the jurisdiction of the National Technical Committee 369 on Wildlife Conservation Management and Husbandry Business of Standardization Administration of China (SAC/TC 369).

This standard was drafted under the responsibility of Heilongjiang Institute of Wildlife Research and under the participation of Heilongjiang Institute of Forestry Monitoring and Planning.

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# Overall design specification for wild animal farms

## 1 Scope

This standard specifies the site selection, farm area layout, husbandry, supporting facilities and equipment, organizations structures and personnel, and document requirements of wild animal farms.

This standard is applicable to the overall design of newly-built wild animal farms, and it can also be used as a reference for rebuilt and expanded wild animal farms.

## 2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the normative documents (including any amendment) referred to applies.

GB 5749 Standards for drinking water quality

GB 13078 Hygienic standard for feeds

GB 18596 Discharge standard of pollutants for livestock and poultry breeding

GB/T 19525.2 Criteria for evaluating the environmental quality of the livestock and poultry farm

GB 50015 Code for design of building water supply and drainage

GB 50016 Code for fire protection design of buildings

GB 50052 Code for design of electric power supply systems

GB 50140 Code for design of extinguisher distribution in buildings

GB 50348 Technical standard for security engineering

GB 50395 Code of design for video monitoring system

## 3 Terms and Definitions

The following terms and definitions apply to this document.

### 3.1 Wild animals

The rare and endangered terrestrial wild animals and terrestrial wild animals that are beneficial or have important economic or scientific research value, as well as animals that non-domesticated and domesticated by human but have not changed their basic biological characteristics and biological habits in farming environments.

### 3.2 Wildlife ranches

A production and operation organization that targets a single species or a single taxon of wild animals and provides origin of species, products or services related to wild animals through farming & breeding and operation & utilization thereof.

### 3.3 Area of farm

Area that is enclosed by fence, mesh materials or enclosures in wild animal farms.

### 3.4 Husbandry area

An enclosed husbandry management area that is made of cage and house or shed and yard for farming wild animals.

### 3.5 Animal house

The collective term for cages and houses, places where wild animals live. The cages are enclosed in top part and generally formed by weaving bamboo skins, wooden strips, metal wires or welding steel bars. The cages are classified into two forms, indoors and outdoors. Houses are generally of a wooden box structure or a built house or barn.

### 3.6 Enclosure

The collective term for sheds and yards, places where wild animals live. The sheds are open-top part and generally refer to the area encircled by enclosing walls, moat, mesh materials or fence; yards generally refer to the built house or barn and are classified into two forms, indoors and outdoors. The free-range field (area) is a special kind of sheds and yards.

### 3.7 Space enclosure facilities

The enclosures, including enclosing walls, fence, mesh materials and moat, etc., used as barrier and shield on all sides of farm (park) areas, animal husbandry areas, animal exercise fields (areas), cages and houses, sheds and yards, etc.

### 3.8 Enclosing wall

The seamless space enclosure facility made of built walls, glass, metal plates, wood boards, etc. It is generally classified into brick-concrete-structured enclosing wall, stone-concrete-structured enclosing wall, colored-steel-plate partition wall, block-structured enclosing wall, concrete wallboard enclosing wall, glass enclosing wall and so on.

### 3.9 Fence

The constraint facility with wide gap, also called railings and guardrails, which is made of iron rods, wooden strips, PVC, ropes, etc. It is generally classified into iron fences, stone fences, PVC fences, wooden fences, cement fences, plastic steel fences, stainless steel fences, rope fences, etc.

### 3.10 Mesh materials

The mesh-like space enclosure facility made of metal mesh materials such as chain link mesh, welded wire mesh, crimped wire mesh, and punching hole mesh, etc.

### 3.11 Moat

The constraint enclosure facility made of built moats. The moat is generally L-shaped. The moat wall on the side of the animal is called inner wall, and the moat wall on the other side is called the outer wall. The outer wall with vertical sides, the inner wall with a gradually sloped ramp.

### 3.12 Environmental enrichment

The various measures and methods to improve animal welfare, i.e. to provide more opportunities for animals to show natural behaviors, to increase their exercise, to

stimulate their spirits and to strengthen their adaptability and control capacities to the environment by constructing and improving the environment of cages and houses, sheds and yards for farming animals.

### 3.13 Excrement non-hazardous treatment

Process of killing pathogenic bacteria, parasites and weed seeds, etc., in livestock and poultry excrement by high temperature, biological fermentation or anaerobic technology, etc.

### 3.14 Biosafety disposal

Disposal of diseased or dead animal carcasses and diseased or dead animal products or appendages by incineration, rendering, burial or other physical, chemical, biological methods, so as to completely eliminate the pathogens they carry, eliminate disease factors, and protect the health and safety of humans and animals.

### 3.15 Body mass index (BMI)

The value obtained by dividing the body weight in kilograms by the square of their height in meters, and it is commonly used to measure the degree of body fat.

## 4 Site Selection

4.1 An area should be sited in the excellent ecological environment avoiding the pollution of three industrial wastes water, agriculture, urban domestic garbage and noise. It is advisable to select a forested or agricultural area, instead of a town or residential area.

4.2 The site shall meet the following conditions:

- a) At least 500m away from source of domestic drinking water, animal slaughtering and processing places, live animal and animal product market;
- b) At least 500m away from urban residential areas, highly populated areas used for activities of culture, education and scientific research, and others; as well as major transportation arteries such as highways and railways;
- c) At least 1000m away from other livestock and poultry farms;
- d) At least 200m away from other places for veterinary diagnosis and treatment;
- e) At least 500m away from other animal farms (husbandry area);
- f) At least 3000m away from other animal quarantine sites, non-hazardous treatment sites, and biosafety disposal sites.

4.3 Site selection shall avoid the following areas or sections:

- a) Residential area;
- b) Basic farmland or basic farmland preservation area;
- c) Ecological public-welfare forests, including water conservation forest, soil and water conservation forest, windbreak and sand fixation forest and river bank protection forest, etc.;
- d) Core areas and buffer areas of nature reserves, water source conservation areas, cultural relic protection areas, etc.;
- e) Areas that are threatened by floods or mountain torrents, and areas prone to natural

disasters such as debris flows and landslides, etc.;

f) Areas having serious natural environmental pollution;

g) Other prohibited husbandry areas specified by laws and regulations.

4.4 The site selected shall have sufficient water supply, and water quality shall meet the requirements of GB 5749.

4.5 The site selected shall have stable feed source, the feed hygiene shall meet the requirements of GB 13078, and the feed quality shall meet the relevant product quality standards.

4.6 The site selected should be required to the environmental quality assessment in accordance with the standards of GB/T 19525.2.

## 5 Farm Area Layout

### 5.1 Floor plan

5.1.1 Reasonable area divisions shall be made to arrange the location of each building based on the requirements of production and management and combined with terrain and main wind direction. For wild animal farms that provide origin of species or services, at least 4 functional space areas should be divided including animal accommodation facility, husbandry practice, management and isolation. For wild animal farms that provide wild animal products, product processing areas shall be additionally set up.

5.1.2 The husbandry area shall be mainly equipped with farming cages and houses, or sheds and yards. The husbandry area shall be separated from other functional areas with enclosing walls.

5.1.3 The keeper area shall be mainly equipped with feed storage, processing and preparation, etc., facilities, all of which shall be arranged near the husbandry area.

5.1.4 The management area shall be mainly equipped with office and living rooms for staff, water supply, power supply and heat supply facilities, material warehouse, carport and guard room.

5.1.5 The isolation area may be arranged according to the following requirements:

a) Veterinary room shall have an area of not less than 20 m<sup>2</sup>, and shall not be cross-used together with rooms for farming, management, production, storage and other purposes;

b) The isolation cages and houses (sheds and yards) shall be separated from other farming cages and houses (sheds and yards) in the husbandry area with an enclosing wall;

c) The facility for non-hazardous treatment of excrement shall be kept at least 100 m away from husbandry area;

d) Biosecurity disposal facility shall be kept at least 500 m away from husbandry area.

5.1.6 The product processing area shall be mainly equipped with product storage rooms, product processing rooms, finished product warehouses, cold storage, etc.

5.1.7 On the premise that buildings are ensured to have a reasonable orientation and meet the requirements of day lighting and ventilation, contour arrangement of building long axis along the farm area shall be made as much as possible based on the original terrain and topography of farm area.

## 5.2 Vertical design

5.2.1 The ground elevation of the cages and houses (sheds and yards) shall be 0.2 m~0.4 m higher than ground elevation outside the cages and houses (sheds and yards), and be in accordance with the road elevation of the farm area. The ground elevation of the building shall be higher than the ground elevation outside the building, and the road elevation in the farm area shall be designed slightly higher than the road elevation outside the farm area.

5.2.2 The drainage system on the farm shall use gravity drainage system and designed according to the principle of rain and sewage diversion. Sewage from the farm area shall be discharged through concealed pipes and subjected to centralized treatment. The treated sewage shall meet the requirements of GB 18596. The rainwater in the farm area shall be drained by open channels or covered channels. The bottom width of open channels or cover-plate channels should not be less than 0.3 m. The side slope shall be paved with bricks or concrete block, and 1:0.75~1:1 side slope may be adopted.

## 6 Husbandry

### 6.1 Cages and houses (sheds and yards)

6.1.1 The cages and houses (sheds and yards) for farmed wild animals shall be designed to meet the following requirements:

- a) To avoid captive animal escape and injury;
- b) To prevent animal body parts reaching out;
- c) Provide for safety, comfort of the animals, sufficient ventilation, well lighting, proper drainage in works area;
- d) To have an area 5 times larger than the animal resting area.

6.1.2 When necessary, the cages and houses (sheds and yards) shall be designed and installed with the following facilities:

- a) Facilities for heating and cooling;
- b) Sun & rain shelter or shed;
- c) Providing substrate for sleep or farrowing or provide dry and appropriate litter;
- d) Feeding and drinking utensils are provided according to the number and types of the species;
- e) Cub protective barrier (applicable to sheds and yards of herbivore dam during lactation);
- f) Outdoor area;
- g) Disinfection facilities;
- h) Video monitoring facilities.

6.1.3 The cages and houses (sheds and yards) shall be made of materials appropriate to the species, intelligence, individual size, running speed, jumping and climbing ability, aggressive level and destruction ability, and domestication degree, etc., of animals in captivity. Toxic or harmful paint shall not be used to paint the cages and houses (sheds and yards). There shall be no cracks, holes or protrusions that may injure animals.

6.1.4 Unless otherwise especially required for farming animals, the ground of cages and houses (sheds and yards) shall be subjected to hardening treatment, be durable in use, wear-proof, water permeability, not easy to generate dust and mud, and be capable of minimizing the dust retention and mud formation in the rainy season and drain away rainwater and sewage.

6.1.5 The door and opening method of the cages and houses (sheds and yards) shall be compatible with the biological characteristics, aggressive level, hazard and destruction ability of the farming animals, and the surfaces on both sides of the door shall be clean, firm and smooth.

6.1.6 The cages and houses (sheds and yards) shall be equipped with necessary environmental facilities according to the natural behaviors of the farming animals.

## 6.2 Enclosure facilities

6.2.1 The enclosure facilities shall be made of firm, durable and non-poisonous materials. They shall not be painted with toxic or harmful paint. There shall be no cracks, holes or protrusions that may injure animals.

6.2.2 The surface of enclosing wall shall be clean, firm and smooth so as to prevent animals from climbing and escaping.

6.2.3 The upper opening width of the moat shall be designed to ensure that animals cannot step over or jump out of the moat under any circumstances. The surface of outer wall shall be clean, firm and smooth so as to prevent animals from climbing and escaping; the surface of inner wall shall be subjected to anti-skid treatment so as to ensure that animals can climb out of the moat freely after falling into it.

6.2.4 The space between each bar of fence shall ensure that the animal cannot extend their head and limbs out. In the case of a wide space between each bar, coverage and strengthening thereof shall be made by use of chain link mesh, crimped wire mesh, or punching hole mesh, the size of which shall ensure that animal can not extend their head and limbs out. Electric fences shall be installed on the upper part of the fence in which lions, tigers, bears and other captive dangerous animals.

6.2.5 Welded wire mesh should not be used as a barrier and shield of farm areas, free-ranging field (area) and movement fields.

## 6.3 Auxiliary husbandry

6.3.1 The wild animal farms shall be equipped with relatively independent feed storage, processing and preparation room and independent animal hospital or veterinary room. Farms that are engaged in production and processing of wild animal products shall also be equipped with relatively independent product processing and storage room.

6.3.2 The wild animal farms shall provide the staff with a comfortable work and rest area, sanitary facilities and drinking water facilities, and be equipped with changing clothes locker (cabinet) suitable for the number of staff.

6.3.3 Feed storage, processing and preparation rooms, animal hospitals or veterinary rooms and other facilities shall meet the following requirements:

a) Ground material is firm, durable, wear-resistant, washable, and not easy to produce dust and mud;

b) Walls and ceilings are smooth and free from cracks and particles falling off;

- c) Junction between wall and ground is curved or other measures are taken to reduce dust accumulation and facilitate cleaning;
- d) Doors and windows are large enough, bright, and facilitate ventilation;
- e) Good power supply and lighting facilities are available;
- f) Fire-proof, theft-proof, rat-proof and mosquito-proof facilities are available.

## 7 Supporting Facilities and Equipment

### 7.1 Water supply and drainage

7.1.1 The wild animal farms shall have a complete water supply and drainage system that realizes environmental protection and energy conservation and meets the needs of farming wild animals. When necessary, water supply and drainage facilities shall also be installed in the cages and houses (sheds and yards).

7.1.2 The design and installation of water supply and drainage facilities shall meet the requirements of GB 50015.

### 7.2 Heating, ventilation and air conditioning

7.2.1 The heating systems and facilities shall be designed and installed as the local climate conditions and the biological characteristics of farming animals required. The heating facilities shall be well-equipped, environmentally-friendly and energy-saving, and meet the demands for warmth of the staff and farming animals.

7.2.2 The design and installation of heating systems and facilities shall meet the requirements of GB 50016.

7.2.3 In case that the farming animals have special requirements for temperature and humidity, such temperature and humidity control facilities that realize environmental protection and energy conservation shall be fully equipped.

7.2.4 In case that wild animals are kept in the house, such ventilation facilities that realize environmental protection and energy conservation shall be fully equipped.

7.2.5 The heating and ventilation facilities, temperature and humidity adjustment facilities in animal cages and houses shall be installed in places out of reach of animals, or additional protective facilities shall be set up to prevent animals from accidental injury and damage.

### 7.3 Power supply facilities

7.3.1 The wild animal farms shall have a complete set of power supply system that realizes environmental protection and energy conservation and meets the needs of production and life. The design and installation of power systems and power supply facilities shall meet the requirements of GB 50052.

7.3.2 The power supply facilities and electrical equipment shall be able to ensure the safety of staffs and farming animals. The electrical equipment in the cages and houses (sheds and yards) shall be installed in the places out of reach of animals and be properly grounded.

7.3.3 Stand-by power shall be provided for areas where there are unstable power supplies or frequent power outages and in wild animal farms where electric fences are adopted.

### 7.4 Fire fighting equipment and security equipment

7.4.1 The wild animal farms shall have fire fighting equipment or fire protection instrument. The design and installation of fire fighting equipment shall meet the requirements of GB 50016. The selection, setting and configuration of fire protection instrument shall meet the requirements of GB 50140.

7.4.2 The video monitoring systems that meet the requirements of GB 50348 and GB 50395 shall be designed and installed in animal husbandry areas of wild animal farms. When necessary, video monitoring systems shall also be installed in auxiliary husbandry areas and living management areas.

#### 7.5 Hygiene and disease control facilities

7.5.1 A disinfection pool that is the same wide as the door and with length of 4.0 m and a depth of more than 0.3 m shall be set up at the entrance and exit of the area of farm.

7.5.2 The clothing disinfection room or disinfection pool shall be set up at the entrance of the husbandry area, and the disinfection pool or disinfection mat shall be set up at the entrance and exit of each farming case and house (shed and yard).

#### 7.6 Environmental protection facilities

7.6.1 The wild animal farms shall be equipped with such environmental protection facilities that meet relevant environmental protection requirements and pass environmental impact assessment, including:

- a) Environmental sanitation facilities, including waste-bins, public toilets, septic tanks, etc., that are clearly marked;
- b) A full set of domestic sewage and farming sewage treatment facilities that are of high-efficiency and energy-saving;
- c) Animal excrement non-hazardous treatment facilities;
- d) Biosafety disposal facilities for diseased or dead animal carcasses, products or appendages;
- e) Non-hazardous treatment facilities for domestic waste and medical waste.

7.6.2 All kinds of non-hazardous treatment facilities and biosafety disposal facilities shall meet the following requirements:

- a) Having distinguishable warning signs;
- b) Being able to prevent leakage, scattering, overflow, rain and foul odor from causing polluting and harming to the surrounding environment;
- c) Being equipped with enclosure facilities that can prevent other animals from entry.

#### 7.7 Road

7.7.1 The roads of the farm area shall be of barrier-free connection to each functional area. The main road surface shall be hardened to ensure the passage of vehicles under various climatic conditions and prevent the generation of dust, standing water and mud.

7.7.2 The roads of the farm area should be arranged in parallel or perpendicular to the long axis of the building. Minimum distance between road and building exterior walls:

- a) 1.5 m in the absence of entrance or exit;

b) 3.0 m in the presence of entrance or exit.

## 7.8 Vegetation planning

7.8.1 The bare ground in the farm area shall be afforested. Measures shall be taken to harden the bare ground that cannot be afforested so as to minimize dust and water accumulation and to prevent the mud formation in the rainy season. The bare ground of the sheds and yards shall be hardened or afforested.

7.8.2 The indigenous plants shall be kept as much as possible in the farm area. Arbors, shrubs, grasses and flowers, etc., that are harmless to humans and animals and suitable for local growth shall be selected for artificial afforestation.

7.8.3 Arbor green belts shall be planted inside or outside of the space enclosure facilities in the farm area.

7.8.4 The trees shall be kept not less than 1 m away from building outer wall, enclosing wall, road edge and edge of open drain.

## 7.9 Instrument and equipment

7.9.1 The wild animal farms shall provide necessary feed or grain crushing, processing and reparation equipment, necessary animal capture devices, necessary labor tools and transportation tools for farming and breeding of wild animals.

7.9.2 Animal hospitals or veterinary rooms shall be equipped with necessary medical devices, examination and diagnosis & treatment equipment, storage cabinets for medicines and devices, disinfection equipment and sanitary cleaning equipment.

7.9.3 The wild animal farms shall be equipped with necessary instrument and equipment for quality inspection of wild animal feed and wild animal products, etc.

## 8 Organizations and Staff

### 8.1 Organizations

The wild animal farms shall have adequate management systems. The following departments shall be set up under the responsibility of a specially-assigned person:

- a) Animal husbandry and reproduction;
- b) Veterinary treatment and hygiene and disease control;
- c) Animal product processing and quality inspection (applicable to the farms that provide wild animal products).

### 8.2 Staffing

#### 8.2.1 Resident veterinarian

There shall be a full-time resident veterinarian in the wild animal farms. The resident veterinarian shall meet the following requirements:

- a) Have education above technical secondary school in animal husbandry, veterinary medicine, wild animal or related majors;
- b) Or have the qualification certificate of a licensed veterinarian or rural veterinarian;
- c) Or have intermediate professional technical title or above;

d) Or have more than 5 years of experience in the diagnosis and treatment of animal diseases, and be able to make correct judgments and treatments on actual problems in the prevention and control of wild animal diseases.

#### 8.2.2 Keeping technicians

The wild animal farms shall have full-time farming technicians. The farming technicians shall meet the following requirements:

- a) Have education above technical secondary school in animal husbandry, veterinary medicine, wild animal or related majors;
- b) Or have intermediate professional technical title or above;
- c) Or have more than 5 years of experience in farming of wild animals, and be able to make correct judgments and treatments on actual problems in the farming of wild animals.

#### 8.2.3 Keeper

Animal keeper is considered "adequate" include the number and type of species within the institution/farm. The keeper shall meet the following requirements:

- a) Have an education background above junior or senior high school;
- b) Body mass index is not more than 30 (applicable to ferocious animal farming);
- c) Have participated in professional technical and safety protection training test in animal husbandry.

#### 8.2.4 Other personnel

The wild animal farms may hire skilled workers specialized in machinery, water supply, heating, electricity and other maintenance work. Such skilled workers shall have the corresponding technical proficiency certificate or work permit certificate, and be aged not more than 60.

### 9 Documentation Requirements

#### 9.1 Feasibility study report

9.1.1 The construction unit of wild animal farm (hereinafter referred to as the "construction unit") shall hire a unit equipped with professional qualifications for wild animals to conduct field investigation on the site of wild animal farm to be built, and to compile the construction project feasibility study report (please refer to Appendix A for format and compilation requirements).

9.1.2 The feasibility study report shall be attached with experts' opinions, with contents covering:

- a) The rationality of site selection and layout;
- b) The feasibility and safety of construction schedule;
- c) The legality of species source of wild animals;
- d) National requirements for on-site investigation and depth of construction.

#### 9.2 Survey and design documents

9.2.1 The construction unit shall hire a construction project survey and design unit

equipped with corresponding qualification level to conduct survey and design of construction project and to compile construction project survey and design documents. Such documents shall be based on the following provisions:

- a) Feasibility study report and approval documents;
- b) Urban planning;
- c) Mandatory standards for engineering construction;
- d) In-depth requirements for construction project survey and design stipulated by the state.

9.2.2 The compilation of survey and design documents shall be truthful and accurate, and shall meet the following requirements:

- a) The investigation documents shall meet the needs of planning, site selection, design, geotechnical treatment and construction of construction project;
- b) The construction design documents shall meet the needs of compiling preliminary design documents and controlling budget;
- c) The preliminary design documents shall meet the needs of compiling construction bidding documents, ordering major equipment and materials, and compiling construction drawing design documents;
- d) The construction drawing design documents shall meet the needs of equipment and material procurement, non-standard equipment making and construction, and indicate the reasonable service life of the construction project.

9.2.3 The materials, components and fittings as well as equipment selected in the design documents shall indicate their specifications, models, performance and other technical indicators, and their quality requirements shall comply with the standards stipulated by the State.

### 9.3 Completion acceptance documents

9.3.1 After receiving the construction project completion report from the construction contractor unit, the construction unit shall organize the survey, design, construction, project supervision, wild animal husbandry and other relevant units to carry out the completion acceptance and issue the completion acceptance report. Completion acceptance may be carried out if the following conditions are met:

- a) Complete various contents stipulated in construction project design and contract;
- b) Have complete technical archives and construction management materials;
- c) Have the entry test report of main building materials, building components & fittings and equipment used in the project;
- d) Have quality conformance documents respectively signed by units such as survey, design, construction, and project supervision, etc.;
- e) Project warranty signed by the construction contractor unit;
- f) Have position paper of experts demonstrating that the construction project meets the animal farming, safety and environment requirements.

9.3.2 The construction unit shall, in strict accordance with the relevant national regulations on archives management, collect and sort out the documents of each link of the

construction project in a timely manner, establish and improve the construction project archives, and promptly hand over the construction project archives to the construction competent administrative department, wild animal competent administrative department or other relevant departments after construction project is subjected to completion acceptance.

#### 9.4 Other documents

9.4.1 Wild animals introduced into wild animal farm shall have certificates on source of breeders, including letter of agreement or intent regarding introduction thereof, valid approval documents, import and export certificates, receiving and rescuing treatment documents, etc. Wild animals under national key protection shall be approved by the department governing wild animal management in accordance with the law.

9.4.2 The non-epizootic area certificate and animal quarantine certificate issued by the local animal husbandry and veterinary administrative department.

9.4.3 The wild animal farms shall also have the following documents:

- a) Certification of land use rights, including land ownership certificate or lease contract, or other valid documents or materials;
- b) Certification of source of funds required for the construction of farm;
- c) Certification of educational background, technical skills and personal experience of employees;
- d) Catalogue of main farming cages and houses, fences facilities, construction facilities, auxiliary facilities and supporting facilities and equipment, as well as pictures, video materials, etc.

## Appendix A

### (Informative)

#### Requirements for compiling the feasibility study report on the construction project of wild animal farms

##### A.1 General requirements

A.1.1 Unit and personnel who compile the “feasibility study report on construction project of wild animal farms” (hereinafter referred to as “feasibility study report”) shall have corresponding professional qualifications. Compilation units and personnel shall strictly abide by relevant laws, regulations, standards and other requirements, adhere to the principles of independence, impartiality, scientificity and reliability, and be responsible for the authenticity, validity and legality of the “feasibility study report” that they compile.

A.1.2 Basic terminology shall comply with relevant national or industrial standards, international standards and international or domestic idiomatic expressions. In addition, the terms that have an important impact on the understanding of the “feasibility study report” shall be defined as necessary.

A.1.3 The Chinese vocabulary is advisable. If necessary, the corresponding foreign vocabulary can be added following the Chinese vocabulary and placed in parentheses. Where it is really necessary to use foreign vocabulary without equivalent Chinese vocabulary, it shall be explained when it appears for the first time. If many foreign vocabularies are used, they shall be collected into a vocabulary table.

A.1.4 In case that abbreviations or short names are used, non-abbreviated words or full names shall be indicated in parentheses where they appear for the first time.

A.1.5 Unless otherwise specified, the unit of measurement used shall comply with the provisions of national standards and relevant industrial standards. For precision of figures, it shall retain two decimal places. The unit of measurement and the precision of figures shall ensure the consistency throughout the report. The following units of measurement shall meet the requirements:

- a) Farm area: unit in  $\text{hm}^2$ ;
- b) Building area: unit in  $\text{m}^2$ ;
- c) Length: unit in km or m;
- d) Width: unit in m;
- e) Weight: unit in kg, g or mg;
- f) Number of animals: unit in zhi;
- g) Power transformation and distribution equipment: unit in kW;
- h) Electrical power equipment: unit in kW.

A.1.6 Graphical representations and symbols of all kinds of attached drawings shall comply with the provisions of national standards and relevant industrial standards.

A.1.7 Printing and binding shall meet the following requirements:

- a) Printed on both sides of A4 (210 mm×297 mm) standard white paper, and bound on the left;
- b) Printed on both sides of A4 (210 mm×297 mm) or A3 (297 mm×420 mm) standard white paper for attached tables;
- c) Printed on A4 (210 mm×297 mm) or A3 (297 mm×420 mm) standard white paper for attached drawings.

At the same time, an electronic copy shall be developed.

A.1.8 The “feasibility study report” should be arranged and bound into a book form in the order of cover, compilation unit professional qualification certificate (copy), compilation unit job title signature page, compilation staff name list and compilation labor division page, preface (optional), content, main text, attached tables, attachments and attached drawings; if attached tables, attachments and attached drawings need to be separately assembled into a booklet, it is advisable to arrange such booklet in the order of cover, content, attached tables, attachments and attached drawings or separately arrange in the order of cover, content and attached tables (attachments, attached drawings).

## A.2 Compilation requirements

### A.2.1 Introductory part

A.2.1.1 Cover: including the project name, project number (optional), compilation unit (with official seal affixed) and date; if the cover material is not suitable for affixing official seal, the title page can be added with the same contents as the cover, and the official seal may be stamped on the compilation unit of title page.

A.2.1.2 Copy or scanned copy of professional qualifications for compilation unit of “feasibility study report” ;

A.2.1.3 Job title signature page of compilation unit of “feasibility study report” : including project name, project number (optional), compilation unit (with a special seal for the qualification certificate, optional), and legal representative (signature or seal), chief engineer or technical quality director (signature or seal) and competent leader (optional) of compilation unit, as well as head (director) (optional) of compilation office (division, section) of “feasibility study report” , chief engineer or technical quality director (optional) of compilation office (division, section) and compilation project leader or project manager (signature or seal).

A.2.1.4 Compilation staff list page: list the compiling staff in the order required by the management of compilation unit.

A.2.1.5 Preface (optional): including the basic content of the report, compiling intentions, writing process, academic value, work division, and acknowledgment, etc.

A.2.1.6 Content: list the content covering secondary headings or above (primary headings); for content covering secondary headings below, list as appropriate.

### A.2.2 Requirements for compilation of main text

#### A.2.2.1 General

Contents include:

- a) Project summary: including project name, project construction site (or project area scope), project legal person (construction unit) name, project legal representative, project competent unit, project construction technical support unit (optional), project

nature, project construction goal, project main construction content and scale, project construction period and progress, project investment scale and fund source, project benefits, introduction to the compilation unit, etc. ;

b) Project construction background and reason;

c) Application (or market) demand or project necessity analysis: analysis of application (or market) demand or project necessity on the basis of full investigation and description of major problems to be solved by the project;

d) Compilation basis: including the review and approval documents of the preliminary project planning or project proposal, the cited national standards, industrial standards, local standards and international standards, etc. ;

e) Main technical-economic indicators: mainly including the construction land scale of project, the species and scale of wild animals to be domesticated and bred, scheme and scale of wild animal products, number of main buildings, number of main machinery equipment, staffing, investment estimates, total investment and composition and fund source;

f) Feasibility study conclusion: brief description of project construction scheme, investment scale and feasibility study conclusions and recommendations.

#### A.2.2.2 Analysis of construction conditions

Contents include:

a) Related physical geography of the construction area: administrative division, geographical location, topography and landform, river system, hydrology, meteorology, soil, vegetation, etc. ;

b) Social economy: area, population and structure thereof, industrial and agricultural production conditions and per capita output and income, living standard and economic development level, etc. ;

c) Land resources and ownership: areas of various types of land, distribution status of land resources for the establishment of ecological public-welfare forests, quantity of afforestation land and site condition analysis;

d) Labor resources: analysis of labor employment in the project area, available labor force and technical quality, etc. ;

e) Infrastructure: traffic, transportation, communication, power supply, water supply and drainage, etc. ;

f) Existing related projects: the possibility and degree of support and cooperation from the society and related departments to the project;

g) Origin of wild animals: farming status, domestication degree, sources of species and transportation methods, etc., of wild animals to be domesticated and bred;

h) Wild animal feed: feed types, supply channels, storage requirement of feeds required for the wild animals to be domesticated and bred, and analysis of feed source stability, etc.

#### A.2.2.3 Construction schedule

Contents include:

a) Project construction goals: according to the project construction scale and time

requirements, the construction goals can be divided into the general goals and phased goals;

- b) Guiding ideology and principles of project construction;
- c) Construction tasks: describe the main content of project construction;
- d) Project function or product scheme, construction scale;
- e) Project construction site selection scheme and related conditions analysis (resources, raw materials, fuel and public facilities);
- f) Main construction content of project or main project construction scheme, including the design scheme and safety analysis of cages and houses (sheds and yards);
- g) Scheme of supporting facilities and utilities of project;
- h) Function zoning or general layout: describe the project components and general plane layout, sub-project components and plane layout, internal and external transportation of the project, etc.

#### A.2.2.4 Husbandry technology scheme

Contents include:

- a) Husbandry inputs: including procurement, storage, processing and preparation and methods of use of animal drinking water, feed, feed additives or medicated feed additives and veterinary drugs;
- b) Animal nutrition: including the division of biological period of wild animals, and nutrition requirements, daily ration standards and feeding requirements at different biological stages;
- c) Husbandry density: including the stocking density at different biological stages;
- d) Husbandry management: including daily husbandry management measures and group management measures at different biological stages, and special care measures of special biological stages such as reproduction period, mating period, growing period, lactation period, etc.;
- e) Animal breeding: including selection and breeding scheme of good source of breeding animal (poultry) and artificial insemination or embryo transplantation (optional) scheme, etc.;
- f) Animal products: including wild animal product obtaining scheme, product processing scheme, etc.;
- g) Animal euthanasia: including criteria for elimination of animals, euthanasia methods or technics, etc.;
- h) Hygiene and disease control: including sanitation and cleaning measures and requirements, selection and use of disinfectants, diagnosis and treatment of animal diseases, immunization plans, disposal of diseased or dead animals, etc.;
- i) Husbandry safety: including protective measures and management measures to prevent animal farmer from animal attack, protective measures and management measures to prevent wild animals from fright and accidental injury, management measures to prevent animal escape, emergency measures for sudden animal injury or escape, etc.;
- j) Archives management: including establishment and management of archives for animal introduction, breeding and delivery, archives for disease diagnosis and treatment, and

farming management archives.

#### A.2.2.5 Measures for fire prevention, occupational safety and health, and energy conservation

They shall be compiled according to the relevant national requirements and relevant standards. Contents include:

- a) Fire protection: design reference, fire risk factors analysis, fire protection measures, fire hydrant water supply measures, forest fire prevention and control, etc.
- b) Occupational safety and health: design basis, identification of hazards that have actual and potential impacts on health safety of employee or animal or public safety in all production and operation activities, risk assessment and control measures, emergency preparedness and response to major events affecting occupational safety and health.
- c) Energy consumption analysis and energy conservation measures, etc.

#### A.2.2.6 Environmental impact assessment

It shall be compiled according to the relevant national requirements and relevant standards. Contents include:

- a) Design basis for environmental protection;
- b) Investigation of environmental status: the identification of environmental factors, including the identification of factors that have or may have a significant impact on the environment (i.e. important environmental factors);
- c) Analysis of the impact of project construction on the environment: environmental factor evaluation, including actual and potential, positive and negative impact analysis;
- d) Environmental protection measures: measures to control the negative effects of environmental factors, in particular important environmental factors, on environment;
- e) Environmental impact assessment conclusion.

#### A.2.2.7 Bidding package (optional)

It shall be compiled according to relevant national laws and regulations based on the following content and order:

- a) Bid inviting scope;
- b) Bid inviting organization form;
- c) Bid inviting way.

#### A.2.2.8 Project organization and management

Contents include:

- a) Construction management: in accordance with relevant national construction management requirements, formulate the organization (project legal person) for project construction management, and propose management schemes for plan management, project management, fund management, information (archives) management, etc. ;
- b) Operation (running) management: according to the characteristics of project, formulate project operation (running) management mode (mechanism), organization management and responsibilities, staffing (or labor quota), post setting, ability requirements and

training;

c) Implementation progress: description of the task arrangement based on construction phase and annual task arrangement based on construction contents.

#### A.2.2.9 Investment estimates and fund sources

They shall be compiled in accordance with the relevant requirements of national laws and regulations and departmental rules. Contents include:

a) Compilation instructions for investment estimates: explain the principle, basis and fee standard, etc., of investment estimation.

b) Construction and installation investment: buildings (structures) construction and installation engineering expenses incurred in the construction contents of project.

Note 1: It is advisable to estimate the construction and installation investment according to the investment estimation method of unit construction project or the investment estimation method of unit physical engineering quantity.

Note 2: It is advisable to estimate the species introduction investment according to the unit individual investment estimation method.

c) Facilities and equipment investment: the expenses of various instruments and equipment incurred in the construction contents of project, including the costs and freight and miscellaneous expenses of equipment requiring installation (or not), and tools and appliances that are not up to the standard of fixed assets prepared for production (project).

d) Other expenses for project construction: all kinds of expenses incurred during construction contents from the construction preparation to the completion acceptance, delivery and use, for which engineering entity is not formed.

Note: Other expenses of project construction generally include construction unit management fees, land acquisition and relocation compensation fees, land reclamation and compensation fees, feasibility study fees, survey design fees, project quality supervision fees, tendering and bidding fees, research and testing fees, production staff training fees, office and living furniture purchase fees, temporary facilities fees, equipment inspection fees, combined trial operation fees, project evaluation fees, audit (review) fees of social intermediaries, environmental impact consulting services fees, engineering insurance fees, labor safety and health review fees, urban infrastructure supporting fees, civil air defense basements off-site construction fees, construction drawing review fees, etc.

e) Fund reserve: calculated as not more than 5% of the sum of the project expenses and other expenses of project construction.

f) Working fund estimate or project annual operation (management) expenditure estimate:

1) Working fund estimate for profitable (product) projects.

2) Annual operation (management) expenditure estimate for unprofitable (product) projects.

g) Fund source of project: detail the source of funds for the construction project; the amount of local budget investment and self-raised funds and their percentage accounting for the total investment in the case of investment in the local budget or investment grants; quantity and source of project working fund or annual operation (management) expenditure for all types of projects.

#### A.2.2.10 Overall assessment

Content include:

a) Economic benefit analysis: including analysis of direct economic benefit and indirect economic benefit. Project financial analysis shall be carried out for profitable (product) projects, including:

1) Operational management analysis: including calculation basis, total operating income estimate (business income, non-business income), total cost estimate (operating cost, management cost, tax, etc.), profit and profit distribution estimate, etc.

2) Financial profitability analysis: including analysis of financial internal rate of return (FIRR), investment payback period, financial net present value (FNPV), investment profit ratio, profit and tax investment ratio, capital profit rate, etc.

3) Project solvency analysis: analysis of asset-liability ratio, liquidity ratio, quick ratio, etc.

4) Project uncertainty analysis: sensitivity analysis, break-even analysis, etc.

b) Ecological benefit analysis: including the impact on wild animal protection, population recovery, animal welfare, etc.;

c) Social benefit analysis: including the impact on the healthy and sustainable development of wild animal industry, the impact on the regional economy and social development, and employment increased in the region, prosper the economy, improve social welfare and spiritual and cultural life, etc.;

d) Risk evaluation: describe the main risk factors of project, the degree of risk, and countermeasures and measures to avoid and reduce risks;

e) Impact analysis: describe the possible influencing factors, degree of impact and countermeasures for negative impacts that can be predicted during the construction of the project and after the project is put into operation;

f) Project feasibility analysis: analyze and demonstrate the feasibility of the construction scheme from the aspects of scheme technical features, construction investment, benefits, etc., including: the maturity of wild animal farming technology, feed security capacity, fund security capacity, investment income capacity, etc.;

g) Conclusions and recommendations: summarize the conclusions of the feasibility study. Propose solutions or recommendations to the main controversial issues and unresolved main issues in the project feasibility study.

#### A.2.2.11 Attached tables, attachments, drawings

##### A.2.2.11.1 Attached tables

Profitable (product) construction projects: construction project investment estimate table, total cost estimate table, fixed asset depreciation and other expense amortization estimate table, product sales income and sales tax and extra estimate table, profit and loss statement, bank statement (all investments), fund source and application statement, balance sheet, working fund estimate table.

Unprofitable (product) construction projects: investment estimation table, annual running (operation) cost estimation table.

##### A.2.2.11.2 Attachments

Attachments include:

- a) Definitions and explanations of key terms: a collection of the definitions of specific terms used in the “feasibility study report” and the original phrases of acronyms in foreign language (optional);
- b) Special technical description (optional);
- c) Important references: including the main references cited in compiling the “feasibility study report” (optional);
- cl) Technical code of feed and management for wild animals;
- e) Relevant certification documents of the project legal person: the government agency legal person code certificate or the organization code certificate of the People’ s Republic of China or enterprise legal person business license or project legal person formation scheme document approved by the superior authority;
- f) Certification documents related to the use of land and houses:
  - 1) For self-existent land, the state-owned land use certificate or forest right certificate of the People’ s Republic of China shall be attached;
  - 2) For requisition or lease land, land (forest land) use agreement (contract) and the land use certificate or forest right certificate of the land owner shall be attached;
  - 3) Where urban land is involved, it is necessary to attach (provide) the review opinions of the urban planning management department on the construction plan stage and the pre-review opinions, on land use, of the relevant departments where the project is located;
  - 4) Where the forestry land is involved and the use purpose needs to be changed, it is necessary to attach (provide) the certification document approving the use of forest land by the forestry authority.
- g) Proof of source of funds, including proof of own funds, proof of supporting funds, etc. ;
- h) Agreement on the use of water, electricity, etc. ;
- i) Environmental impact assessment documents that should be provided as relevant national regulations required;
- j) Other attachments required by the project review department (unit) or evaluation agency.

#### A. 2. 2. 11. 3 Attached drawings

The attached drawings include the location plan of the construction project, the general plane layout, the planar, vertical, and sectional drawing of main project (buildings, cages and houses, sheds and yards), or the effect sketch, or pictures, and the descriptions of area, specifications, and safety..

