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UNESCO Region: ASIA AND THE PACIFIC

SITE NAME: Mount Qincheng and the Dujiangyan Irrigation System

DATE OF INSCRIPTION: 2nd December 2000

STATE PARTY: CHINA

CRITERIA: C (ii) (iv) (vi)

DECISION OF THE WORLD HERITAGE COMMITTEE:

Criterion (ii): The Dujiangyan Irrigation System, begun in the 2nd century BCE, is a major landmark in the development of water management and technology, and is still discharging its functions perfectly.

Criterion (iv): The immense advances in science and technology achieved in ancient China are graphically illustrated by the Dujiangyan Irrigation System.

Criterion (vi): The Temples of Mount Qincheng are closely associated with the foundation of Taoism, one of the most influential religions of East Asia over a long period of history.

The Delegate of Hungary recommended the application of cultural criterion (v) for this site as it is an outstanding example of traditional land-use marked by the irrigation system which is representative of a culture. ICOMOS was requested to examine this point, particularly for sites in Asia, but it maintained that in this case, the site's outstanding universal value could not be justified on the basis of cultural criterion (v).

The Committee discussed the question of inscription under natural criteria, a proposal for the construction of a dam by the water conservancy project and the issue of sacred mountains in China. The Committee noted that Mt Qincheng is considered to meet natural criteria (ii) and (iv). However, it decided to defer the nomination under natural criteria and requested that IUCN and the World Heritage Centre clarify with the State Party the following matters relating to the integrity of the site: the management regime in the buffer zone; the completion of the Overall Plan for the management of Longxi-Hongkou Nature Reserve, and a commitment to its early implementation; the inclusion within the plan of arrangements to deal with long term funding, the development of adequate trained staff, satisfactory controls over tourism development and activities, and programmes for monitoring, research, education and public awareness and information on the water conservancy project and the possible impacts of the dam proposal.

The Delegate of China explained that the proposal for a new dam was only a proposition at this stage and the authorities were willing to invite foreign experts to inspect the site.

The Committee encouraged the State Party to consider: (a) the merits of enlarging the site to include other Giant Panda areas, such as Wolong Nature Reserve, physically linked to the site; (b) initiating a wider review of the potential which exists in China for other natural World Heritage sites with consideration for a workshop focusing on possible boundaries for an enlarged site as well as to identify other sites of biodiversity value in the region.

The Chairperson also recalled that a workshop on sacred mountains in Asia will be hosted by the Japanese Government.

BRIEF DESCRIPTIONS

Construction of the Dujiangyan Irrigation system began in the 3rd century BC, and it continues to control the waters of the Minjiang river and distribute it to the fertile farmland of the Chengdu plains. Mount Qincheng was the birthplace of Taoism, which is celebrated in a series of ancient temples.

1.b State, Province or Region: Dujiangyan City, Sichuan Province

1.d Exact location: 30° 52' N, 103° 25' E

**WORLD HERITAGE CONVENTION
CULTURAL & NATURAL HERITAGE: CHINA**

MT. QINGCHENG & DUJIANGYAN IRRIGATION SYSTEM

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TABLE OF CONTENTS

PART ONE IDENTIFICATION OF THE PROPERTY	(1)
1. COUNTRY	(1)
2. PROVINCE, CITY	(1)
3. NAME OF THE PROPERTY	(1)
4. EXACT LOCATION ON MAP AND INDICATION OF GEOGRAPHICAL COORDINATIONS	(1)
5. MAPS	(1)
6. AREA OF THE PROPOSED PROPERTY FOR INSCRIPTION AND PROPOSED BUFFER ZONE	(1)
PART TWO JUSTIFICATION FOR INSCRIPTION	(12)
1. STATEMENT OF SIGNIFICANCE	(12)
2. COMPARATIVE STUDIES	(12)
3. AUTHENTICITY AND INTEGRITY	(13)
4. CRITERIA FOR INSCRIPTION OF THE PROPERTY	(14)
PART THREE DESCRIPTION	(20)
1. DESCRIPTION OF PROPERTY	(20)
2. HISTORY AND DEVELOPMENT	(35)
3. FORM AND DATE OF MOST RECENT RECORDS OF SITE	(37)
4. PRESENT STATUS OF CONSERVATION	(38)
5. POLICIES AND PROGRAMS RELATED TO PRESENTATION AND PROMOTION OF PROPERTY ..	(38)
PART FOUR MANAGEMENT	(40)
1. OWNERSHIP	(40)
2. LEGAL STATUS	(40)
3. PROTECTIVE MEASURES AND MEANS OF IMPLEMENTATION	(40)
4. AGENCIES WITH MANAGEMENT AUTHORITY	(41)
5. LEVELS AT WHICH MANAGEMENT IS EXERCISED AND NAMES AND ADDRESSES OF RESPONSIBLE PERSONS FOR CONTRACT PURPOSES	(42)
6. APPROVED PLANS RELATED TO PROPERTY	(42)
7. SOURCES AND LEVELS OF FINANCE	(43)
8. SOURCES OF EXPERTISE AND TRAINING IN CONSERVATION AND MANAGEMENT TECHNIQUES ..	(43)
9. VISITOR FACILITIES AND STATISTICS	(44)
10. PROPERTY MANAGEMENT PLAN AND STATEMENT OF OBJECTIVES	(44)
11. STAFFING LEVELS	(45)
PART FIVE FACTORS AFFECTING THE SITE	(46)
1. DEVELOPMENT PRESSURES	(46)

2. ENVIRONMENTAL PRESSURES	(46)
3. NATURAL DISASTERS AND PREPAREDNESS	(47)
4. VISITOR AND TOURISM PRESSURES	(47)
5. NUMBER OF INHABITANTS WITHIN THE PROPERTY AND BUFFER ZONE	(47)

PART SIX MONITORING (49)

1. OVERVIEW OF MONITORING	(49)
2. ADMINISTRATIVE ARRANGEMENTS FOR MONITORING THE PROPERTY	(50)
3. RESULTS OF PREVIOUS REPORTING EXERCISES	(50)

PART SEVEN DOCUMENTATION (52)

1. SYMPTOMATIC SKETCHES AND THE PROPERTY	(52)
2. CATALOGUE OF PHOTOS	(59)
3. COPIES OF PROPERTY MANAGEMENT PLANS AND EXTRACT OF THE LAWS AND REGULATIONS RELEVANT TO THE PROPERTY	(134)

PART EIGHT SIGNATURE ON BEHALF OF THE STATE PARTY (138)

ANNEXES (139)

PART ONE IDENTIFICATION OF THE PROPERTY

1. COUNTRY

The People's Republic of China

2. PROVINCE, CITY

Dujiangyan City, Sichuan Province

3. NAME OF THE PROPERTY

Mt. Qingcheng & Dujiangyan Irrigation System

4. EXACT LOCATION ON MAP AND INDICATION OF GEOGRAPHICAL COORDINATIONS

103°25'45" - 103°38'15" E, 30°52'29" - 31°01'48" N

5. MAPS

- 1) Geographical Location of Mt. Qingcheng & Dujiangyan Irrigation System in China
- 2) Lande Map of Mt. Qingcheng & Dujiangyan Irrigation System
- 3) Relation Map of Mt. Qingcheng & Dujiangyan Irrigation System
- 4) Reservation of Mt. Qingcheng & Dujiangyan Irrigation System
- 5) Profile of Dujiangyan Weir Works
- 6) Dujiangyan Irrigated Area
- 7) Dujiangyan Geological Structures
- 8) Satellite Remote Sensing Image of Mt. Qingcheng & Dujiangyan Irrigation System

6. AREA OF THE PROPOSED PROPERTY FOR INSCRIPTION AND PROPOSED BUFFER ZONE (HA.)

The Mt. Qingcheng & Dujiangyan Irrigation System covers a reservation area of 17,891 hectares, and a buffer zone of 36,858 hectares.

Part Two JUSTIFICATION FOR INSCRIPTION

1. Statement of Significance

Magnificent and century-old, the Dujiangyan Irrigation System is an only such heritage of water conservancy left over from human civilizations. Noted for the design of damless diversion, the system is not only an eminent wonder of Chinese water conservancy engineering, but also a dazzling pearl of the kind in the world. This man-made irrigation is built by taking full consideration of local geographical conditions that descends from northwest to the southeast, as well as of land configuration, water vein and water potential of the river outlet. Builders of the Irrigation System adopted the damless diversion technology and automatic irrigation. So interdependent are the embankment, diversion, flood discharge, scouring and flow control that the system is ensured of its comprehensive role in flood prevention, agricultural irrigation, water transport and water consumption. The marvel is that this Irrigation System has offered sustained efficacy of performance since its completion 2,250 years ago, and has been playing an even greater role in modern times. Under the presupposition of not damaging but fully utilizing the natural resources to serve the mankind, the Dujiangyan Irrigation System properly integrates human, land and water resources and turns disasters into benefits. It is one of the greatest ecological engineering wonders in the world, creating a new epoch and a landmark in both the Chinese and world history of water conservancy. The Dujiangyan Irrigation System is a crystallization of ancient Chinese wisdom and an epoch-making event in the Chinese civilization.

Located to the south of the Dujiangyan Weir Works, Mt. Qingcheng is a historical mountain of nationwide renown as well as a scenic and historic interests area under state-level protection. At its east foot are the Mangcheng ruins dating back 4,500 years of the late Neolithic Age, a rarity in the same period in China. Multitudinous relics unearthed record a significant profile of the ancient Shu-Kingdom civilization. As early as in the 2nd century B. C., the Qin Dynasty (221-206 B. C.) inscribed Mt. Qingcheng one of the eighteen sacred mountains and rivers as national sacrificial sites. Thus, Mt. Qingcheng is known as the birthplace of Chinese Taoism. Furthermore, Mt. Qingcheng distinguishes itself with its unique landforms characterized by bare red-rock valleys, lush vegetation, moderate climate, evergreen woods, overlaying hills and mountains, twisting trails, and notable collections of ancient scriptures. The Longxi Nature Reserve is located to the north of the Dujiangyan Weir Works, the landform gradually rises from an elevation of 726 meters. The highest peak, the 4,582m Mt. Guangguang, is distinguished for its distinctive plant zonation. Its diversity of plant species is unique in China and is seen everywhere. This is also one of the leading habitats of giant pandas.

It is considered as true that the Property possesses outstanding historical, scientific, cultural and appreciative values. As both an outstanding cultural heritage and a natural heritage, this Property is a valuable treasure of all mankind, worthy of permanent international protection.

2. Comparative Studies

Among ancient water conservancy projects of the world, the Babylon Kingdom built the control project of Nel-Hammurabi on the Euphrates River and the ancient Roman Empire built manmade canals. Yet, these projects have long fallen into disuse, while the Dujiangyan Irrigation System survives and is still being utilized on a sustained and increasingly effective manner.

No other Chinese noted projects of water conservancy are greater than the Dujiangyan Irrigation System in originality

of conception, design and siting. It adapts local conditions and circumstances, takes cooperative strategies of water control, rendering unique scale effects rarely seen in the world. The Dujiangyan Irrigation System is a great beginning of the mankind in their close coordination of nature and ecology with science and culture. It is unrivalled among any other similar ancient projects of water conservancy in China and even in the world.

The Property is located in the west margin of the Chengdu plains, at the transitional junction of the Sichuan Basin and Qinghai-Tibet Plateau. This is also a transition zone at the two major terrains of West China, as well as at the junction of two major phylogenetic systems. Such diverse landforms and climate provide ideal ecological environments for formation and reproduction of living beings. Mt. Qingcheng is the front zone of the Qionglai mountain range and the southwest extension of the Longmen mountain range. Within this vast territory, the elevation varies from the highest 4,582m Mt. Guangguang to the 726m Baopingkou Diversion Passage. As there are marked variations in height difference, mountain peaks on fault folds appear to be of more different poses and countenances. Mt. Qingcheng collects mixed cultural heritages, including Taoist culture, ancient architecture, Qingcheng wushu, Qingcheng School of the Books of Changes, and Qingcheng alchemy. In A. D. 142, Taoist forefather Zhang Ling founded Taoism on Mt. Qingcheng, and in the following year he began to permanently live in the Tianshi (Taoist headmaster) Celestial Cave, and initiated 24 Taoist parishes. After descendants of Zhang Sheng (grand-grand son of Zhang Ling) built the Tianshi Mansion on Mt. Longhu, all Taoist headmasters regarded an honor to come to worship their patriarch on Mt. Qingcheng as this sacred mountain is inscribed as the 5th heavenly cave paradise of the Chinese Taoism. On Mt. Qingcheng is the nation's most concentrated architectural complex of Taoist temples, the construction of which dated from the Jin Dynasty (265-420) and culminated in the Tang Dynasty (618-907), representing local colorings of southwest China nationalities. While temple architectures on Mt. Wudang built in 1416 signify the features of imperial courts, that on Mt. Qingcheng embodies local and ethnic coloring and customs of southwest China. Since the founding of the Qingcheng Taoism, its sects and schools keep multiplying, enjoying perpetual reputation over endless streams of pilgrims.

3. Authenticity and Integrity

Original projects of the Dujiangyan Irrigation System are still performing their designated functions today, such as the three main works (Yuzui Bypass Dike, Feishayan Floodgate, Baopingkou Diversion Passage) and ancillary works (Baizhang Dike and V-Shaped Dike). Along with technological development and expansion of irrigated area, maintenance and reinforcement works became necessary and largely started at the Weir Works (the head project of the Irrigation System) in 1936 by using concrete mortar and cobblestones, and continued on up to date, adding part of water conservancy facilities. However, the ancient thoughts and strategies of water control remain and endure, including initial engineering layout, "deepening the riverbed so as to build low dikes," "construction in the light of general conditions and circumstances," "cutting off the sharp angle at the bend, and harnessing on the straight watercourse." By 1998, the agricultural coverage irrigated by the Dujiangyan Irrigation System extended to 668,700 hectares while the system keeps on supplying industrial and living water for 50 large and medium cities as well as for manufacturing and mining industries. The Dujiangyan Irrigation System has become the world's best example in comprehensively utilizing natural water resources.

Within the Reservation, the forest coverage rate is 95%, and that of vegetation is 98% with a wonderful collection of diversified natural landscapes. There are many ancient trees, including one 50 meters tall and 2.3 meters at periphery. Its trunk stem is 20m at the height of 4 meters. At the height of 1~5 meters of the trunk, the stalactite grows excessively and drops down like waterfalls in different sizes and shapes. The Tianshi Celestial Cave where Master Zhang lived as well as Shangqing Palace, Zushi Temple, Jianfu Palace, Yuanming Palace, and Yuqing Palace are nation-

wide-known Taoist temples, and remain intact under prudent conservation. These Taoist structures are built with bark roofs and settled in an architectural environment of stylized log bridges, kiosks, pavilions, corridors and terraces. Well-conserved Taoist relics on Mt. Qingcheng also include the stone portrait carving of Master Zhang in the Sui Dynasty (581-618), calligraphy tablet by Emperor Kaiyuan (713-742), three statues of Tang emperors, and Taoist scriptures.

4. Criteria for Inscription of the Property

1) Originality of Dujiangyan Irrigation System in the World History of Water Conservancy and Mt. Qingcheng in Chinese Taoism

Built in about 256 B. C., the Dujiangyan Irrigation System has experienced a history of over 2,250 years. Over 2,000 years ago, Li Bing, local Shu-Kingdom magistrate of the Qin Dynasty (221-206 B. C.) drew lessons from previous efforts in water control, and followed geographical conditions of the Chengdu plains and the natural course. He made full use of the special land configuration at the mountain outlet of the Minjiang River to select the construction site, fully making use of the drop height and following the natural course. Although less-advanced was means and construction technology, he was able to adopt the principle of cold expansion and hot shrinking. Construction started by cutting the Lidui Platform, parting Mt. Yulei and diverted the water by way of the Pijiang River and Jianjiang River (the current Zouma River and Baitiao River), turning natural disasters to fortunes to local people, automatically irrigating the Chengdu plains. Due to this irrigation system, the Land of Abundance came into being and became known throughout the world, making the Chengdu plains one of the nation's leading granaries. Through a development of over 2,000 years, the Dujiangyan Irrigation System has become a comprehensive and effective large-scale engineering of water conservancy, performing its present functions such as flood prevention, irrigation, water transport, hydraulic power generation, aquaculture, tourism, urban industrialization and living water consumption. It has become a finest exemplification in the history of Chinese and even world water conservancy. Mt. Qingcheng is a sacred locality of Chinese Taoism that evolves in the light of the Chinese culture and tradition. It has developed into a national religion of outstanding cultural significance and unprecedented originality.

2) Dujiangyan Irrigation System Is Crystallization of Human Civilization, Uniquely Seen in the History of World Science and Technology

Organizer of the Dujiangyan Irrigation System, local magistrate Li Bing rightly outlined the relations among main works of the Yuzui Bypass Dike, Feishayan Floodgate, Baopingkou Diversion Passage. These works are an integral whole by itself, mutually independent and complementary. The rational layout and systematic engineering jointly function in water and silt branching, flood discharging, scouring, diversion and harnessing. As a result, it is able to supply sufficient water even at the low water period, and drowning is prevented at the flood period. To be exact, by means of diverting the Minjiang River through the Yuzui Bypass Dike, water at the low water period will automatically divert 60% of the Minjiang River water into the Inner Canal, 40% of that into the Outer Canal. At the flood period, it will automatically divert 60% of the water into the Outer Canal, and 40% into the Inner Canal. The Irrigation System was built at the bend of the Minjiang River course, and the surface water of less silt flows to the concave bank, while bottom water of concentrated silt flows to the convex bank, rushing off silt and cobbles out to the Outer Canal. To discharge the remaining silt and stones, technical considerations employed include water control at the Baopingkou Diversion Passage, upward pushing at the Lidui Platform, flood branching-off and scouring at the Feishayan Floodgate and V-Shaped Dike, concave-convex landforms and water flow at the bends. In this way, water in the Inner Canal automatically separates so that the surface water flows toward the concave bank while the base water flows

toward the convex bank. Silt and cobbles rushed by flood will largely run from the Feishayan Floodgate and V-Shaped Dike to the Outer Canal by force of the base water flow. Three water forces are jointly employed to clean the remaining silt and cobbles: supporting force of the Hutou Cliff at the river center and propping force of the Lidui Platform as well as the binding force of the Baopingkou Diversion Passage. Then, silt and cobbles will circle round onto the Feishayan Floodgate and V-Shaped Dike and eventually discharge to the outer canal. This prevents silting at the Baopingkou Diversion Passage which then controls the inflow of diversion, on one hand ensuring sufficient agricultural irrigation and on the other hand preventing water disasters on the irrigated area of the inner canal. The Dujiangyan Irrigation System automatically regulates the amount of water to be flown into the irrigated area, making the Chengdu plains safe from flood and a granary of Sichuan. The Irrigation System is a success of using fluid force at the natural river bend, as well as a best example of automatic diverting, flood discharging and scouring. For designing the Weir Works, Li Bing set up stone objects in the river as a scouring mark, and he also set up the "Sanrenshi (a stone marker)" to observe the water regimen - a landmark of surveying the water regimen in ancient Chinese history. Since completion of the Dujiangyan Irrigation System, great importance was attached to the remarkable performances of the Dujiangyan Irrigation System throughout Chinese history. The imperial government established complete administration organs, set up regulations for annual maintenance and flood prevention. They accumulated and summarized the previous water-control experiences expressed in various documentary matters and forms, making this ancient Weir Works develop on a sustained basis. In 1872, Richthofen (1833-1905), a German geographer, highly commended that the irrigation methodology employed for the Dujiangyan Irrigation System was so perfect that there was no rival in the world. In 1986, the Dujiangyan Irrigation System saw visits of Mr. Frangim, secretary general of the International Irrigation & Drainage Association as well as scholars of the International River Silt Society. They highly regarded the functions of Dujiangyan scientific irrigation and scouring. At visit to the Dujiangyan Irrigation System in March 1999, officials with the UN Human Habitat Center, enthusiastically invited the Dujiangyan Irrigation System for inscription of the UN "Best Utilization and Disposal of Water Resource Award."

3) Mt. Qingcheng and the Dujiangyan Irrigation System Are Epoch-Making Masterpieces of Chinese National Culture, Exerting Great Influence to Later Generations

Since the founding of the Chinese Taoism on Mt. Qingcheng, Taoist sects and schools have been multiplying, gradually expanding its influence throughout China. Taoist masters from other Chinese religious mountains frequently pay their pilgrimage to Mt. Qingcheng since, In the Jin Dynasty (265-420), Mt. Qingcheng became the Taoist center in southwest China. Known as the No. 1 Taoist master fully engaged in establishing the Taoist religion, Du Guangting, the Qingcheng Taoist master, devoted himself in annotation and dissemination of Lao Tzu doctrines, and conducted systematic studies of Taoist doctrines and scriptures. For this reason, Mt. Qingcheng exerts an immeasurable influence over Chinese Taoism.

The Dujiangyan Irrigation System is an outstanding creation symptomatic of Chinese wisdom. Its sustained performance is an embodiment of scientific management and well-organized maintenance. By learning from previous experiences in water control, Li Bing drew on local building materials and adopted unique engineering technologies such as "bamboo cage", "sinking raft", "dry-laid cobbles" and "sheepfold." Flood prevention and maintenance on an annual basis saved the overall costs of labor and financial sources. Even at present, this original and successful technology has been extensively used in flood prevention and emergency works in the Yellow River Basin and Pearl River Basin. Since the Han Dynasty (206 B. C. - A. D. 220), the Dujiangyan Irrigation System has played an irreplaceable role in controlling accidental floods. Its scientific principles are still considered an advanced technology extensively used in efforts against flood prevention and emergence. The Dujiangyan Irrigation System is an epoch-making masterpiece of the Chinese technology in water conservancy.

4) Mt. Qingcheng Is the Birthplace of Chinese Taoism, the Ancestral Mountain and Court Hall of the Tianshi Tao

In A. D. 143 (2nd year of Han'an), Zhang Ling, founder of Taoism, came to the Chicheng Cliff Abode on Mt. Qingcheng. Based on the "learning of Emperor Huang and Lao Tzu" of the Pre-Qin era, he created the "Wudoumi Sect" or what is currently termed the "Tianshi Tao (a leading Taoist school)." Zhang Ling "ascended to heaven" from the mountain, thus Mt. Qingcheng is believed to be the birthplace of Taoism as well as the ancestral mountain and court hall of the Tianshi Tao. Between Han and Jin Dynasties, Taoism experienced a period of fastest growth. Fan Changsheng moved on Mt. Qingcheng and assisted Li Xiong to establish the Chenghan regime, a time of unprecedented prosperity in Sichuan. Subsequently, the Tianshi Tao served as a spiritual prop for both the Chenghan government and popular religion. During A. D. 618-907, the Tang Dynasty started nationwide campaign to worship Taoism, and then Taoism saw another round of its prosperity and so did Mt. Qingcheng in particular. The emperor Xizong of Tang Dynasty (618-907) granted Mt. Qingcheng as "Xiyigong" (honorary title for sacred religious place), and ordered to build the Divine Taoist Temple on Mt. Qingcheng with 2,400 sacrificial altars installed. This is the prime time of Chinese Taoism when 40 Taoist temples on Mt. Qingcheng were built and evolved into seven Taoist sects. In the late 9th century, the Taoist master Du Guangting conducted systematic studies on and unified Taoist sects and thoughts. During his stay on Mt. Qingcheng for about 30 years, he completed 30 books of 250 volumes of Taoist works. He is believed to be an epitomizing scholar of Taoist thoughts, and his influence goes all over Chinese religious places and as far as to Southeast Asian countries. In the Five Dynasties, the Taoist music was introduced to the imperial court. The Taoist music "Floating Water" composed by Taoist priest Zhang Kongshan was recorded in the United States in 1977 and sent to space via the spaceship Voyager II, looking for its audience in the cosmos. At present, Mt. Qingcheng is a leading location of Chinese Taoist culture. In 1995, the Chinese Taoist Association held the Second Grand Religious Ceremony of the Chinese Chuan Chen Tao on Mt. Qingcheng. Headmasters of all the Chinese Taoist mountains came to chair the ceremony, and Master Fu Yuantian (headmaster of Mt. Qingcheng and chairman of the Chinese Taoist Association) was elected the "23rd Paramount Master of Chuan Chen Tao."

Ancient Taoist architectures on Mt. Qingcheng are still well conserved. They are exceptional national treasures.

5) The Property Is the Best Conserved Area of Biological Diversity in the World's Subtropical Mountainous Regions

The Property is located in the north section of the Hengduan mountain system and within the alpine valley of West Sichuan, a key region of rich biological diversity in the world. Over on complicated geological structures, it sits on the transition zone of the Sichuan basin to the Qinghai-Tibet plateau. Its rising and falling mountain ranges are featured by deep valleys, moderate and humid temperature, long geological history, and abundant biological diversity. It is the best-conserved area of mountain animal and plant resources among the world's subtropical regions.

5-1) Rich Species Resources

Within the Property, 3,012 species of higher plants (278 families, 1,365 genera) are recorded, including 397 species of mosses (67 families, 182 genera), 203 species of ferns (38 families, 73 genera), 87 species of gymnosperms (10 families, 31 genera), and 2,325 species of angiosperms (163 families, 1,079 genera). The region also has as many as 11,000 species of animals. Of 586 species of vertebrates are 99 mammal species, 22 reptile species, 23 amphibian species, and 75 fish species. 51,426 insect specimens have been collected, among which collected 51,426 species

with 1,187 species (21 orders, 136 families) have been identified. It is estimated that the region will have over 10,000 insect species, a number more than on Mt. Emei and other heritage properties in proximity. In 1994, the Property was listed by the Academia Sinica as one of the five national bases for "biological diversity studies."

5-2) Complexity of Flora

The Property is located on the horizontal zone of the Central Asia subtropical system. The plant zonation is characteristic of subtropical evergreen broadleaf forests. But in regard to flora, the Property is located at the transition zone of China-Himalayan Sub-Kingdom/East Asia-Japan Sub-Kingdom. Its fauna is found at a transition zone from the oriental zoo-geographic region to the palearctic region. Because of its complicated biological components, the Property represents diversified fauna and flora features.

5-3) Rich Ancient Relic Species

The Property is rich in ancient relic species. Gymnosperms include *Ginkgo biloba* known as the "living fossil," as well as ancient trees of hundreds of years old. Angiosperms include primitive species such as *Magnolia*, *Michelia*, *Manglietia* of the Magnoliaceae; *Phoebe*, *Machilus*, *Nothaphoebe* of the Lauraceae; *Cercidiphyllum japonicum* of the Cercidiphyllaceae; *Tetracentron sinense* of the Tetracentraceae; *Eptelea pleiospermum* of the Trochodendraceae; *Nyssa* and the "living fossil" *Davidia involucrata*; *Sabia* and *Melioma*. Many of them are mono- or rare species. The fauna in this region is represented by giant panda (*Ailuropodamelanoleuca*), and this is one of the habitats of giant panda. About 67 individuals of giant panda were recorded in 1987, but only 50-70 recorded at present. In addition, this is also a habitat of *Garralax c. canorus* and *Phasianidae*.

Some of the species originated from remote time and are distributed in narrow regions. But in this area, they become endemic to the region, including *Arachnoides caudata*, *Heteropogon cantortusvar*, *Acer guanense*, *Bashania gingchengshanensis*, *Machilus sichuangensis*, *Rhododendron guanxianense*, *Elatostematenuicornutum*, *Clematis qingchengshanica*, *Chrysosplenium glossophyllum*, *Impatiens rectirostenata*, *Rhododendron hunnewellianum*, *Pseudosasa guanxianensis*, *Malaxis sichuanicansis*. There are many endangered species under protection at various government levels, including 1 plant species under the state first-class protection, 8 species under the state second-class protection, 19 species under the state third-class protection, 12 animal species under the state first-class protection and 55 species under the state second-class protection.

5-4) Apparent and Complete Plant Zonation, representative of the North Section of the Hengduan Mountain Range

In the Property, elevations vary from Mt. Guangguang of 4,582 meters high, to Sichuan Basin of 700 meters and the complete vertical zonation of vegetation is similar to that in the Qinghai-Tibet Plateau:

700-1500m	mountain evergreen, deciduous and broadleaf mixed forest
1500-2000m	mountain broadleaf and coniferous mixed forest
2000-2400m	subalpine coniferous forest
3400-3800m	subalpine shrubland
3800-4000m	alpine meadow
4000-4582m	alpine flowstone slope sparse belt

As the Property is located in the "West-China Rain Screen Zone," the rain screen is the reason for a cool, rainy,

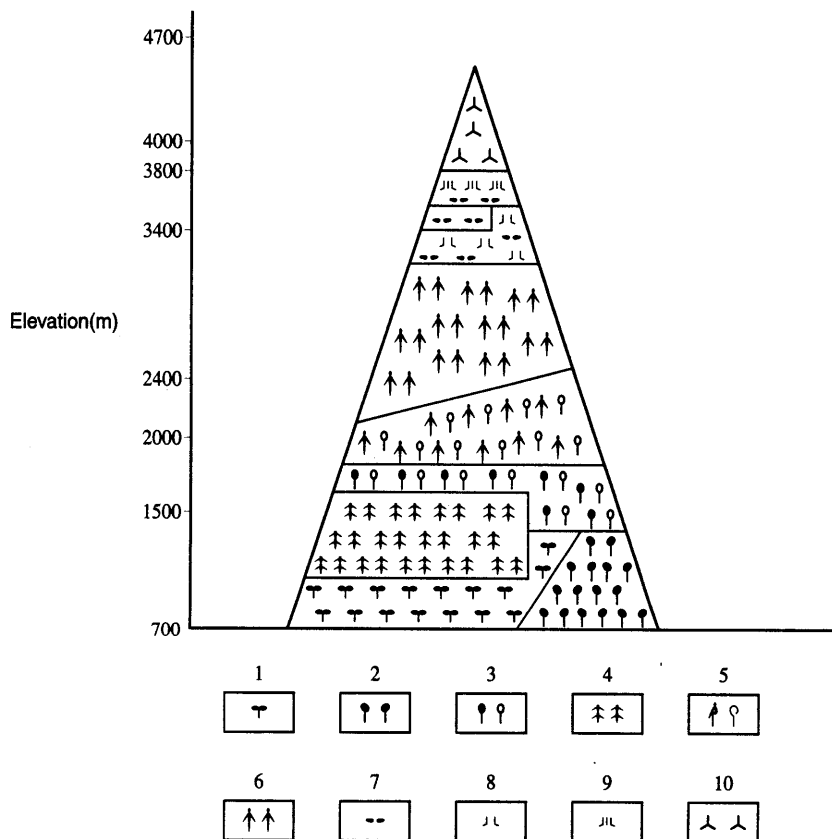
humid and cloudy climate. The zonal vegetation is mostly characteristic of evergreen broadleaf forest which consists of humidity-favored and low-sunlight-favored flora represented by Phoebe and Machilus. Domestic and foreign experts unanimously believe that the density of local mosses is matchless in the world.

In addition, there are seven zones of the vertical spectrum, each consisting of a number of eco-systems and some with at least 16 forest types.

5-5) Abundant Azalea Species

The Property has the richest collection of azalea species in China. They are mostly distributed in the subalpine shrublands and coniferous forests. The Institute of Botany of the Academia Sinica established the West China Sub-alpine Botanic Garden, introducing many alien species. Currently there grow over 250 ornamental azalea flowers within the Property.

The Property is rich and unique in its biological diversity, a rare case in the subtropical regions of China.



Vertical Vegetation Distribution in Longxi Nature Reserve

Illustrations -

1. cultivated vegetation
2. evergreen broadleaf forest

3. evergreen, deciduous, broadleaf mixed forest
4. Cryptomeria and fir forest
5. coniferous, deciduous, broadleaf mixed forest
6. subalpine hemlock and fir forest
7. subalpine evergreen shrubland
8. subalpine arrow bamboo shrubland
9. subalpine meadow
10. subalpine flowstone sparse vegetation

5-6) The Property is the "Natural Corridor" for Survival of Giant Panda

Local giant panda lives in two mountain systems (east and west) with a current population of 50 to 70. In proximity of the Property, the east system covers the southwest foot of Mt. Chaping of the Minshang Mountain Range; the west serves as a connecting passage, covering areas like Pengzhou, Shifang, Mianzhu, the south foot of Mt. Chaping, the east foot of Mt. Minshan, Pingwu, and Qingchuan. The west system includes the east foot of Mt. Balang and the Wolong Nature Reserve. These east and west habitats of giant pandas are also linked by Chongzhou, Dayi, Luxian, Jiajinshan, Baoxing and Tianquan, making up the Qionglai Mountain Range for reproduction of giant panda population.

The appropriate manner that giant pandas are distributed in these two mountain systems serves as an effective basis for multiplying their population, and makes it easy to spread their gene exchanges. Between these two mountain systems, it is beneficial to enhance genetic diversity and heterozygosity, and results in a stable population composition of giant pandas. In this sense, the Property is a "natural corridor" for survival and multiplying of giant panda.

- The cultural heritages of the Property accord with the World Heritage Convention (Cultural Criteria ii, iii, iv), its natural heritages of the Property accord with the World Heritage Convention (Natural Criteria i, iii, v, vi).

Part Three DESCRIPTION

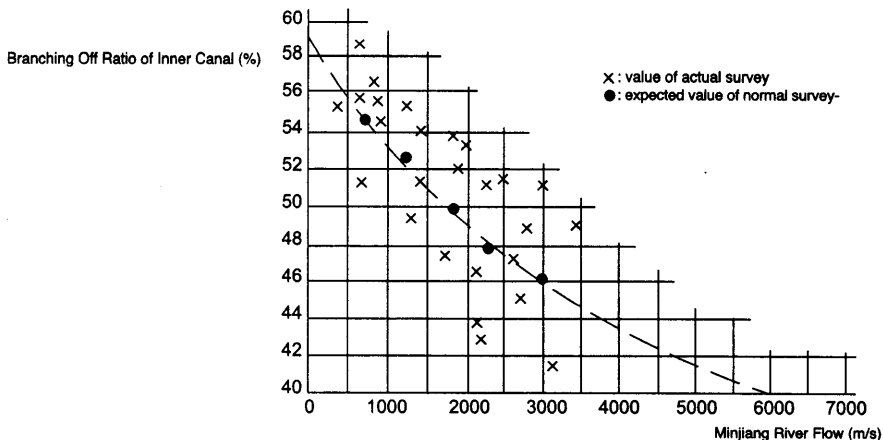
1. Description of Property

1) Dujiangyan Irrigation System

The Dujiangyan Irrigation System is composed of two parts: the Weir Works and the irrigated Area. One kilometer from Dujiangyan City, Sichuan Province, the Weir Works is the center of the irrigation system, with a protected area of 231.5 hectares. Reasons for sustained performance of this water project are optimal siting of the Weir Works, and harmonious coordination of construction with land configuration. Local circumstances and conditions are interdependent and complementary in a rational layout, achieving a scientific integrity. The Weir Works engineering was sited at the top end of the Chengdu plains at an elevation 726 meters, a demanding point of all the irrigated area. It takes in incoming water sources from the upper valley of the Minjiang River. The Weir Works engineering is composed of the three main works (namely, Yuzui Bypass Dike, Baopingkou Diversion Passage) and ancillary works (namely, the Baizhang Dike and V-Shaped Dike). The Weir Works is a comprehensive engineering of eco-system combining functions of bypassing, diverting, draining and scouring.

Three Main Works –

Yuzui Bypass Dike It is located at the river center of the Minjiang outlet pass of the mountain. Waters from the upper valley are diverted into the Inner and Out Canals. The Outer canal is the main course of the Minjiang River while the Inner Canal flows to the Chengdu plains through the Baopingkou Diversion Passage. Yuzui Bypass Dike, the top end of the diversion dike, is 1,070 meters from the Baopingkou Passage, 880 meters from the embankment of the outer canal, and 710 meters from the embankment of the Inner Canal. Yuzui Bypass Dike is 5~8 meters higher than the riverbed, 30 meters wide at the top end and 140 meters wide at the lower end, serving the effective function of silt bypassing. It fully makes use of the circulation at the bend (radius of curvature is 850 meters), sending the surface water of less silt concentration onto the Inner Canal, and the base water of concentrated silt onto the Outer Canal.

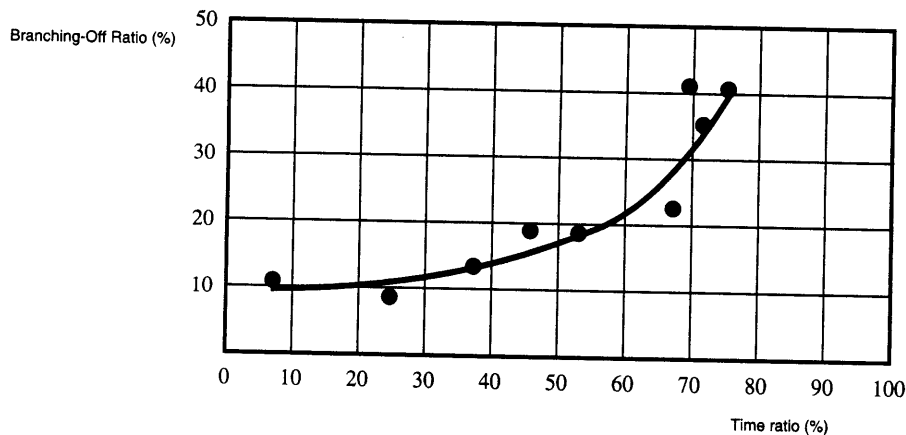


Ratio of Minjiang River Flow and Inner Canal Flow

Feishayan Floodgate It sits between the lower end of the Yuzui Bypass Dike and the V-Shaped Dike. Its top end is 710 meters away from Yuzui Bypass Dike, and its lower end is 120 meters away from the Baopingkou Diversion Passage. The Floodgate is 240 meters long and 2 meters high. The chief function is to send the overflowing flood as well as silt and cobbles from the Inner Canal to the Outer Canal. The stronger the water flows in the Inner Canal, the better the performance the Feishayan Floodgate. At the time of catastrophic flood, water flow at the Feishayan Floodgate is three times that of the Baopingkou Diversion Passage. When water flow of the Inner Canal is lower than 320m³/second, the Feishayan stops its draining function and guides water into the Weir Works, thus ensuring water supply to the Chengdu plains.

**Average Discharging Capacity of
Feishayan Floodgate (& V-Shaped Dike) during Past Years**

Minjiang Flow M ³ /s	Incoming Flow of Inner Canal M ³ /s	Water Flow at Baopingkou M ³ /s	Branching-off flow at Feishayan M ³ /s	% of Feishayan & Inner Canal In-Flow M ³ /s
1000	550	420	130	23.6
2000	1020	520	500	49.0
4000	1800	640	1160	64.4
5000	2300	660	1640	71.3
6000	2460	680	1780	72.4
7000	2800	700	2100	75.0



Branching-off and Scouring Relation at Feishayan Floodgate

Baopingkou Diversion Passage It sits between the Lidui Platform south of Dujiangyan City and the opposite cliff, a huge opening hewn out at initial engineering of the Dujiangyan Irrigation System. It is a vital and strategic passage, through which water of the Inner Canal flows onto the Chengdu plains. As its upstream and downstream riverbeds are broader, it shapes like a bottleneck, hence named "Baopingkou" (the treasure-bottle neck). It is 14.3 meters wide at the bottom, 28.9 meters wide on the surface, 18.8 meters high, and 36 meters long. The Passage is able to automatically control the water flow to the irrigated area of the Chengdu plains. According to previous statistics, the water diverted at the passage is 254.6m³/second on an average and annual basis, that of the flood peak is 535.6m³/second. Its function ensures yields of the Chengdu plains despite of drought or waterlogging.

Main Ancillary Works –

Baizhang Dike It sits at the left of the Inner Canal and the upstream of Yuzhui. It was first built with bamboo cages filled with cobbles and dry-laid structures. The dike was damaged by flood in 1964 and rebuilt with concrete of mortar cobbles. With a length of 850 meters, the dike is 7.4-6.0 meters high, 2.4-3.4 meters deep of the base, and 0.8 meter thick. Its chief function is to straighten the watercourse and protects the left embankment.

Erwang Temple Watercourse Straightening Dike It sits at the left bank of the Inner Canal with a length of 400 meters and a curvature radius of 400 meters. In 1954, bamboo cages with cobbles were placed to straighten the watercourse, but rushed off by flood in 1964. The dike was then rebuilt with concrete of mortar cobbles. The dike is 2.4-3.4 meters deep at the base, 1.1 meter wide, 9.1 meters high, 4.6-3.2 meters wide on the top, and with a longitudinal slope of 6.7%. The elevation of the dike is 735.56 meters. Its chief function is to straighten the watercourse of the incoming flow of the Inner Canal, and reduce the damage to the Feishayan embankment.

V-Shaped Dike It sits at the lower end of the Feishayan Floodgate and the left of Lidui Platform. Built with bamboo cages filled with cobbles in 1933, it was rebuilt with dry-nail cobble dike in 1956, and rebuilt with concrete of mortar cobbles in 1963. The dike top is 64 meters wide and the bottom is 43 meters wide. In 1986, the dike breadth was extended to 65 meters. Its chief function is to assist the flood discharging.

Still intact there is the ancient flood bulletin carved on the left rock wall of Baopingkou Diversion Passage and the iron bar markers buried in the Fengxiwo riverbed.

Well-conserved are also the Erwang Temple and the Fuhu Temple in commemoration of Li Bing and those of meritorious services.

2) Mt. Qingcheng

Fifteen kilometers from the south of Dujiangyan City, Mt. Qingcheng sits against the Minjiang River at the back, overlooking the Chengdu plains. Standing among overlapping hills, Mt. Qingcheng is historically noted as a tourist attraction of worldwide renown for its charming natural landscapes. Its reservation covers an area of 1,522 hectares, including 36 peaks, 8 primary Taoist caves and 72 lesser ones, as well as 108 scenic spots. The highest peak has an elevation of 2,434 meters, and the lowest 726 meters, with an annual average temperature of 15.2°C. Mt. Qingcheng has 11 Taoist temples featuring special architecture of Taoist culture and West-Sichuan local domicile.

Since the Tang and Song Dynasties, Mt. Qingcheng has been well-known throughout China for its "Secluded Elegance." Scorching summer and breezing winter never happen on the mountain, only with an overwhelming secluded elegance all the year around. The same secluded elegance sheds on rushing streams with cobbles clearly visible at the bottom, and on small waterfalls that look like dazzling pearls from a distance. Furthermore, the same secluded elegance is under dense clouds waving their ways across hillsides and tall trees. And gloomy sights of Taoist temples as well as the natural integrity can be other forms of secluded elegance and tranquility. In addition, its "Golden Whip Cliff" represents majesty, the "Demon-Subjugating Stone" exemplifies peculiarity, and the "Pen Canyon" reveals a strong sense of "precipitousness." Its lush woods and shrubs seem impenetrable and in position to compete with Mt. Emei for beauty.

3) Longxi Nature Reserve

1,500 meters away from west of Dujiangyan City and with a protected area of 16,138 hectares, this nature reserve conserves vast spans of primitive forests with distinctive vertical distributional pattern from low to high elevations.

Mt. Qingcheng & Longxi Nature Reserve is habitat of the national treasure: giant panda.

4) Scenic Spots in the Kernel Reservation

No.	Name	Site	Descriptions
1	Lidui Locks	South of city	One of the 10 ancient spots of Guanyang, formed when the Gorgehewing Lidui Platform. Baopingkou seems locking water flow. From a distance, one feels the Lidui water conjoins the horizon.
2	Sunset at	Dujiangyan Weir Works at the center of Minjiang River	"Golden dike" originates from the Poem of Chengdu by Zuo Si of the Northern & Southern Dynasties. His sunset is that the sun captures everything, shining to gilt and redden the whole mountain. A marvelous scene.
3	Rainbow of the Bamboo Cable Bridge	On the ancient Weir Works	Ancient name is "Zhupu Bridge", and "Bamboo Bridge" in Tang Dynasty (618-907). It spans both the inner and outer canals, a length of 260m. Set up against mountains and river water, it looks like "fishermen drying their nets", and "dyeing men drying clothes."
4	Majestic Ancient Trail	West of City	It's a mountain trail opened up for the Dujiangyan Irrigation System organized by Li Bing. It serves as a passage to connect Tibetants – Qiang people. The Yulei Pass of the Hutou Cliff at west Dujiangyan City was built in Tang Dynasty (618-907).
5	Snow on Mt. Minshan	Mt. Minshan	Mt. Minshan lies at the back of Dujiangyan. In a clear early morning, one sees the snow-clad Mt. Minshan from the town, one of remarkable ancient scenes.
6	Yulei Divine Castle	Erwang Temple, west of city	Originally the "Wangdi Temple" built by ancient local people in honor of Du Yu. Between A. D. 494-498, Liu Ji (Yizhou prefecture governor) moved the temple to Pixian county and renamed "Congde Temple" in honor of Li Bing. In Song Dynasty (960-1279), the temple size was expanded to a floor space of 6,050m ² , sitting on the mountain and overlooks the river. The whole architecture of wood makes a distinction of the important from the lesser, with circling steps and walls. Hence called the Yulei Divine Castle
7	Dragon Subjugated in the Chill	At back of Lidui Platform, south of City	One of the ancient scenes of Guanyang, where (historically claimed) Li Bing captured and subjugated the evil dragon. Pushed and supported by Lidui Platform, water circles around here, stirring up white waves. An ancient calligraphy goes "Flowery Isle Hall."
8	Jade Goddess	West of City	Hill after hill on the north bank, resembling a sleeping young lady. One of the noted scenic spots.
9	Wave Fun on Ancient Bridge	South of City	There used to be two bridges named "Lingxu" and "Buyun". The Puji Bridge was built in the late Qing Dynasty (1616-1911). As it is at the city south, hence named "South Bridge". The current one was rebuilt in 1979 of a magnificent structure. On the bridge, one sees the "Lidui Locks Gorge" and waves of the Inner Canal.
10	Cranes of Qingcheng	Mt. Qingcheng	Egrets inhabited on Mt. Qingcheng, The "Egret Villa" and "Egret Comfort Kiosk". Egrets are one of the notable mountain views.
11	Green ripples of Yuecheng Lake	Between Mt. Zhangren and Qinglong Hill	240,000m ² , with green peaks erecting surrounded and quiet water waving a welcome note. Boating on the lake is an enjoyment of great obsession.

12	Nature's Painting	Paifang Hill of Mt. Longju	"Nature's Painting" built in the Jiaqing reign of Qing Dynasty (1616-1911), at the mountain outlet pass, a preeminent scene halfway up Mt. Qingcheng. As mountains nearby accumulate clouds and green, visitors feel like in a painting
13	Golden Wall of Tiancang	Back of Mt. Qingcheng	Precipitous cliffs of Mt. Tiancang are reddish brown, stretching miles afar and resembling a city wall. Peaks gather together clouds locally called "Eight Trigram Platform", "Immortals' Cliff", "Zengzi Cliff." 13 peaks of Mt. Tiancang have peculiar cliff shapes and caves. In one cave, two stone-like pillars stand erect and one lies flat, shining with dazzling golden light.
14	Flying Waterfalls of Mt. Qingcheng	Mt. Qingcheng	After summer and autumn rain, Mt. Qingcheng is freshly bathed and new all over. Magnificent waterfalls are roaring down from the Moon Bay Cliff at the side of Jixian Bridge and Ningcui Bridge.
15	Three Isles and Bizarre Cliff	Tianshi Celestial Cave	A giant cliff erects on the bank of Haitang Stream on the left of Tianshi Celestial Cave. It is carved with two words saying "Subjugating Demons." Steps lead to the cliff foot and back. A peculiar and enjoyable sight.
16	Heart Washing	Tianshi Celestial Cave of Mt. Qingcheng	The Tinghan Kiosk sits on the bank of Haitang Stream and at the side of Moon Bay. Spring water dropping down into the small pool, thus call "heart washing."
17	Dragon-Teeth Heavenly Staircase	Longya Peak of Mt. Qingcheng	Perilous steps are constructed on fault of Longya Peak. Visitors have to lower the head when walking through this dangerous trail.
18	Centuries-old Gingko	Tianshi Celestial Cave of Mt. Qingcheng	Planted by Zhang Ling of Han Dynasty (206 BC-AD220), 1,800 years old, 50m high, 2.3m of periphery. Wood stalactite drop down at the height of 1-5m of the trunk, a rare sight. The circumference at the height of 4m is 20m. Historically commended "A delicate tree as high as white clouds above green peaks and egrets." An important landscape on Mt. Qingcheng
19	Shadow of Immortals Qingcheng	Tianshi Celestial Cave of Mt.	The cave is said to be a place where Master Zhang Ling preached his doctrine. There is a stone portrait of him, carved in Sui Dynasty (581-618). Looking from the cave, one sees 36 peaks overlaying each other in dark green. Floating clouds are as close as one could touch them.
20	Pen Canyon	Back of Tianshi Cave of Mt. Qingcheng	Sheer cliff at back of Tianshi Cave, two mountains seem to crash apart so to make up a canyon, 70m deep and 18m long. The pathway along the cliff is extremely perilous.
21	Bridge of Immortals' Gathering	Front of Tianshi Cave of Mt. Qingcheng	"5-Cave Heavenly Gate" in front of Tianshi Cave, originally "Immortals Reception Bridge," and renamed the "Bridge of Immortals' Gathering. In the background of towering peaks, green trees and woods, and quietly running streams, one feels particularly comfortable and in good mood when taking a rest on bridge.
22	Chaoyang Ancient Temple	Mt. Qingcheng	On steep cliff are a large cave and a small one. The large can hold a hundred people and the small a dozen. It is legended that Master Ning Feng lived here.
23	Traces of Emperor Xuan Yuan	Qianyuan Hill, Mt. Qingcheng	The flatland overlooks the Weijiang River and overlapping peaks. It is said to be a place where Emperor Xuan Yuan worshipped Master Ning Feng as the Wuyue Zhangren (Master of Five Taoist Sacred Mountains).
24	Thatched Pavilion of Risky Path	Mt. Qingcheng	In front of Chaoyang Cave, the path has many bends and steep cliff at the side. A good sight in the pavilion to view the Zhuangguan Terrace, one seems wrapped in white clouds and green vegetation.

25	Stone Carving on High Stand	Shangqing Palace of Mt. Qingcheng	The three carvings go "Natural Wonder," "No. 5 Mountain under the Sun," and "No. 1 Peak of Qingcheng." The carvings are well conserved.
26	Magu Alchemy Pool	Shangqing Palace of Mt. Qingcheng	It is legended to be the pool where Magu the nun made pills of immortality, a kind of alchemy product.
27	Twin Wells	Shangqing Palace of Mt. Qingcheng	Although the wells are close together, one is circular and one square in shape, one transparent and one murky of water, one deep and one shallow. There are calligraphy inscription by Zhang Daqian, and a poem carving by Gao Pu.
28	Distant View of Snow Mountain	Shangqing Palace of Mt. Qingcheng	In clear day from Shangqing Palace, a distance view is clear of snow mountain, a great enjoyment and relaxation.
29	Sunrise of Qingcheng	Sun-Viewing Pavilion of Shangqing	In clear morning, there appears a magnificent view of sunrise from the pavilion in front of Shangqing Palace.
30	Cloud Sea of Qingcheng	Mt. Qingcheng	In drizzling rain, clouds move across mountains, so does the visitor feeling like a flying god. When the day is clear after summer rain, the forest is covered with dark green with cotton-like clouds whirling above.
31	Zhao Gong Wood	Jiping Flatland, Mt. Damian, Mt. Qingcheng	Symbiotic tree of 3-12 plant species, over 10m high, 1,000 years old, with twisted roots and gnarled branches. Each species competes with the other for growth and beauty, a biological wonder and rarity.
32	Dish-Like Tree	Elev. 2,350m on Damian Hill, Mt. Qingcheng	6m high, 48 huge branches radiating in all directions at the trunk height of 0.6m. The crown has a diameter of 10m. Beautiful bellflower are in blossom in April and May.
33	Tang Fir	Front Shanghuang Temple of Mt. Qingcheng	Planted by a princess of Tang Dynasty (618-907), over 30m high and circumference of 1.55m. Two huge main branches separate at the trunk height of 20m. A spectacular view.

5) The First Batch of Plants in the Reservation Listed under State Protection

No.	Name of Plant	Property	Life form (Elevation, M)	Vertical Distrib. Protection	Value/State
1	<i>Cephalotaxus oliveri</i>	Arbor	Evergreen	700-1400	Endangered, Class II
2	<i>Picea brachytyla</i>	Arbor		2400-2800	Rare, Class III
3	<i>Amentotaxus argotaenia</i>	Arbor	Evergreen	700-1400	Endangered, Class III
4	<i>Gingko biloba</i>	Arbor	Deciduous	700-1600	Rare, Class II
5	<i>Acer catalpifolium</i>	Arbor	Deciduous	700-1600	Endangered, Class III
6	<i>Dyosma versipellis</i>	Grass	700-1400	Endangered,	Class III
7	<i>Cercidiphyllum japonicum</i>	Arbor	Deciduous	1600-2500	Rare, Class II
8	<i>Eucommia ulmoides</i>	Arbor	Deciduous	700-1400	Rare, Class III
9	<i>Cinnamomum mairei</i>	Arbor	Evergreen	700-1400	Endangered, Class III
10	<i>Phoebe zhennan</i>	Arbor	Evergreen	700-1400	Endangered, Class III
11	<i>Glycine soja</i>	Grass		760-1000	Endangered, Class III

12	<i>Ormosia bosiei</i>	Arbor	Evergreen	700-1200	Endangered, Class III
13	<i>Trillium tschonoskii</i>		Grass	1000-2000	Endangered, Class III
14	<i>Magnolia officinalis</i>	Arbor	Evergreen	1000-1600	Endangered, Class III
15	<i>Magnolia sinensis</i>	Arbor	Evergreen	1500-2500	Endangered, Class II
16	<i>Larix mastersiana</i>	Arbor	evergreen	2300-3500	Rare, Class II
17	<i>Michelia wilsonii</i>	Arbor	Evergreen	700-1600	Endangered, Class II
18	<i>Tetracentron sinensis</i>	Arbor	Deciduous	1800-2600	Rare, Class II
19	<i>Davidia involucreta</i>	Arbor	Deciduous	100-2500	Rare, Class I
20	<i>Davidia involucreta var vimoriniana</i>	Arbor	Deciduous	100-2500	Rare, Class II
21	<i>Gastrodia elata</i>	Grass		1000-2200	Endangered, Class III
22	<i>Coptis chinensis</i>	Grass		700-1400	Endangered, Class III
23	<i>Kingdonia hniiflora</i>	Grass		2800-3200	Rare, Class II
24	<i>Emmenopterys henryi</i>	Arbor	Deciduous	700-1400	Rare, Class II
25	<i>Salix magnifica</i>	Arbor	Deciduous	2500-3000	Endangered, Class III
26	<i>Tapiscia sinensis</i>	Arbor	Deciduous	700-1400	Rare, Class III
27	<i>Pterostyrax psilophylla</i>	Arbor	Deciduous	700-1400	Endangered, Class III
28	<i>Euptelea pleiospermum</i>	Arbor	Deciduous	1000-2200	Rare, Class III
29	<i>Pteroceltis tatarinowii</i>	Arbor	Deciduous	700-1400	Rare, Class III

6) Endemic Wild Plants in the Reservation

No.	Name of Plant	Property	Life form	Vertical Distrib. (Elevation, M)	Value/State Protection
30	<i>Allantodia lobulosa</i>	Grass	Evergreen	700-1400	Endemic Sichuan
31	<i>Athyrium suprapuberulum</i>	Grass	Evergreen	150-2500	Endemic Sichuan
32	<i>Athyrium wallichianum</i>	Grass	Evergreen	2500-3000	Endemic Sichuan
33	<i>Arachniodes guanxianensis</i>	Grass	Evergreen	700-2000	Local type
34	<i>Salix hetenochroma var. concolor</i>	Shrub	Deciduous	700-2000	Syntype species
35	<i>Ulmus kunmingensis var. qingchengshanensis</i>	Arbor	Deciduous	700-1400	Dujiangyan variant
36	<i>Elatostema tenuicornutum</i>	Grass	Evergreen	700-1400	Endemic Dujiangyan
37	<i>Clematis qingchengshanica</i>	Liana	Deciduous	700-1400	Endemic Dujiangyan
38	<i>Machilus sichangensis</i>	Arbor	Evergreen	700-1600	Endemic Dujiangyan
39	<i>Bergenia guanxianensis</i>	Grass		2500-2500	Local type
40	<i>Chrysosplenium glossophyllum</i>	Grass		1200-2000	Endemic Dujiangyan

41	<i>Sorbus guanxianensis</i>	Arbo	Deciduous	100-2500	Local type species
42	<i>Astragalus simpsonii</i>	Grass		100-2000	Local type species
43	<i>Astragalus guanxianense</i>	Arbor	Evergreen	700-1400	Local type species
44	<i>Impatiens rectirostellata</i>	Grass		600-1400	Endemic Dujiangyan
45	<i>Impatiens udulata</i>	Grass		700-1400	Endemic Dujiangyan & Mt. Emei
46	<i>Rhododendron guanxianense</i>	Shrub	Evergreen	1600-2600	Endemic Dujiangyan
47	<i>Primula chenii</i>	Grass		700-1400	Local type species
48	<i>Bashania qingchengshanensis</i>	Shrub	Evergreen	700-1400	Endemic Mt. Qingcheng
49	<i>Pseudesasa guanxianensis</i>	Shrub	Evergreen	700-1400	Endemic Dujiangyan
50	<i>Malaxis sichuanica</i>	Grass		700-1400	Endemic Dujiangyan
51	<i>Hemipilla crassicalcarata</i>	Grass		700-1800	Endemic Dujiangyan
52	<i>Sinobambusa intermedia</i>	Shrub	evergreen	700-1200	Type species
53	<i>Isometrum lancifolium</i>	Grass		900	Local type species
54	<i>Helwingia chinensis</i>	Grass		800-1400	Type species
55	<i>Impatiens balsamina</i>	Grass		700-1000	Endemic Dujiangyan & Mt. Emei
56	<i>Indigofera lenticellata</i>	Grass		700-1400	Type species
57	<i>Spiraea laeta var. tenuis</i>	Shrub	deciduous	700-1500	Type species
58	<i>Sibiraea angustata</i>	Grass		3000-4000	Type species
59	<i>Sorbus setchwanensis</i>	Arbor	deciduous	1200-2500	Type species
60	<i>Sorbus sargentiana</i>	Arbor	deciduous	1500-2500	Type species
61	<i>Sorbus koehne</i>	Arbor	deciduous	2600	Type species
62	<i>Coluria oligocarpa</i>	Arbor	deciduous	1200-2000	Endemic Dujiangyan & Wenchuan
63	<i>Salix phanera</i>	Arbor	deciduous	1400	Type species
64	<i>Salix pella</i>	Arbor	Deciduous	1200-1900	Type species
65	<i>Salix macroblasta</i>	Arbor	Deciduous	1200-1400	Type species
66	<i>Salix dolia</i>	Arbor	Deciduous	700-1200	Type species
67	<i>Salix atopantha</i>	Arbor	Deciduous	700-900	Type species
68	<i>Salix argyrophegga</i>	Arbor	Deciduous	800	Type species
69	<i>Populus szechuanica</i>	Arbor	deciduous	700	Type species

7) Wild Flowers in the Reservation

No.	Name of Plant	Vertical Distrib. (elevation, m)	Value
70	<i>Meconopsis chelidonifolia</i>	1600-2100	ornamental
71	<i>Rhododendrom ambiguum</i>	1500-2800	Ornamental
72	<i>Primula amethystina</i>	2800-3500	Ornamental
73	<i>Gentiana veitchioroum</i>	3000-4100	Ornamental
74	<i>Gentiana wilsonii</i>	200-1400	Ornamental
75	<i>Aesculus wilsonii</i>	1500	Ornamental
76	<i>Rhododendron aganniphum</i>	1200-2500	Ornamental
77	<i>Rhododendron argyrophillum</i>	1200-2500	Ornamental
78	<i>Rhododendron augustinii</i>	1500-2500	Ornamental
79	<i>Rhododendron calophytum</i>	1600-2500	Ornamental
80	<i>Rhododendron faberi subsp. prattii</i>	3000-4000	Ornamental
81	<i>Rhododendron guanxianense</i>	1200-2000	Endemic Dujiangyan
82	<i>Rhododendron hunnewllianum</i>	1200-2500	Endemic Dujiangyan

83	<i>Primula chenii</i>	200-1400	Ornamental
84	<i>Cymbidium ensifolium</i>	700-1600	Ornamental
85	<i>Cymbidium goeringii</i>	700-1600	Ornamental
86	<i>Gymnadenia conopsea</i>	700-1600	medical
87	<i>Gymnadenia orchidis</i>	1500-2000	Medical
88	<i>Cypripedium frianchetu</i>	1500-2000	Ornamental
89	<i>Cypripedium flavum</i>	2700-3300	Ornamental

8) Major Wildlife in the Reservation

No.	Common Name	Scientific Name	State Protect	Remarks
1	Giant panda	<i>Ailuropoda melanoleuca</i>	Class I	Rare & Endangered
2	Golden monkey	<i>Rhinopithecus roxellanae</i>	Class I	Rare & Endangered
3	Takin	<i>Budorcas taxicolor</i>	Class I	Endangered
4	Clouded leopard	<i>Neofelis nebulosa</i>	Class I	Endangered
5	Leopard	<i>Panthera pardus</i>	Class I	Endangered
6	Black stork	<i>Ciconia nigra</i>	Class I	Endangered
7	Golden eagle	<i>Aquila chrysaetos</i>	Class I	Endangered
8	Griffon vulture	<i>Gypaetus barbatus</i>	Class I	Endangered
9	Band-tailed hazel grouse	<i>Bonasa sewerzowi</i>	Class I	Endangered
10	Pheasant quail	<i>Tetraxis obscurus</i>	Class I	Endangered
11	Green-tailed monal	<i>Lophophorus lhuysii</i>	Class I	Endangered
12	Gold-band butterfly	<i>Teinopalpus aureus rar</i>	Class I	Endangered
13	Macaque	<i>Macaca mulatta</i>	Class II	Endangered
14	Tibetan macaque	<i>Macaca thibetana</i>	Class II	Endangered
15	Jackal	<i>Cuon alpinus</i>	Class II	Endangered
16	Black bear	<i>Ursus thibetanus</i>	Class II	Endangered
17	Brown bear	<i>Ursus arctos pruinosus</i>	Class II	Endangered
18	Lesser panda	<i>Ailurus fulgens</i>	Class II	Rare & Endangered
19	Yellow-neck marten	<i>Martes flavigula</i>	Class II	Endangered
20	Otter	<i>Lutra lutra</i>	Class II	Endangered
21	Spotted linsang	<i>Prionodon pardicolor</i>	Class II	Endangered
22	Zibet	<i>Viverra zibetha</i>	Class II	Endangered
23	Civet	<i>Viverricula indica</i>	Class II	Endangered
24	Golden cat	<i>Felis temmincki</i>	Class II	Endangered
25	Forest musk deer	<i>Moschus berezovskii</i>	Class II	Endangered
26	Horse musk deer	<i>Moschus moschiferus sifanicus</i>	Class II	Endangered
27	Red deer	<i>Cervus unicolor equinus</i>	Class II	Endangered
28	Goa	<i>Procapra picticaudata</i>	Class II	Endangered
29	Serow	<i>Capricornis sumatraensis</i>	Class II	Endangered
30	Goral	<i>Naemorhedus goral</i>	Class II	Endangered
31	Blue sheep	<i>Pseudois nayaur</i>	Class II	Endangered
32	White-head goose	<i>Aser atbifrons</i>	Class II	Endangered
33	Swan	<i>Cygnus columbianus</i>	Class II	Endangered
34	Mandarin duck	<i>Aix galericulata</i>	Class II	Endangered
35	Kite	<i>Milvus migrans</i>	Class II	Endangered
36	Goshawk	<i>Accipiter gentilis</i>	Class II	Endangered
37	Sparrow hawk	<i>Accipiter nisus</i>	Class II	Endangered
38	Grosbeak hawk	<i>Accipiter virgatus</i>	Class II	Endangered
39	Buteo	<i>Buteo buteo</i>	Class II	Endangered
40	Dark eagle	<i>Aquila clanga</i>	Class II	Endangered
41	Bald eagle	<i>Aegyptius monachus</i>	Class II	Endangered
42	Buzzard	<i>Gyps fulvus himalayensis</i>	Class II	Endangered

43	White-tail sparrow hawk	<i>Circus cyaneus</i>	Class II	Endangered
44	White -belly hawk	<i>Circus spilonotus</i>	Class II	Endangered
45	Goose hawk	<i>Falco subbuteo</i>	Class II	Endangered
46	Red-foot falcon	<i>Falco vespertinus</i>	Class II	Endangered
47	Red falcon	<i>Falco tinnunculus</i>	Class II	Endangered
48	Tibet snow cock	<i>Tetraogallus tibetanus</i>	Class II	Endangered
49	Crimson pheasant	<i>Ithaginis cruentus</i>	Class II	Endangered
50	Red-belly tragopan	<i>Tragopan temminckii</i>	Class II	Endangered
51	Tibet eared pheasant	<i>Crossoptilon crossoptilon</i>	Class II	Endangered
52	Pukras	<i>Pucrasia macrolopha</i>	Class II	Endangered
53	Red-belly pheasant	<i>Chrysolophus pictus</i>	Class II	Endangered
54	Grey crane	<i>Grus grus</i>	Class II	Endangered
55	Red horn	<i>Otus scops</i>	Class II	Endangered
56	Collar horn	<i>Otus bakkamoena</i>	Class II	Endangered
57		<i>Bubo bubo</i>	Class II	Endangered
58		<i>Glaucidium brodiei</i>	Class II	Endangered
59	Spotted-head owlet	<i>Glaucidium cuculoides</i>	Class II	Endangered
60		<i>Strix aluco</i>	Class II	Endangered
61	Long ear	<i>Asio otus</i>	Class II	Endangered
62	Short ear	<i>Asio flammeus</i>	Class II	Endangered
63	Giant salamander	<i>Andrias davidianus</i>	Class II	Endangered
64	Mullet	<i>Myxocyprinus asiaticus</i>	Class II	Endangered
65		<i>Carabus (coptolabrus) lafossei</i>	Class II	Endangered
66		<i>Cheirotonus gestroi pouillaud</i>	Class II	Endangered
67		<i>Stonititis thaidina dongchuanensis</i>	Class II	Endangered
68		<i>Heleyra superba takamukui mata</i>		New species
69		<i>Sasakia fanebriis oeech</i>		Special type
70		<i>Kallima chinensis swinnoe</i>		Special type
71		<i>Apatura schrenlii menetries</i>		Special type
72		<i>Libythea eeltis chinensis Fruhstorfer</i>		Special type
73		<i>Hucho bleekeri kimura</i>		Endangered
74		<i>Paracobitis potanini Gunther</i>		Special type
75		<i>Oreias dabryi sauvage</i>		Special type
76		<i>Triplophysa polpfasciata Din</i>		Special type
77		<i>Gobiocypris rarus Ye Et Fu</i>		Special type
78		<i>Acheilognathus omeiensis (shihet Tchang)</i>		Special type
79		<i>Abcherythroculter Kurematsui (Kimura)</i>		Special type
80		<i>Sarcocheilichthys davidi (Sauvage)</i>		Special type
81		<i>Abbottina obtusirostris (Wu et Wang)</i>		Special type
82		<i>Xenophysogobio boulengeri (Tchang)</i>		Special type
83		<i>Schizothorax (Schizothorax) prenanti (Tchang)</i>		Special type

84		<i>Schizothorax Schizothorax) Davidi (Sauvage)</i>		Special type
85		<i>Sinogastromyzon szechuansis szechuanensis Fang</i>		Special type
86		<i>Liobagrus marginatoides (Wu)</i>		Special type
87		<i>Euchiloglanis kishinouyei Kimura</i>		Special type
88		<i>Euchiloglanis davadi (Sauvage)</i>		Special type
89		<i>Pareuchiloglanis sichuanensis Ding et Fu</i>		Special type
90		<i>Ctenogobius chengtuensis (Chang)</i>		Special type

9) Temple Architecture and Other Cultural Heritage

No.	Name	Date	Site	Features	Value
1	Dujiangyan Irrigation System	3rd century B. C.	1.9km of west city	Large water conservancy works built by Li Bing (local magistrate) and his men. The Weir Works is composed of 3 main works: Yuzui Bypass Dike, Feishayan Floodgate, and Baopingkou Diversion Passage. The system is still performing efficiently today.	national key protection
2	Yuzui Bypass Dike	3rd century B. C.	Weir Works, north-west of city	Li Bing used special landform to build his damless bypass and diversion dike which functions for water diverting and bypassing as well as scouring.	national key protection, managed by Dujiangyan
3	Feishayan Floodgate	3rd century B. C.	North-west of city	It functions to drain the overflowing flood to the Inner Canal and drive silt to the Outer Canal. It is a key project of controlling the incoming water to the Inner Canal.	national key protection, managed by Dujiangyan
4	Baopingkou Diversion. Passage	3rd century B. C.	North-west of city	Organized by Li Bing, it is the first ladder diversion passage at lower section of Hutou Cliff. It is also a strategic point where water of the Inner Canal flows to Chengdu plains	national key protection, managed by Dujiangyan
5	Erwang Temple	Initially in 5th century and rebuilt in 17th	1.8km from north-west of city	Temple in honor of Li Bing and those of meritorious services. It doesn't emphasize the central axial and leans on hillside, with delicate design and workmanship. Valuable carvings record past experiences and efforts in water control.	National key protection, managed by Dujiangyan
6	Fulong Temple	initially built in 5th century. Current site built in 18th	On Lidui Platform, south of city	There are three halls, and relics like Li Bing's Statue, and the Flying Dragon Iron Tripod, Majestic and unique architecture	Class-I state protection, of essential value of ancient architecture, managed by Dujiangyan

7	Anlan Cable Bridge	Initially built in 7th Century, rebuilt as steel cable bridge in 1962	west of the city	Crossing Minjiang River, 260m, historically called "Zhupu Bridge," used to be railed by bamboo cables. People could cross the river safely, thus called "Anlan Bridge." Historically, an important pathway to link both banks of Minjiang River.	Class-I state protection, of referential value of ancient bridge architecture, managed by Dujiangyan
8	Songmao Ancient Trail	Built in 3rd century B. C.	West of city	Mountain trail for Dujiangyan Irrigation System works organized by Li Bing. It is a passage connecting Tibetant-Qing people and Tibetans. The trail was built against the hillside, of stone pavement, overlooking the river.	Evidence of Dujiangyan history and nationalities
9	Yulei Celestial Castle	Built in 7th century	Hutou Cliff, west of city	It leans on cliff and overlooks Minjiang River, built against the Tufan warriors' invasion in Tang Dynasty (618-907).	National key protection, managed by
10	Mt. Qingcheng	Named in 2nd century	15km, south-west of city	The main peak Damianshan with elevation of 2,434m, 36 peaks, 8 large caves, 72 small caves, and 108 scenic spots. Recommended as "No. 5 Mountain under Sun," "Secluded Elegance of Qingcheng." In late East Han Dynasty (206 BC-AD220), Zhang Ling (founder of Taoism) lived and preached his doctrines. A birthplace of Chinese Taoism.	National tourist attraction, Important location of Chinese Taoist culture
11	Changdao Temple (Tianshi Celestial Cave)	Initially built in 730, rebuilt in 16th Cent. And in 1920	Mt. Qingcheng	An ancient architecture complex. The back of the hall is where Zhang Ling preached his doctrine.	Class-II state protection, referential value of Taoist culture and architects
12	Jianfu Palace	Initially built in 730, rebuilt in 1888	At foot of Zhangren Peak, Mt. Qingcheng	Historically called "Zhangren Temple," and taken the current name in Song Dynasty (960-1279). It has a long antithetical tablet of 394 characters, the dressing table of Princess Qingfu of Ming Dynasty (1368-1644) at the back palace. A leading Taoist place on Mt. Qingcheng.	Important referential value of Taoist culture and architecture
13	Zushi Temple (Zhenwu Palace)	Initially built in 8th century, rebuilt in 1865	At foot of Xuanyuan Peak of Mt. Qingcheng	Rational layout of compound courtyard of tranquility and elegance	Important referential value of Taoist culture and architecture
14	Shangqing Palace	Initially built in 4th century, rebuilt in 1869	At side of No. 1 Peak of Mt. Qingcheng	It has noted tablets, inscribed boards, and carvings. Outside the Palace are relics like Sun-Viewing Pavilion, God Lamp Pavilion, Laojun Pavilion, Horse-Racing Flatland, and flag poles	Important referential value of Taoist culture and architecture

15	Yuanming Palace	Built in 1872	North of Zhangren Peak, Mt. Qingcheng	Leaning on hillside, original design. As there is no dusting in the hall, hence called "Dust-free Hall"	Important referential value of Taoist culture and architecture
16	Yuqing Palace	Rebuilt in 1938	North of Zhangren Peak, Mt. Qingcheng	Originally called "Tianzhen Temple" where Sun Simiao lived a seclude life and completed his medical works "Prescriptions Worth 1,000 Gold." Rebuilt in 1938, it has ancient calligraphy like inscribed boards of "Yuqing Taoist Temple" and "Natural Spring Water" at the back temple.	Important referential value of west-Sichuan modern architecture
17	Mangcheng Site	About 23 B. C.	Mangcheng Village of Qingcheng Township	120,000m ² , with compacted clay city walls, unearthed Neolithic architectural ruins and a large number of objects of the time	New evidence that Yangtze River is the source of Chinese civilization
18	Ruins of Huiqing Jianfu Palace	12th century	In front of Jianfu Palace of Mt. Qingcheng	Architectural ruins of Song Dynasty (960-1279), 500m ² , unearthed in 1958 a "Taoist Inscription Record of Huiqing Jianfu Palace".	Important referential value of west-Sichuan modern architecture

10) Tablet Inscriptions, Pottery, and Epigraphs

No.	Name	Date	Site	Features	Value
1	Stone Statue of Li Bing	2nd century	Cultural Administration, Fulong Temple	Unearthed in March, 1974, 290cm high, 96cm wide at shoulder, 3 lines of intelligible words on left and right sleeves and on the body, respectively "Leap Month 25, Year Jianning", "Magistrate Li Bing," and "Three stone statues are made in honor of his glorious deeds."	Class-I state protection, evidence of Dujiangyan history and that of ancient arts
2	Construction Worker Statue	2nd century	Cultural Administration, Fulong Temple	Unearthed 1975, 1.85m high, 0.7m wide in shoulder, standing with both hands holding a shovel (no head and shoulder). It is verified to be one of the "Three Stone Statues" recorded on the Li Bing Statue.	Class-II state protection
3	Stone Painting of Freshwater Aquatic culture	2nd century	Cultural Administration, Fulong Temple	Unearthed in 1964 at Luoqiao Village, Chongyi Town. The stone painting reveals development of agriculture and aquatic culture of the irrigated area. Unearthed are also stone statues and stone horses of Han Dynasty (206 BC-AD 220).	Class-I state protection, important referential value of Dujiangyan development & ancient sculpture

4	Flying Dragon Stove of Ming Dynasty . (1368-1644)	15th century	Cultural Administration, Fulong Temple	Unearthed in Shanghuang Temple in Qing Dynasty (1616-1911) (Xianfeng reign), weighted over 500kg, 8 flying dragons are made on the stove of different manners. Workmanship is original, delicate and natural.	Class-I state protection, important referential value of ancient metallurgy and foundry
5	Tang Tablet Inscription	8th century	Changdao Temple, Mt. Qingcheng	1.4m x 0.7m, the inscribed document is the imperial edict by Emperor Tang Xuanzong in 724 to appease the then Taoist and Buddhist conflicts. It is called "Imperial Edict Tablet of Emperor Wushen of Tang Dynasty (618-907)."	Class-II state protection, valuable calligraphy of Tang Dynasty
6	Stone Portrait of Master Zhang	6th century	Changdao Temple, Mt. Qingcheng	Made in Sui Dynasty (581-618) (Daye reign)	Historical evidences for studies of Taoist culture
7	3-Emperor Statue	7th century	Changdao Temple, Mt. Qingcheng	In the Sanhuang (3-emperors) Hall. Stone statues of Emperor Fu Xi, Shen Nong and Xuan Yuan, 90cm high with inscription at the back "Made in Tang Dynasty (618-907) (Kaiyuan (713-742) reign 10)"	Some value of Taoist culture and ancient sculpture
8	Stone carving of "No. 5 Mountain under Sun"	20th century	Changdao Temple, Mt. Qingcheng	Inscribed in 1925, 10.1m x 2m, the characters are 2m x 1.4m, and 10cm of carved depth.	Of historic and tourist values
9	Stone carving of "Cloud Nest:" and "Cloud Root"	20th century	Mt. Qingcheng	1939-1940 by Lin Sen, head of the national government.	Of historic and tourist values
10	Stone Carving of "No. 1 Peak of Qingcheng"	19th century	At side of Shangqing Palace, Mt. Qingcheng	Inscribed by Huang Yunhao of Qing Dynasty (1616-1911) (Guangxu reign, 10), 11.45m x 1.85m, each character is 1.85m x 1.45m	Of historic and tourist values
11	Stone carving of " 3-Character Scripture" for water control	19th century	Erwang Temple	1.5m x 0.79m, calligraphed by Wen Huan, magistrate of Chengdu, Qing Dynasty (1616-1911) (Guangxu reign, 2)	Experience for future generations
12	Stone carving of "6-Character Formula" for water control	19th century	Erwang Temple	Calligraphed by Wang Menggen, magistrate of Guangxian County in 1818, saying "deepening the riverbed so as to build low dikes."	Experience for future generations
13	Stone carving "8-Character Maxim" for water control	19th century	Erwang Temple	Calligraphed by Hu Jun, water management official of Sichuan in 1875, saying "cutting off the sharp angle at the bend, & harnessing on straight riverbed."	Experience for future generations
14	Stone carving "8-Character Maxim" for water control	19th century	Erwang Temple	Calligraphed by Wu Tao, Qing Dynasty (1616-1911) (Guangxu reign), saying "Adapt local conditions and circumstances."	Experience for future generations

11) Related Historical Documentation and Monographs

No.	Title	Dyna. /Date	Author
1	Shiji (annals of records)	Han	Sima Qian
2	Hanshu (records of Han dynasty)	Han	Ban Gu
3	Zhenglun (on politics)	Han	Cui Shi
4	Shuwang Benji (biographic sketches of Shu emperor)	Han	Yang Xiong
5	Benshu Lun (on Shu kingdom)	Han	Lai Ming
6	Fengsu Yanyi (collection of customs)	Han	Ying Shao
7	Huayang Zhi (local chronicles of Huayang county)	Jin	Chang Qu
8	Sanguo Zhi (history of three kingdoms)	Jin	Chen Shou
9	Erya (book of rites)	Jin	Guo Pu
10	Bao Pu Zi (Taoist scripture)	Jin	Ge Hong
11	Shudu Fu (prose of Shu kingdom)	Northern & Southern	Zuo Si
12	Yizhou Ji (records of Yi prefecture)	Northern & Southern	Ren Yu
13	Shuijing Zhu (annotations of water resources)	North Wei	Li Daoyuan
14	Kuodi Zhi (local chronicles of Kuodi)	Tang	Li Tai
15	Yuanhe Junxian Zhi (local chronicles of Yuanhe prefecture)	Tang	Li Jipu
16	Yuanfeng Jiuyu Zhi (local chronicles of nine places of Yuanfeng)	Song	Wang Cun
17	Taiping Huanyu Ji (local geographical records)	Song	Le Shi
18	Yudi Guangji (local records)	Song	Ouyang Min
19	Xintang Shu (new records of Tang dynasty)	Song	Ouyang Xiu
20	Yudi Jisheng (geographical records and scenes)	Song	Wang Xiangzhi
21	Diyan Zhi (chronicles of dikes and weirs)	Song	Ren Zao
22	Maoting Kehua (casual talks of thatched pavilion)	Song	Huang Xiufu
23	Duxing Zazhi (casual talks)	Song	Zeng Minhang
24	Wenweng Tangji (records of Wenweng abode)	Song	Song Qi
25	Gujin Jiji (collection of past records)	Song	Zhao
26	Dongzhai Jishi (records of east study)	Song	Fan Zhen
27	Wuchuan Lu (travel accounts of Wuchuan)	Song	Fan Chengda
28	Yunji Qiqian (a Taoist scripture)	Song	Zhang Junfang
29	Luyi Ji (peculiar tales)	Five Dynasties	Du Guangting
30	Daojiao Lingyan Ji (records of Taoist efficacy)	Five Dynasties	Du Guangting
31	Daomen Shuyao (essentials of Taoism)	Five Dynasties	Du Guangting
32	Xianchuan Shiyi (addenda to Taoist legends)	Five Dynasties	Du Guangting
33	Qingchengshan Ji (records of Mt. Qingcheng)	Five Dynasties	Du Guangting
34	Minshan Yishi (anecdotes of Mt. Minshan)	Five Dynasties	Gou Taifu
35	Qingchengshan Ji (records of Mt. Qingcheng)		Fan Zhongjie
36	Qingchengshan Ji (records of Mt. Qingcheng)		Huangpu Shi'an
37	Yangdan Jue (formula of alchemy)		Huangpu Shi'an
38	Qingchengshan Fangwu Zhi (records of Qingcheng objects)		Gou Taifu
39	Guanji Chugao (draft records of Guanxian county)	Qing (Guangxu)	Peng Guxiang
40	Guanxian Xiangtu Ji (local records of Guanxian county)	Qing (Guangxu)	Xu Jiamin
41	Guanzhou Jinshi Zhi (epigraphy of Guanzhou county)	1928	Pu Zhongxiang
42	Guanjiang Beikao (references of Guanjiang river)	Qing (Qianlong)	Wang Laitong

43	Guanjiang Dingkao (final observation of Guanjiang river)	Qing (Qianlong)	Wang Laitong
44	Records of Mt. Qingcheng	Qing (Guangxu)	Peng Xun
45	Supplementary Record of Guanxian County	Qing (Qianlong)	Sun Tianning
46	Local Chronicles of Guanxian County	Qing (Qianlong)	Zheng Shan
47	Local Chronicles of Guanxian County	1932	Luo Junsheng
48	Epigraphy of Guanxian County	1932	Pu Zhongxiang
49	Anecdotes of Guanxian County	1932	Luo Junsheng
50	Records of Dujiangyan Construction Workers	1937	Wu Hongren
51	Outline of Dujiangyan Water Conservancy Projects	1938	Sichuan Bureau of water Conservancy
52	Collection of Noted Works of Sichuan Water Conservancy	1989	Sichuan Department of Water Conservancy and Electricity
53	Coordination of Chinese Scientific Myths and Religions - Centered on Li Bing	1990	Luo Kaiyu
54	Celestial Paradise - Mt. Qingcheng	1992	Iketa Masanao (Japan)
55	Past and Present of Mt. Qingcheng	1996	Fu Haina (US)
56	Enlightenment of Using the Laws of Water and Silt Flows in Dujiangyan	1994	Huang Wanli, Qinghua Univ.
57	On the Law of Silt Discharging at Fengqiwo Segment of Dujiangyan	1994	Liu Ruxian, Dujiangyan Administration
58	Major Experiences in Design and Management of Dujiangyan Diversion Project	1997	Hu Changjian, Dujiang- yan Administration
59	Dujiangyan and Hydrology	1994	Wang Guidao, Sichuan Bureau of Hydrological Resources Survey
60	Experience of Dujiangyan Silt Control and Theoretical Studies	1993	Xiong Dacheng, Sichuan Univ.
61	Dujiangyan Engineering and Management Development	1997	Li Peihong, Wang Shaoliang
62	Ten Hydrological Achievements of Dujiangyan Engineering	1994	Wen Chengzhou, Dujiangyan Administration
63	Development of Dujiangyan Natural Resources	1994	Chen Jiayang, Chen Yuanxin, Chengdu University of Science & Technology
64	Elementary Studies on Landslide of Erwang Temple	1983	Wang Chenghua, Chengdu Geological Institute, Academia Sinica

2. History and Development

The geology of the Property dates from the late Triassic of the Mesozoic Era (195 million years ago) under the NW-SE strong compression in Sichuan area due to the "Indo-Chinese" movement. This compression also resulted in the formation of Mt. Qionglai, Mt. Longmen, etc. In the late Cretaceous of Mesozoic Era (140-70 million years ago), the Yanshan movement formulated the eastern mountain ranges of Sichuan basin, the mature uplifting of Mt. Longquan anticline, the Ba-Shu lakes, and the embryonic form of the Yangtze River system. And the area of Mt. Qingcheng began to take the form of land. The Himalayan movement uplifted its southeast territory In Eocene and Oligocene, the Tertiary period of the Cenozoic Era (60-25 million year ago). The Dongpo River was eroded by lunar tide, the Xipo

River had to run over from northwest to southwest, leading to an accelerating corrosion, and thus canyons came into being. As a result, the Yangtze River system fell apart from its embryonic form, while the Bashu lakes shrank and became the "Chengdu Lake." Evolution of the consequent valley and longitudinal valley in upper reaches of the west mountain region formulated the Minjiang River, Tuojiang River, Fujiang River, and Jinsha River. Beyond the point where the Yangtze River passed the Three Gorges, the Sichuan basin took the form of land. Meanwhile, the Himalayan movement contributed fault folds in the Property region, creating the Qingxia New cathaysian structural system with an orientation of northeast 10o-30o, The Yingxiu Fault abruptly rose westwards and compressed southeastwards, producing klipses. The deep fracture at the location of Erwang Temple revived and cut through the strata above the Jurassic system. Mt. Qingcheng was constituted of Cretaceous sedimentary rocks, along the joints of which, deep canyons and steep cliffs were formulated, represented in the present-day grand circulation of mountain cliffs. Meanwhile, Mt. Qingcheng filled up with red sand and mud rock of shallow lakes with a thickness of 1,080 meters. Water was accumulated at the carbonate caves of the fault, and expanded as time passed by, resulting in karst caves. Here, the land descending from west to east stretches into alluvial fan of the Chengdu Plains. This configuration provides an objective condition for the birth of the ancient Dujiangyan Water Conservancy Project.

The Dujiangyan Irrigation System along with its development is a landmark in the Chinese and world history of hydraulic engineering. In 256 B. C., Li Bing, Shu-Kingdom magistrate of Qin Dynasty (221-206 B. C.), selected the mountain outlet pass of the Minjiang River (of abundant water flow) as the esite for the Irrigation System. He led local people to "hew Lidui Platform", "build two canals" against water disaster, divert water, open the navigation line, irrigate the agricultural fields, and eventually create the Land of Abundance. In 141 B. C., Wen Weng, Shu magistrate, organized construction of canals to divert water and expand the irrigated area. Water from Dujiangyan Irrigation System was sent to the area of Pengzhou and Xinfan. In 277-234, Zhuge Liang, the Prime minister of Shu Kingdom, set up a special government organ taking care of the Dujiangyan Irrigation System. He recruited 1,200 workers engaged in protection works. From 618 to 907, the Tang Dynasty (618-907) started large-scale construction of water conservancy projects and irrigation network, including the Baizhang Embankment, Wansui Pool, Mizao Embankment, and Tongji Embankment. The Chengdu plains were thus greatly benefited with crisscrossing networks of weirs and canals. From 960 to 1276, the Song Dynasty (960-1279) summarized previous experiences of Dujiangyan water control into three courses, three canals and 14 branches, and consummated the annual regulations of maintenance, repair and water control. Other works were added up such as the Sili Embankment and Shabo Embankment, further expanding the Dujiangyan irrigating coverage to twelve counties. From 1276 to 1368, the Yuan Dynasty (1206-1368) made important experimentation in water control technology by using iron bars to protect the embankments, and expanded the irrigated area through additional construction such as the Shilang, Wangong and Luotuo works. From 1368 to 1644, the Ming Dynasty (1368-1644) strengthened management of the Dujiangyan Irrigation System while making important improvements. In the late Ming and early Qing Dynasty (1616-1911), incessant wars led to such a chaos that contributed to disrepair of the Dujiangyan Irrigation System. From 1644 to 1910, the Qing Dynasty (1616-1911) began regular remediation of the Dujiangyan Irrigation System, and resumed annual maintenance regulations. Officials like Ding Baozhen and Qiang Wangtai organized local people to make major repairs of the Dujiangyan Irrigation System, further expanding the irrigation area to about 180,000 hectares. From 1911 to 1949, the Republic of China Government built the Xingong Yuzui project, added up the bronze signs, and buried the iron bar. The government also surveyed the Dujiangyan Irrigation System and compiled the "Detail Drawing of Inner and Outer Canals as well as the "Other Rivers and Streams of Dujiangyan" and the "Plane Figure of Sichuan Dujiangyan Irrigated Area," and published the "Outline of Dujiangyan Water Conservancy Projects. From 1949 up to now, the People's Republic of China conceives the Dujiangyan Irrigation System as a valuable treasure of all mankind, takes forceful measures in its protection, and fully summarizes the positive and negative experiences in previous water control efforts. The Chinese Government utilizes modern technologies to meet the increasing water demands of the

irrigated area as well as increasing industrial and agricultural consumption. On the presupposition of keeping intact the original structure of the Dujiangyan heritages, modern building materials and technology were employed to maintain and consolidate the three main works and ancillary works, and to build the diversion pivotal works and conduit works. The Dujiangyan irrigating capacity expanded from 14 counties of 188,000 hectares in the 1940s up to current 34 counties of 668,700 hectares. The Ministry of Water Conservancy and Sichuan Provincial Government respectively set up stone tablets as part of their protection endeavors of the Dujiangyan Irrigation System. Of all the other similar water projects in the world, the Dujiangyan Irrigation System is a large-scale water-conservancy project of the kind, of the best protection, of the largest irrigated area and strongest integral performances, and of the best comprehensive efficiency.

Since ancient times of around 1,800 years ago, Mt. Qingcheng has been one of China's leading tourist attractions, where Taoism was initially founded, substantiated and developed. In the Jin Dynasty (265-420), Taoist temples were largely constructed on the mountain, disseminating quite a number of Taoist schools and nationwide-known scholars. The Qingcheng Taoist Sect, headed by Du Guangting, collected Taoist theories, religious creeds, sacrificial rituals, approaches of cultivation, religious geography, legends and tales before the Five Dynasties and Tang Dynasty (618-907). He was engaged in a systematic and overall research on these data. The "Taoist Scriptures," one of the nation's leading works of Taoism, collected 20 works by Du Guangting who made an irreplaceable contribution to the development of Chinese Taoism as well as Chinese science and culture. Between the Ming and Qing Dynasties, Mt. Qingcheng saw another round of Taoist thriving, where disciples came from all over China to inquire and develop Taoism. In the early Qing Dynasty (1616-1911), Chen Qingjue, a noted Taoist scholar, establish the Dantai Bidong (red platform, green cave) Sect. For hundreds of years, headmasters of Mt. Qingcheng, like Peng Chunxian, Yi Xinying, and Fu Yuantian, wrote books, created theories, sorted out relics, repaired the temples, and protected the environment. In 1957, the Chinese Taoist Association was established, Qingcheng Headmaster Yi Xinying was elected its vice chairman and then the chairman of Sichuan Taoist Association. In 1979, Qingcheng Headmaster Fu Yuantian was elected the chairman of Sichuan Taoist Association, then chairman of the Chinese Taoist Association, pinhabitant of the Chinese Taoist Academy, and member of the CPPCC Standing Committee. The Qingcheng Taoism has exerted far-reaching influence both at home and abroad, and drawn much attention from international scholastic community. Japanese, American and French scholars have published academic papers and monographs concerning their studies of Mt. Qingcheng.

3. Form and Date of Most Recent Records of Site

Historically and in modern times, governments have attached great importance to the ecological environment of the Property. In 1883, the imperial government of the Qing Dynasty (1616-1911) set up a stone tablet at the Tianshi Celestial Cave that says "Logging Ancient Trees Is Prohibited." In 1940, the government of the Republic of China listed both the Dujiangyan Irrigation System and Mt. Qingcheng as the West Sichuan Scenic and Historic Interests Area. After 1949, government concern and protection were further strengthened. Laws, regulations and policies were formulated in forest conservation, logging prohibition, plant pest management, and construction control. In 1951, Guanxian County Government established the Administration of Ancient Relics and Sites, exerting its management authority over the Dujiangyan Irrigation System and Mt. Qingcheng as well as setting out the reservations. In 1979, Sichuan Provincial Government listed the Tianshi Celestial Cave Hall and tablets of Tang Dynasty (618-907) as key units under provincial protection. In February 1982, the State Council listed the Dujiangyan Irrigation System as a key unit under state-level protection. On November 18 of the same year, the PRC State Council approved the application that the Property be listed as the national key scenic and historic interests area. In September 1983 and June 1984,

Sichuan Provincial Government and Chengdu Municipal Government jointly listed Dujiangyan City as a key unit for saving and protecting the giant panda. In January 1994, the PRC State Council approved the application that Dujiangyan City to be listed as a state-level city of historical and cultural importance.

4. Present Status of Conservation

In a history of over 2,200 years, floods and wars have affected the main and ancillary works of the Dujiangyan Irrigation System. However, the established concept of "following on the previous course" and frequent maintenance keep intact the original appearances and layout of Dujiangyan Yuzhui Bypass Dike, Feishayan Floodgate and Baopingkou Diversion Passage. Since 1949 in particular, the Chinese government utilize modern scientific means to maintain and manage the Weir Works, making the Irrigation System the best-protected ancient project of water conservancy in China and even in the world.

As Mt. Qingcheng is a famous Chinese mountain and the birthplace of Taoism, imperial and contemporary governments have attached great concerns and considerable importance to it. Forceful measures and strict management have been taken to ensure perpetuation of its natural and ecological status. Well conserved are Taoist temples like the Jianfu Palace, Tianshi Celestial Cave, Shangqing Palace, and Zushi Temple, and Taoism has been developing in a sound and healthy manner. Vegetation in the Longxi Nature Reserve is well protected, and its primitive ecological environment stays away from human interference.

5. Policies and Programs related to Presentation and Promotion of Property

Natural and cultural heritages of the Property are protected under the state laws, and protected by the general public out of their consciousness. Since 1949, the sand table and electrical model were made of the Weir Works at the Fulong Temple, introducing to the visitors the construction technology and ancient river remediation efforts. Three bilingual (Chinese and English) science documentaries are produced to introduced the scientific nature of the Dujiangyan Irrigation System and development of the irrigated areas. At the Erwang Temple, enlargement works were made to the Honor Hall built at the end of the Qing Dynasty (1616-1911), with three exhibition halls and five exhibition lounges. The Qin and Han Dynasty (206 B. C. - A. D. 220) Exhibition Hall is still in the original Honor Hall, with Li Bing's Statue stands at the gate and with five statues of Li Bing and his son inside. The Tang-Song Dynasty Exhibition Hall is in the Qinyan (Qin Dynasty Weir) Hall with 19 statues of Gao Jian, Liu Xigu and others. The Yuan-Ming-Qing Dynasty Hall is in the Qinyan Hall and Honor Hall, with 11 statues of those of meritorious deeds and a group sculpture (10 statues) in honor of Dujiangyan construction workers, documenting their life stories and meritorious deeds in construction of the Dujiangyan Irrigation System. Built at the side of the Erwang Temple, the Li Bing Memorial Hall records a large number of data concerning his life and glorious contributions during the term of his office. The Property Tourist Guide and related pamphlets are published to introduce local history, scenery and relics. Other 17 publications also intend to help the reader to understand more about Mt. Qingcheng and Dujiangyan Irrigation System. They include the History of Mt. Qingcheng, Poem Collections of Mt. Qingcheng and Dujiangyan Irrigation System, Tablets and Epigraphs of Dujiangyan Scenic Spots, Taoist Culture of Mt. Qingcheng, and Dujiangyan - Monument in the World History of Water Conservancy. The past year saw productions of 44 TV documentaries and A/V publications introducing Mt. Qingcheng, Dujiangyan Irrigation System and Longxi Nature Reserve, such as Mt. Qingcheng of Secluded Elegance, Elegance of Mt. Qingcheng, and Ancient Irrigation System. They have been telecast in the city, province and CCTV. The English version of the Longchi Wildlife has been distributed to Europe,

Southeast Asia and the United States. In the scenic spots of the Property, there set up 520 bilingual (Chinese and English) signs with graphics and introduction, and 342 bilingual destination boards. All the above are provided for convenience of demonstration of the Property, a treasure to be highly valued by current and future generations.

Part Four MANAGEMENT

1. Ownership

The People's Republic of China

2. Legal Status

According Article 9 of the Constitution of the People's Republic of China, "the state owns all the natural resources such mining areas, rivers, forests, mountains, grassland, barren land and beach. According to Paragraph 2 of Article 22, the state protects the scenic spots, rare relics and other important relics of historical and cultural importance." According to Paragraph 2 of Article 4, "the state owns the ancient cultural relics, ancient burial sites, ancient cliff caves, and ancient temples."

In 1982, the PRC State Council listed the Dujiangyan Irrigation System as a key relic unit under the state protection, and the Property as a state-level key scenic and historic interests area.

3. Protective Measures and Means of Implementation

Since establishment of the Property in 1949, a complete set of effective measures has been formulated in its protection and management.

1) Legal Protection

Major laws relevant to protective management efforts include

- the Constitution of the People's Republic of China;
- the Criminal Law of the People's Republic of China;
- the Law of the People's Republic of China on the Protection of Cultural Relics;
- the Law of the People's Republic of China on the Protection of Wildlife;
- the Law of the People's Republic of China on Environment Protection;
- the Law of the People's Republic of China on Urban Planning;
- the Water Law of the People's Republic of China;
- the Law of the People's Republic of China on Water & Soil Conservation; and
- the Forestry Law of the People's Republic of China.

Major regulations concerned are

- Detailed Implementation Regulations of the PRC Law on the Protection of Cultural Relics;
- Provisional Regulations on the Management of Scenic and Historic Interests Areas, promulgated by the State Council;
- Regulations of Sichuan on the Management of Scenic and Historic Interests Areas;
- the Regulations of the Peoples' Republic of China on River Management; and
- Regulations of the Management on Sichuan Dujiangyan Irrigation System.

On the basis of the above laws and regulations, the Property has formulated its corresponding regulations concerning protection of forest and water resources, as well as protective management of annual maintenance, relics and

environmental sanitation.

2) Protection Planning

According to the Overall Plan of the Property and the features of the Property, the reservation area is classified into three parts: the first is the natural and cultural reservation of the Dujiangyan Irrigation System (231.5 hectares) and Mt. Qingcheng (1,522 hectares), the second is the reservation of biological diversities of the Longxi Nature Reserve (16,138 hectares). On the base of the value of heritages and geographical environment, the reservation (36,856 hectares) is classified into that of Cultural Reservation and Natural Reservation, while the Longxi Nature Reserve is classified as the Reservation of Biological Diversity. Meanwhile, buffer zones and transition zones are classified. Corresponding measures are taken to protect natural, cultural and environmental landscapes, and control the tourist carrying capacity. In the buffer zones and transition zones, measures are taken to protect the wildlife and plant resources as well as their living environments. In view of the value, the Shaping Flatland and Tai'an Scenic Spot of Mt. Qingcheng are set out as the tourists center. Measures are also taken for tourist evacuation and branching-off inside the kernel reservation, as well as for controlled tourism development projects dependent. On the basis of relevant state laws and regulations, corresponding protective measures are formulated concerning protected boundaries so as to optimize the ecological environment of the Property.

3) Protection of Cultural and Historical Relics

In order to properly protect cultural and historical relics within the Property, national, provincial and municipal governments have organized four rounds of general surveys since 1949. They have promulgated, set up the demonstration boards, for one relic unit under the state protection (Dujiangyan Irrigation System), three relic units under the provincial protection, and eighteen relic units under the Dujiangyan municipal protection. Antiseptic, mothproof and damp-proof measures are administered to ancient architectures and temples within the reservation, which receive careful repair and recovery services. Reinforcement works are carried out for the Lidui Platform and Baopingkou Diversion Passage, pouring works for the Feishayan Floodgate and remediation works for the Yuzui Bypass Dike. Ground cultural relics are also effectively protected.

4) Environmental Protection

To prevent the Property from natural or man-induced damages, a series of measures are formulated in forest conservation, forestation, returning the farmland to forestry and water-resource protection. Specialized organs are set up for protection patrol and scientific investigation in the respect of the Property hydrology, geology, meteorology, environment and living organisms. In addition, protective measures are also taken such as setting up posters, filing the resources on record and supervising the ancient and rare trees, rare animals and plants.

4. Agencies with Management Authority

- The Ministry of Construction, the People's Republic of China
Add: 9 Sanlihe Road, Baiwanzhuang, Beijing, China
Zip Code: 100835
- The Ministry of Water Conservancy, the People's Republic of China
Add: 2 Lane 2, Baiguang Road, Xuanwu District, Beijing, China
Zip Code: 100053
- The National Administration of Culture Relics, the People's Republic of China
Add: 29 Wusi Avenue, Beijing, China
Zip Code: 100009

- Sichuan Provincial Construction Commission
Add: 36 Section 4, Renmin Nanlu, Chengdu, Sichuan, China
Zip Code: 610041
- Sichuan Provincial Cultural Department
Add: 19 Dongsheng Street, Chengdu, Sichuan, China
Zip Code: 610015
- Sichuan Provincial Department of Water Conservancy and Electric Power
Add: 69 Wenwu Road, Xinhua Avenue, Chengdu, Sichuan, China
Zip Code: 610017

5. Levels at which Management is Exercised and Names and Addresses of Responsible Persons for Contract Purposes

The state, and the province and the city have formulated a series of laws, regulations and creeds for implementation purposes in the reservations. These efforts have resulted in effective fulfillment of the designated targets as represented below:

- Maintain the historical design and layout of the relics, effectively prevent natural damages to ancient architectures;
- Collect and well keep ancient relics like tablets, epigraphs and carvings;
- Well protect the forest vegetation, river and streams, animal and plant resources;
- Effectively protect the Dujiangyan Irrigation System, and promote its greater and better performances.

Specific Implementation Agencies, Responsible Persons and their Addresses:

- Zhang Ningsheng, director, Dujiangyan Administration of Scenic and Historic Interests Areas
8 Ruiliang Street, Dujiangyan City, Sichuan, China
Zip Code: 611830
- Liu Shihong, director, Dujiangyan Urban Construction Commission
Add: Central Section, Guanjing Road, Dujiangyan, Sichuan, China
Zip Code: 611830
- Peng Shuming, director, Sichuan Dujiangyan Administration
Add: 60 Park Road, Dujiangyan, Sichuan, China
Zip Code: 611830
- Chen Yulin, director, Dujiangyan Mt. Qingcheng Administration
Add: Qingchengshan Town, Dujiangyan, Sichuan, China
Zip Code: 611844
- Zeng Jian, director, Administration of Dujiangyan Longxi Nature Reserve
Longchi Town, Dujiangyan, Sichuan, China
Zip Code: 611845
- Ma Rujun, director, Dujiangyan Administration of Cultural Heritage
Add: 207 Park Road, Dujiangyan, Sichuan, China
Zip Code: 611830

6. Approved Plans related to Property

- (1) The Ninth 5-Year Development Plan of Relics and Museum, and the Outline of the 2010 Long Range Targets;

- (2) Dujiangyan Overall Plan (1990-2030);
- (3) Overall Plan of Mt. Qincheng & Dujiangyan Irrigation System;
- (4) Proposal of Further Strengthening the Relics Protection in Dujiangyan City;
- (5) Overall Plan of Dujiangyan Urban Planning
- (6) Provisional Measures on the Management of Scenic and Historic Interests Areas Promulgated by Dujiangyan Municipal Government.

7. Sources and Levels of Finance

Unit: RMB million yuan

Source of Fund, Amount & Term	State Allocation	Province, city & county allocations	Self-collected fund	Total
1979-1998	85	118	233	436

Uses of the Fund:

- 1) protection and maintenance of the Dujiangyan Irrigation System;
- 2) protection and maintenance of ancient architectures;
- 3) protection and repair of cultural relics;
- 4) protection of ecological environment;
- 5) construction and maintenance of infrastructures;
- 6) publicity and researches; and
- 7) information renewal and training of researchers and staff.

8. Sources of Expertise and Training in Conservation and Management Techniques

Protective management of the Dujiangyan scenic and historic interests area has been under constant attention and support of national institutions and research institutes. These institutions include the PRC Ministry of Construction, the Ministry of Water Conservancy, the National Administration of Cultural Heritage, Sichuan Construction Commission, Sichuan Provincial Department of Water Conservancy & Electric Power, Sichuan Provincial Administration of Culture Relics, the National Institution of Cultural relics, and Sichuan Provincial Museum.

Knowledge of the Property management personnel is primarily acquired from the following sources:

- 1) institutions of higher learning and technical schools;
- 2) in-service studies at institutions of higher learning;
- 3) amateur education, correspondence education, and self-study programs of college courses;
- 4) national, provincial and Chengdu workshops specializing in water conservancy, cultural relics, and management of scenic spots;
- 5) national and provincial seminars, and those held by research institutes.

Currently, the Dujiangyan City has nine schools offering courses in water conservancy, forestry, English, international culture, and management of natural heritages. These education sources are sufficient to ensure demands of elementary technicians to be posted in the Property. The demands of senior and intermediate technical personnel are ensured from sources like training in institutions of higher learning, correspondence education, self-study programs, training classes, and in-service workshops. The Dujiangyan Training Center of Tourist Personnel has an annual

capacity of 850 trainees/time, offering courses of English, tourist guiding, relics protection, management of tourist services, tourist professional ethics, specialized management knowledge and skills of scenic spots.

9. Visitor Facilities and Statistics

1) Tourist Facilities in the Property

- 5 bus shuttles
- 5 two-star (or above) hotels
- 34 hostels and restaurants for organized tourists
- 12 merchandizing shops
- 8 travel agencies
- 60 standard sanitary lavatories
- 180 tourist guides
- 1 reception & interpretation center
- 20 parking lots
- 1 rescue center
- 5 on-site first-aid stations
- 420 on-site safety and rescuing personnel
- 520 bilingual (Chinese and English) posters and signs
- 258 signs for complaint claiming
- 342 bilingual (Chinese and English) destination boards
- 8 information service stations

2) Number of Tourists to the Property (1989-1998)

Year	Tourists (million)	Up/down rates over previous year
1989	0.68	0.7%
1990	0.62	-0.91%
1991	0.74	1.28%
1991	0.81	1.0%
1993	0.74	-0.9%
1994	0.71	-0.95%
1995	0.64	0.9%
1996	0.64	0%
1997	0.62	-0.96%
1998	0.60	-0.9%

10. Property Management Plan and Statement of Objective

The major protection and management targets of the Property include: protecting the Property on the basis of laws, strengthening the planning management, improving the protection measures, establishing and improving the maintenance system. Natural and cultural relics in the Property shall be protected and managed on a standard, scientific, legalized and sustained manner. The Property shall be ensured of its authenticity, integrity and coordination of envi-

ronment with the scenery.

- 1) steadily improve and implement the Overall Plan, protect and manage the Property in a scientific manner.
- 2) Participate in international and national seminars. Conduct researches on scientific feasibility of the Dujiangyan Weir Works, Dujiangyan culture, protection of Mt. Qingcheng animals and plants, ecological resources such as massif, water resource, geology, atmosphere, and natural landscapes, as well as Taoist culture. Display the constructive role of traditional cultures in social and economic progresses.
- 3) Take scientific measures to deal with urgent anti-damp, antiseptic and mothproof issues at major architectures such as the Erwang Temple, Fulong Temple, Jianfu Palace, Tianshi Celestial Cave, Shangqing Palace, Yuanming Palace, and Lingyan Temple. Prevent damages due to natural and man-induced factors.
- 4) Establish the Dujiangyan Irrigation System Museum to demonstrate styles and features of the Property.
- 5) Strengthen protection of collected relics, strengthen training of researchers and management personnel to realize ultimate effective protection.
- 6) Conduct extensive, deep-going and continuous publicity of the Property. Firstly, publicize the importance of applying it for the World Cultural and Natural Heritage, as well as rights and obligations of citizens. Secondly, publicize the measures and steps in protection and management of the natural and cultural heritages within the Property. Thirdly, use all forms of media to publicize the features of the Dujiangyan scenic and historic interests area. Fourthly, extensively publicize the protection and management laws and regulations of natural and cultural relics, so as to draw overwhelming attention and concern from all social sectors. A general awareness shall be initiated that everyone bears his responsibility for protection of relics. Strict legal and punishment measures shall be taken against vandalism and crimes that contribute damages to cultural and natural relics.
- 7) Effectively control the tourist carrying capacity, initiate the entry reserve system and rotation for organized tourists.
- 8) Gradually change the modes of local production and life style within the Property zone, timely resettle the inhabitants from the Property zone, and reduce pollution that encroaches living organisms.

11. Staffing Levels

By 1998, there are 850 staff working within the Property in fields of water conservancy, relic collection and protection, and tourist management. Among them, there are 258 personnel with intermediate and senior technical titles in culture and museum, water conservancy, architecture, gardening, protection of animal and plant life, making 33.5% of the total staff. There are 312 personnel with elementary technical titles, making up 36.7% of the total.

Part Five FACTORS AFFECTING THE SITE

1. Development Pressures

1) Pressure of Water Resource

From 1949 up to now, the Dujiangyan irrigated area has increased 3.6 times from 188,000 hectares to 668,700 hectares. Urbanized expansion, industrial development, and increase of urban population result in a drastic increase of 3 times of water consumption. Excessive logging in the upper valley of the Minjiang River contributes to a serious annual decrease of water supply. According to official statistics, the Minjiang River supplied 15.028 billion cubic meters of water from 1930 to 1989, while that from 1990 to 1997 reduced to 13.53 billion cubic meters.

On September 28, 1998, Sichuan Provincial Government promulgated the Notification Concerning Full Prohibition of Logging in Natural Forests. Since then, logging is banned in the upstream source areas of the Minjiang River. Local logging industries are remodeled to engage in either forest protection or forestation. This strongly guarantees the water supply from the Minjiang River.

2) Developmental Pressure

In the mid-80s, the Property had a long boundary and spacious coverage, but some inhabitants and urban investors built housing within the Property. In the light of the principle "Protection first, development second," the Dujiangyan City Government formulates strict regulations on construction zoning. All construction projects and corresponding environmental protection projects shall be simultaneously designed, constructed and completed for acceptance. Regulatory measures are timely taken over those projects that do not coordinate with natural settings, and these projects are properly handled by either being revised the original plan or being dismantled under regulatory plans.

2. Environmental Pressures

1) Water Quality

The fact remains that industrialization in the watershed of the Minjiang River pollutes, to varying degrees, the upstream water source beyond the Dujiangyan Weir Works. Yet, evaluation of 30 water parameters including organic matters, inorganic matters, and heavy metals reveals that the Dujiangyan water quality is close to the national class-I criterion of surface water quality. In recent years, in order to protect the watershed quality on the basis of the PRC Preventive Measures against Water Pollution and the Chengdu Protective Regulations of Drinking Water, the government closed seriously polluting enterprises within the Scenic and Historic Interests Area. According to the 1997 water monitoring data, the surface water environment reached the national class-I criterion.

2) Climate

The Property is located in the zone of Mid-Asian tropical humid climate, with an annual average temperate of 15.2oC, an extreme temperature ranging from 34oC to -5oC, an annual precipitation of 1,243.8mm, and an average humidity of over 80%. Most of the ancient architectures are located in the kernel area of the Property. In an overcast and damp climate all the year around, building timber tends to decay or to be bored by termites. In cooperation with Sichuan University, Sichuan Academy of Ancient Architecture, and the National Administration of Cultural Heritage, the administrations of the scenic and historic interests areas has conducted special studies on prevention of dampness and elimination of termites, and achieved fruitful results.

3. Natural Disasters and Preparedness

1) Floods

Since completion of the Dujiangyan Irrigation System, there has been 38 floods, 10 of which are destructive to varying degrees. Timely maintenance was rendered after the flood. Thanks to its lush vegetation, Mt. Qingcheng has not yet experienced any destructive windstorm or landslide in past hundreds of years.

2) Earthquake

Although the Property is located on the seismic zone of the Longmen, Mountain Range, there has been no destructive earthquake. According to seismic data over the past 200 years, there was one earthquake, the epicenter of which was at Mt. Qingcheng and southwest of Wenchuan County, with a magnitude of IV. Intermediate earthquake happened in the seismic zones of the Longmen Mountain Range, Songpan and Xuanshuihe, the seismic waves struck Mt. Qingcheng but in harmless and indirect manner.

3) Arrow Bamboo Blooms and then Withers

The Property is one of the important habitats of giant panda. From 1982 to 1984 when climate drastically fluctuated, the arrow bamboo (food of giant panda) bloomed and then withered, which greatly threatened the existence of giant panda. The local government took immediate approaches, organized a rescue team, and set up a field observation station. A patrol squad composed of professionals was on duty all the year around. The arrow bamboo was transplanted, alternative food prepared for giant panda, sick giant pandas medically treated and sent back to the wild. From 1985 to 1987, the Dujiangyan Government was rated by provincial and municipal forestry organs in succession as the Advanced Unit in Protecting the Giant Panda, and was awarded by the UN Wildlife Foundation.

4) Fire Hazard

In December 1955, the Property established its first fire protection headquarters. In 1956, the Scenic and Historic Interests Area was classified as the "Fire Prohibition Zone" against collecting firewood and grass, picking herbal medicines, pasturing and opening land. At the main crossings, signboards were posted for forest conservation. Checking points are always on alert for forest protection purposes, and specialized protection patrols were organized all the year around. On November 8, 1982, the protective measures were carried out that "prohibit wanton felling of trees, eliminate forest fire, stop opening land at the expense of damaging forest, and protect the giant panda." In the past 50 years, there is no fire disaster in the reservation. In 1925, the Erwang Temple was caught in fire, part of the Main Hall and Second Hall were burned down but repaired in 1927.

4. Visitor and Tourism Pressures

In recent years, there is a steady increase in the number of tourists visiting the Property, as well as people coming for holidays, conferences and scientific investigations. In 1998, the Scenic and Historic Interests Area received around 600,000 visits, which yielded great pressure on protection and management of sites. However, the Property Administration takes immediate evacuation measures which effectively reduce the number of visits.

5. Number of Inhabitants within the Property and Buffer Zone

There are 37 households of 156 inhabitants within the Property, and 4,312 households of 17,248 inhabitants in the

buffer area. The local government strictly controls the construction of civilian houses, and orients alternative fuel sources. Measures are taken to return the farmland to forestry, prohibit wildlife killing, encourages local farmers to be engaged in tourism. As a result, harmony of mankind and nature is gradually improved.

From generation to generation, farmers and inhabitants have coexisted with the Property. They take the protection of the Property as their conscious act, abiding by the protection laws and regulations in their production and life, protecting the wildlife and forest. They won't constitute encroachment or threat to the Property.

Part Six MONITORING

1. Overview of Monitoring

Monitoring started long ago in the Reservation of the Property. Measures and technology have experienced constant improvement in the respect of overall and systematic monitoring of natural landscapes, hydrology, geology, animal and plant life, relics, sites, and environment.

1) Basic Types of Monitoring

Conventional Monitoring - Regularly monitor the surface water and atmosphere qualities to provide grounds to scientific management;

Wildlife Monitoring - formulate detailed plans and establish wildlife monitoring systems, conduct survey and monitoring at fixed sites, and file records concerning the wildlife;

Habitat and Vegetation Monitoring - regularly record the vegetation, flora and habitats, and monitor their dynamic changes. Monitoring focuses on flora changes in protected species, annual changes in vegetation types and in ecological (natural or man-induced) environment. Monitor recovery of secondary forests after logging, and establish permanent plots;

Tourist Monitoring - conduct assessment and statistic works over tourism environment within the Property, analyze changes in tourist sources and markets, analyze tourist benefits, monitor existing tourist facilities, and monitor tourist impact on animal, plant, ecology and cultural relics;

Patrol Monitoring - patrol the Property to prevent, discover, and eliminate potential fires, pests and human damages;

Carrying Capacity Monitoring - The annual tourist carrying capacity shall be limited within 600,000 visitors in the Property, the daily reception within 5,000. If the limit is broken, measures shall be taken to dispersing tourists;

Community Monitoring - Inhabitants within and on the buffer zone of the Property are one of the major forces in protecting natural and cultural resources. Only if they participate in protection efforts could the Property be under effective protection. Monitoring focuses on social and economical status, impact of social development projects on protection of resources;

Prototype Monitoring - As for monitoring the Dujiangyan Weir Works, the first focus is on cross-section (scouring changes in the riverbed), the second focus on water surface (obtaining data concerning flows at different river segments of the Minjiang River), the third focus on the riverbed texture (monitoring the sand structure of riverbed), and the fourth focus on traction and suspension loads of cobbles as well as water height and flow. The 25-1 current meter is used to monitor the current velocity, the M-1 cobble traction load sampler is used to monitor the traction load, and the bottom sand sampler is used to monitor the suspension load.

Monitoring of Ancient Architectures and Ruins - Regularly monitor ancient architectures and ruins, and keep abreast

of any changes incurred to them. Monitoring focuses on impact of buffer environment on ancient architectures and ruins, as well as changes in the current statuses.

2) Monitoring Collaboration

Monitoring targets of great scientific significance shall be carried out in cooperation with research institutes and universities. Such targets will include wildlife, habitats, vegetation, ancient architecture and ruins. Cooperation agreements shall be signed with these institutions to fulfill the monitoring and research targets.

2. Administrative Arrangements for Monitoring the Property

Already established is a complete set of monitoring system. The overall monitoring of the Property is administered under the general supervision of Sichuan Provincial Construction Commission. That of animal and plant life is under the Dujiangyan Forestry Bureau. That of fire control is under the City Fire Control Headquarters. That of environment is under the City Environment Protection Bureau. That of the Dujiangyan Weir Works is under the Sichuan Dujiangyan Irrigation System Administration. That of the relic units is under the Municipal Administration of Cultural Heritage. Expert panels take regular field investigation and observation in the reservation to examine implementation of protection and monitoring approaches.

Water regimen monitoring is carried out with a well developed monitoring system and a flood information system. At the Ziping Flatland, Erwang Temple, and Baopingkou Diversion Passage, three hydrological stations are set up and staffed by a prototype observation team. Day and night, they monitor the water regimen as well as variations of traction and suspension loads, provide water stage information at 8:00 am every routine day or every hour during the high-water period. In the upper valley of the Minjiang River, the water regimen station and the precipitation station are equipped with modern communication means directly connected with the Dujiangyan City Flood Prevention Headquarters. Still farther along the upper valley, meteorological stations at Songpan, Heishui, Lixian, Maoxian and Wenchuan counties will, from time to time, send regimen reports through the Provincial Rainfall Regimen Network.

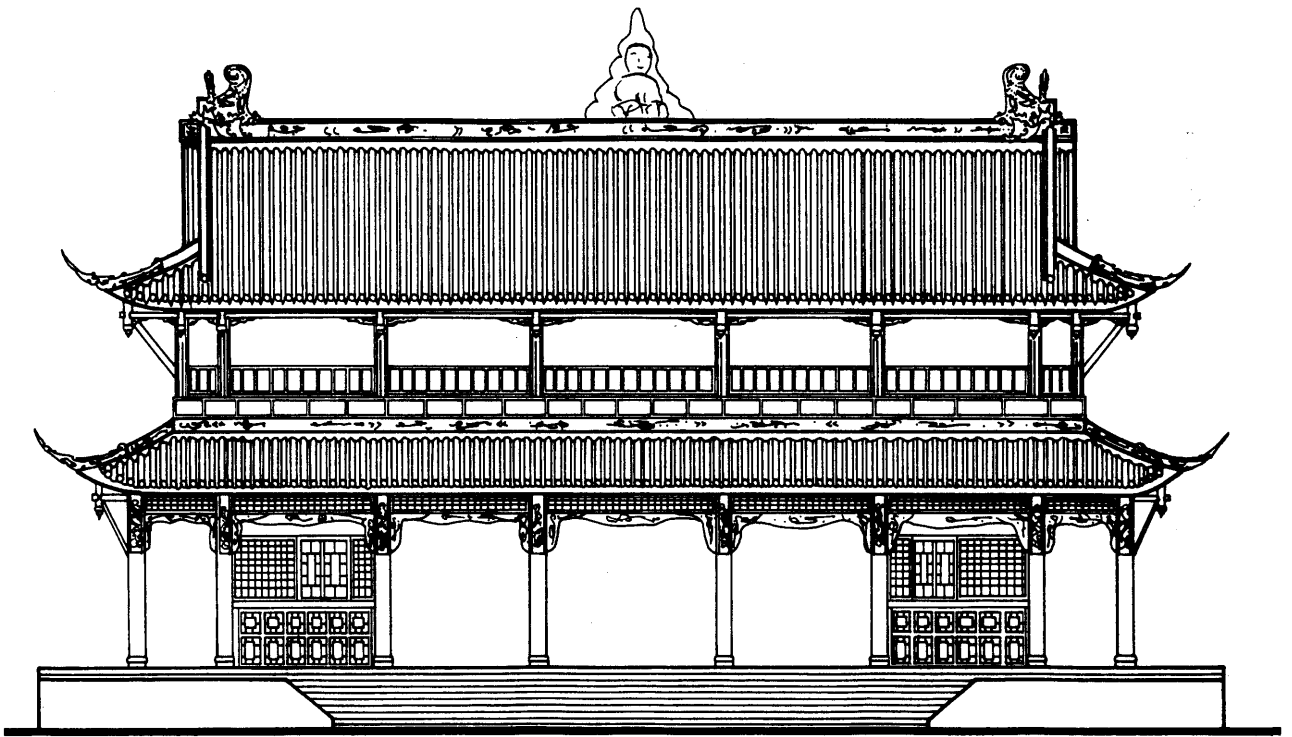
3. Results of Previous Reporting Exercises

In the early 1950, the Dujiangyan Weir Works was in disrepair and unable to supply water for local farming activities in spring season. In January, the Chinese government sent 1,500 PLA servicemen for recovery works, and 45 spots were repaired after 95 days of hard working. The immediate recovery ensured the water supply for spring farming of the year. In February 1950, the Dujiangyan (formerly Guanxian County) City Government formulated the Measures on the Management of Cultural Relics, and listed a number of ancient structures as the key protection units, including 20 architectures such as the Tianshi Celestial Cave, Shangqing Palace, Zuzhi Temple, Dujiangyan Weir Works, Erwang Temple, Fulong Temple, Anlan Bridge. Special government fund was allocated for maintenance and repair. In 1972, beams of three halls in Fulong Temple broke apart, and some of the pillars became decayed. These were immediately recovered and repaired at the support of special fund allocated by the Sichuan Provincial Government. In 1977, the National Administration of Cultural Heritage allocated special fund to maintain and repair the First Hall of Fulong Temple, all the beams were soaked in medical solutions and then dried to prevent termites. In 1982, a slight landslide at the slope under the Erwang Temple, and as special fund was allocated by the provincial government in 1983 the sliding was basically under control. In 1984, Dujiangyan (formerly Guanxian County) City established the Office of Saving Giant Panda, formulated related regulations in this effort, which results in saving giant pandas from

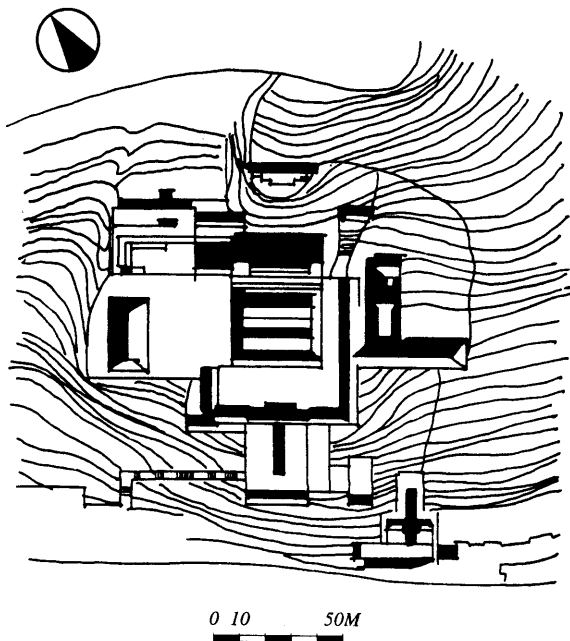
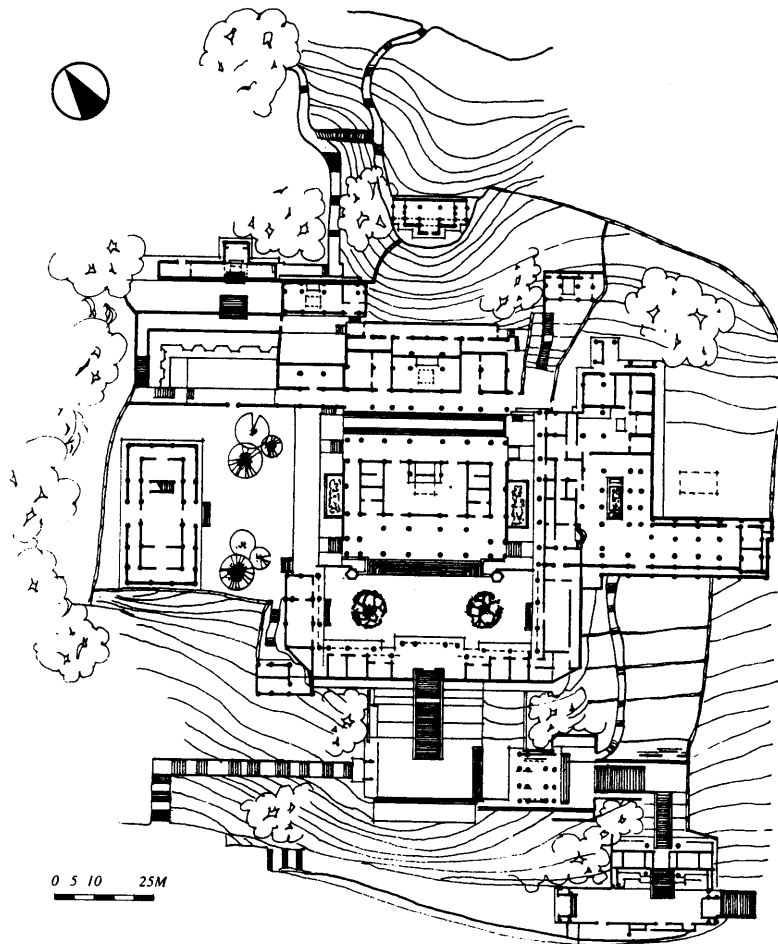
being killed or extinct within the Property. In November 1990, The PRC Ministry of Water Conservancy approved the Dujiangyan Overall Plan to expand an irrigated area of 724,000 hectares in the short term and an irrigated area of 933,300 hectares in the long run. The Ministry also approved to extend the water flow at the Baopingkou Diversion Passage to 480m³/s. In March 1993, the Dujiangyan Municipal Government formulated the Provisional Regulations on the Management of Scenic and Historic Interests Areas. In May 1999, the Ministry of Construction approved the Overall Plan of Mt. Qingcheng & Dujiangyan Irrigation System.

Part Seven DOCUMENTATION

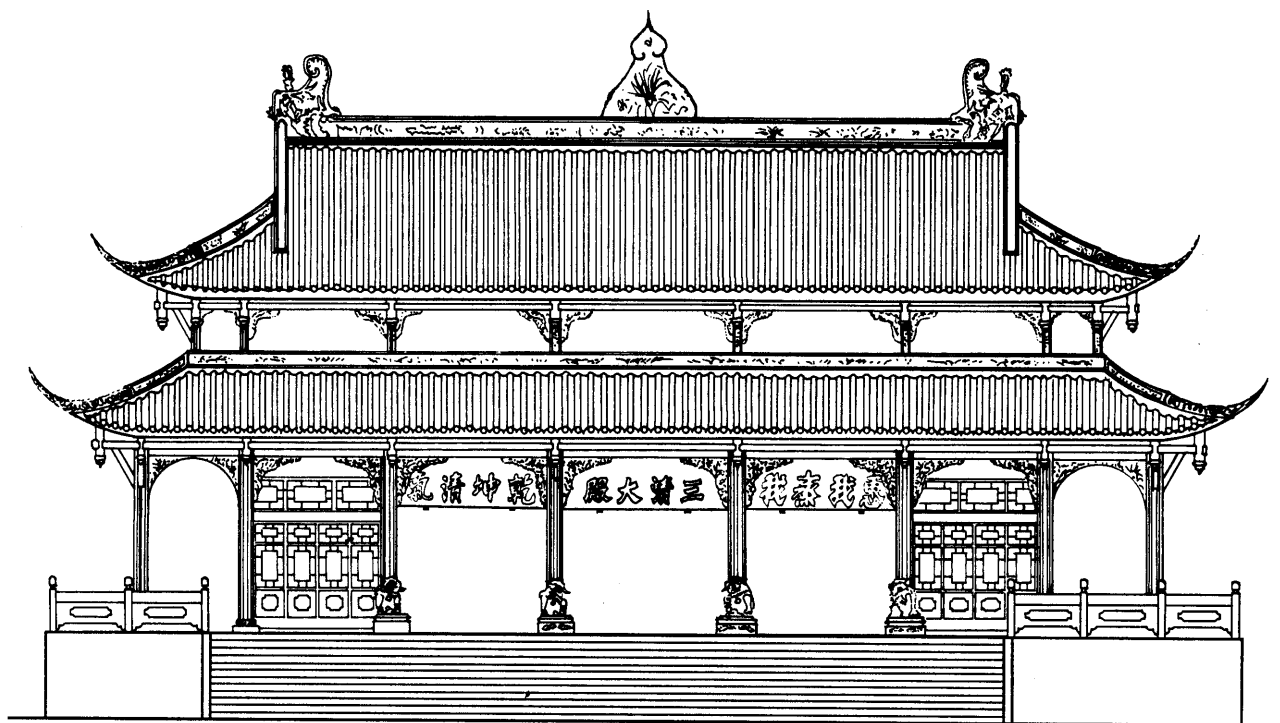
1. Architectural Sketches of Mt. Qingcheng & Dujiangyan Irrigation System



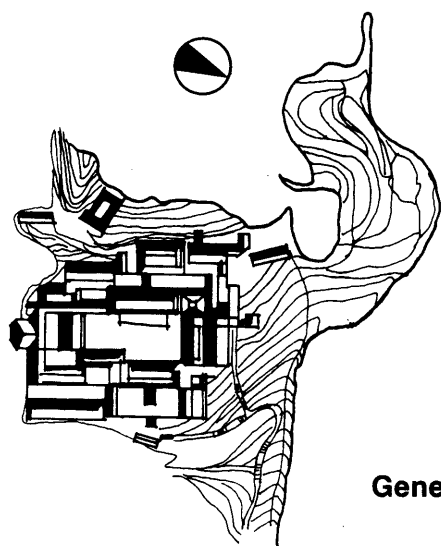
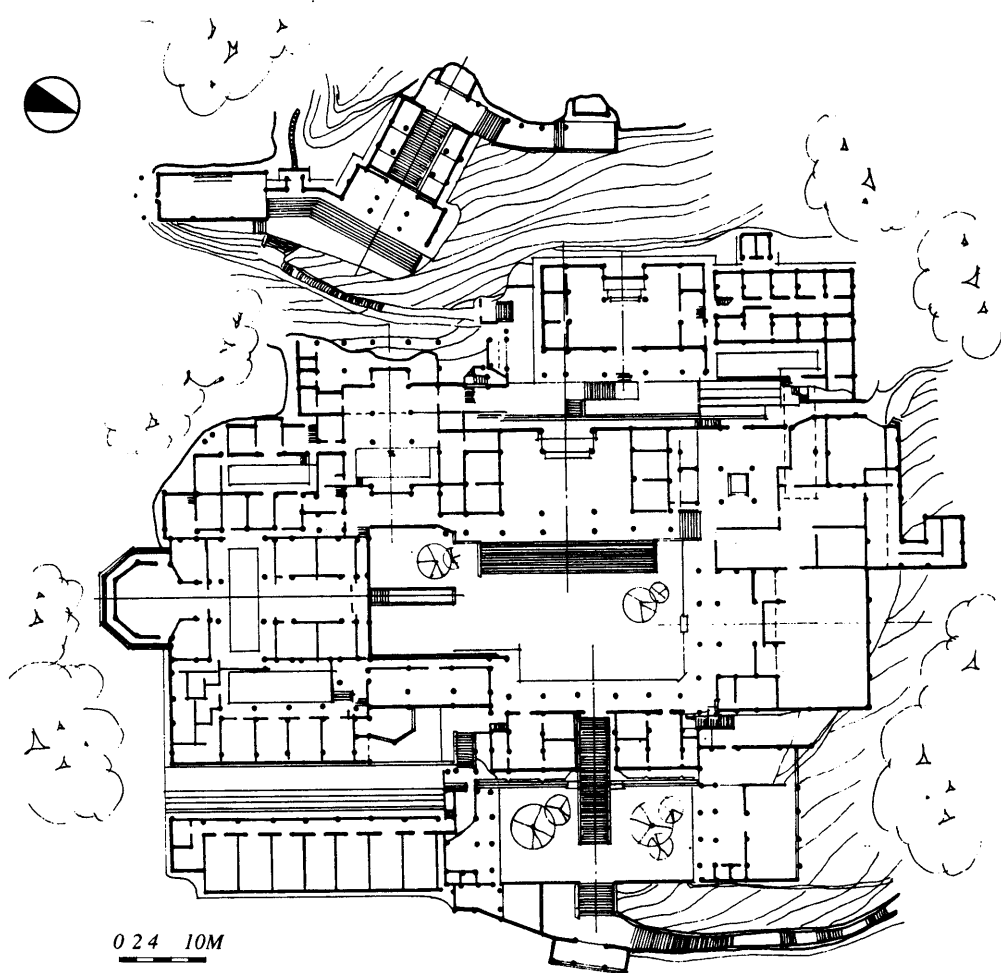
Li Bing Hall, Erwang Temple



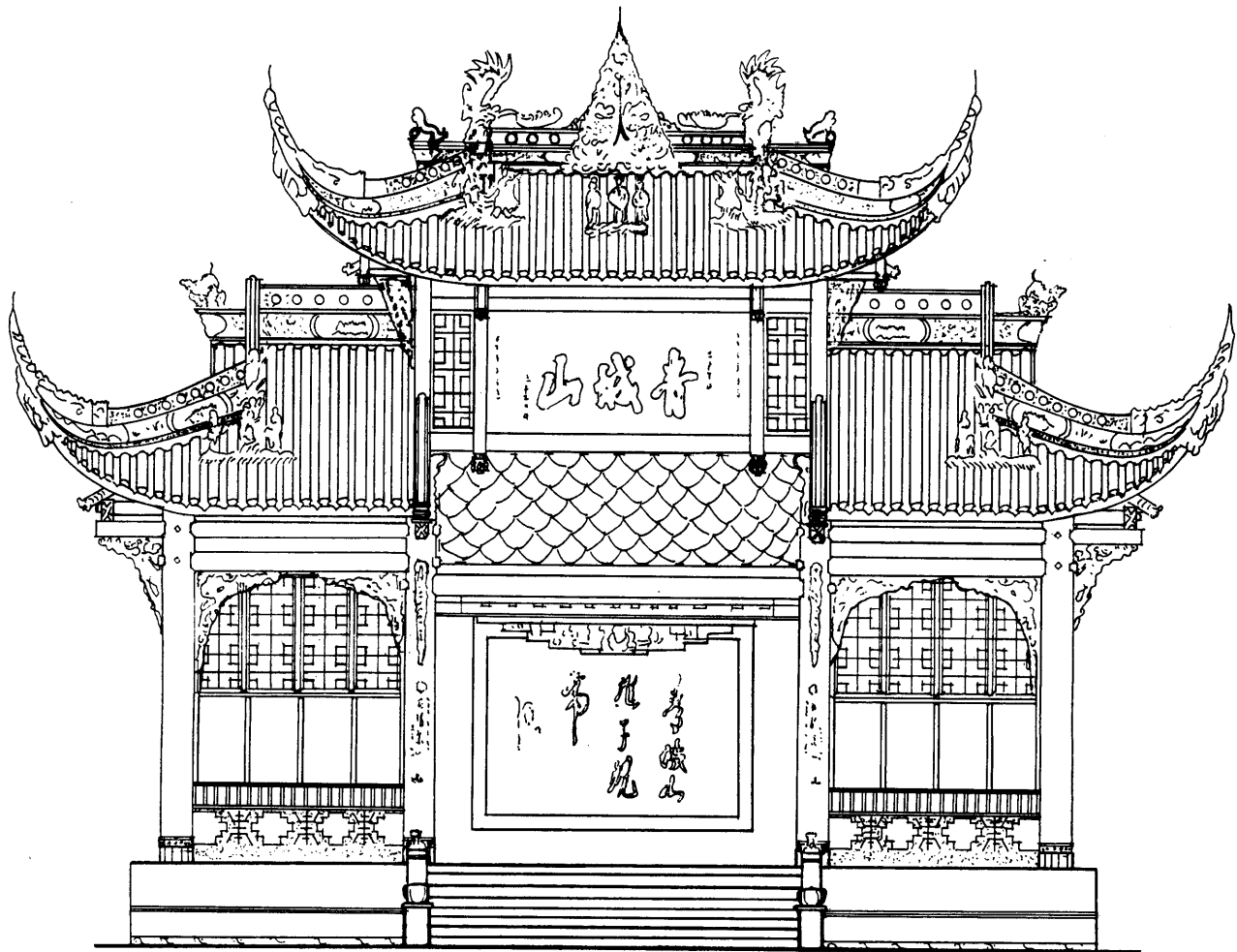
General Plane of Erwang Temple



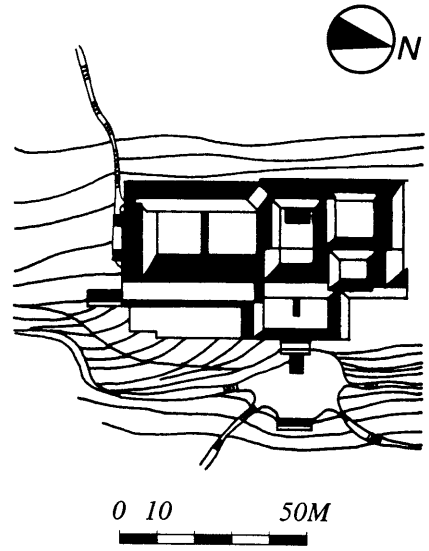
Sanqing Grand Hall in Tianshi Celestial Cave, Mt. Qingcheng



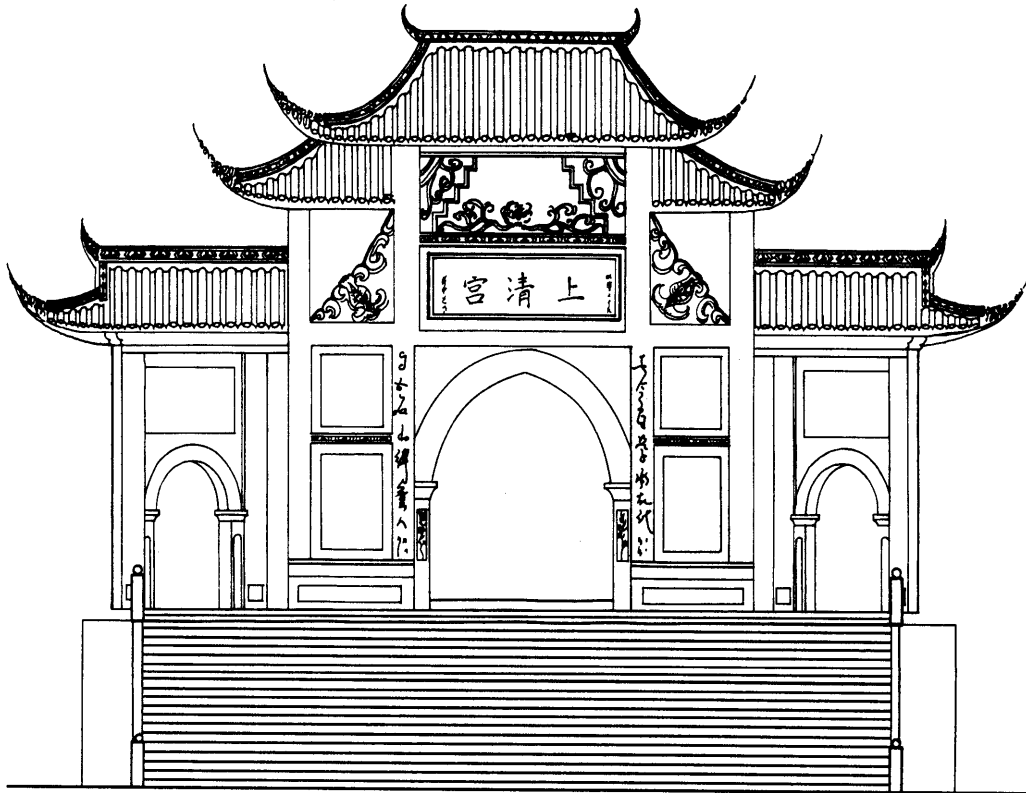
General Plane of Tianshi Celestial Cave, Mt. Qingcheng



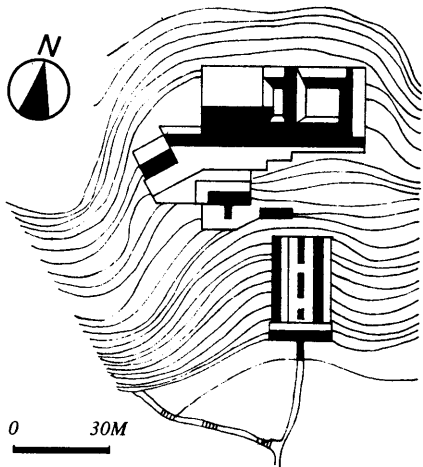
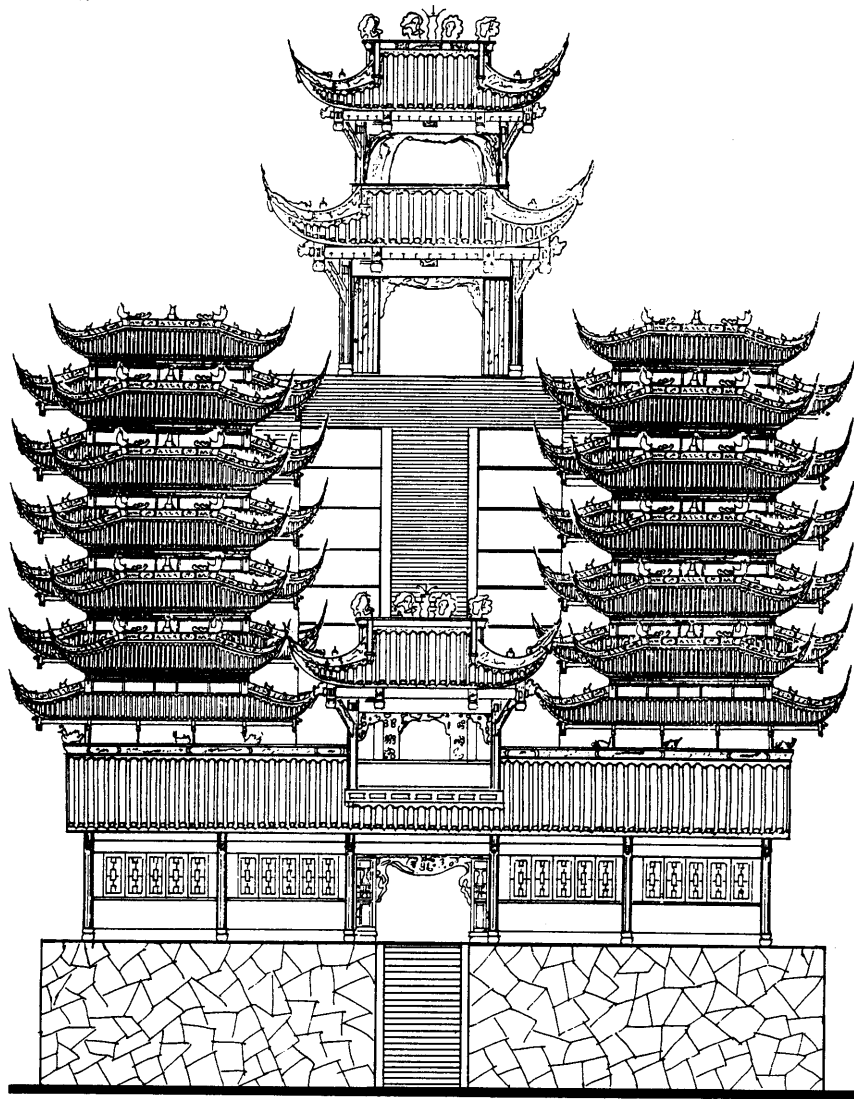
Mountain Arch of Mt. Qingcheng



General Plane of Shangqing Palace



Arch of Shangqing Palace, Mt. Qingcheng



Chengguang Temple, Yulei Mountain

2. Catalogue of Photos

- 1) Weir Works of Dujiangyan Irrigation System
- 2) Weir Works of Dujiangyan Irrigation System
- 3) **Bird's-eye View of the Dujiangyan Irrigation System**
- 4) Distant View at Baopingkou Diversion Passage
- 5) Overlook of Dujiangyan Irrigation System (2 pieces)
- 6) Streams at Origin of Minjiang River
- 7) Feishayan Floodgate
- 8) Sunset Glow at Baopingkou Diversion Passage
- 9) Flood Peak at Baopingkou Diversion Passage
- 10) Bamboo Cages of Cobbles at Feishayan Floodgate
- 11) Iron Bars Buried in Early Time of Construction for Measuring the Depth
- 12) Cable Bridge at Dujiangyan Weir Works
- 13) Ancient Musical Tower in Erwang Temple
- 14) Corridor Bridge
- 15) Erwang Temple
- 16) Ancient Architectures in Erwang Temple
- 17) Water Control Maxim by Li Bing
- 18) Yunu Peak at Dujiangyan Weir Works
- 19) Drawing of Irrigated Areas of Dujiangyan Irrigation System
- 20) Drawing of Irrigated Areas prepared in the Qing Dynasty
- 21) Water Control Maxim by Li Bing (6 pieces)
- 22) Unearthing Site of Prehistoric Ruins of Mangcheng
- 23) Sino-Japan Joint Survey over Mangcheng Ruins
- 24) Stone Statue of Li Bing of the East Han Dynasty
- 25) Newly-Made Steel Statue of Li Bing and his Son
- 26) Stoneware Unearthed from Mangcheng Ruins (2 pieces)
- 27) Flying Dragon Tripod of Ming Dynasty
- 28) Inscriptions on Stone Statue of Li Bing
- 29) Monument of 10 Million-mu Irrigated Area
- 30) Bamboo Cage Protection and Flood Discharging
- 31) Raft Diversion Works
- 32) Annual Maintenance at Inner Canal
- 33) Bamboo Cage Protection
- 34) Imitation Ceremony of Ancient Drawing Off (5 pieces)
- 35) Arch of Mt. Qingcheng
- 36) Snow on Mt. Qingcheng
- 37) 36 Peaks of Mt. Qingcheng
- 38) Morning Fog on Mt. Qingcheng
- 39) Green Peak
- 40) Tianshi Celestial Cave
- 41) Rare Phoebe on Mt. Qingcheng
- 42) Clouds over Mt. Qingcheng
- 43) Wood Kiosk in the Mountain
- 44) Shangqing Palace
- 45) Natural Painting Workshop
- 46) Temple in the Mountain
- 47) Religious Activities of Taoism
- 48) Crystal Stalactite in Karst Cave
- 49) Gold Whip Cliff of Mt. Qingcheng
- 50) Mountain Lake
- 51) Red Leaves of Mt. Qingcheng
- 52) Plank Road in the Valley
- 53) Secluded Trail (2 pieces)
- 54) Deep Valley and Stream
- 55) Foggy Mt. Qingcheng
- 56) Demon Subduing Stone of Tianshi Celestial Cave
- 57) Celebrated Stone Carvings (2 pieces)
- 58) Stone Wall with a Line of Sky
- 59) Mountain Meadow
- 60) Moon-City Lake
- 61) Natural Valley
- 62) Fog Spring in 3-Pond
- 63) Water Ripples
- 64) Water Screen Cave
- 65) Ponds in the Deep Valley
- 66) Giant Panda (4 pieces)
- 67) Golden Monkey
- 68) Leopard
- 69) Lesser Panda
- 70) Salamander (*Batrachoseps fibefanus*) at Elevation of 3,700m
- 71) Lappet Butterfly, *Teinopalpus aureus* rar
- 72) Hummingbird
- 73) Tragopan *temminckii*
- 74) Owl
- 75) *Glaucidium cuculoides*
- 76) Jin
- 77) White-Belly Pheasant
- 78) *Bonasa sewerzowi*
- 79) Roots of Ancient Tree
- 80) Arrow Bamboo - Food of Giant Panda
- 81) Moss 30cm Thick
- 82) Five Trees Grown on One Ancient Trunk
- 83) 1,800-Year-Old Ginkgo
- 84) *Cercidiphyllum japonicum*
- 85) Habitat of Giant Panda
- 86) Towering Peaks at 4,200m
- 87) Short Azalea Groves in Mountain (3,200m)
- 88) Alpine Meadow at 4,200m
- 89) Bog Moss under Azalea Shrub
- 90) U-Shaped Valley from Quaternary Glacier
- 91) Cirque Lake at 4,200m
- 92) Hemlock under Fir Woods
- 93) 200m-Deep Valley
- 94) Alpine Cedar Azalea (3,500m)
- 95) Vegetation Zone at 3,200m
- 96) Needle-Leaved Forest in Alpine Valley
- 97) Emei Fir Woods (2,900m)
- 98) Azalea Shrub
- 99) *Dividia involucrata*, *Cercidiphyllum japonicum*
- 100) Rare *Cymbidium*
- 101) Rare Orchidacean (2 pieces)
- 102) Flowers of *Dividia involucrata*
- 103) *Primula malacoides*
- 104) Alpine Azalea Woods
- 105) Fern Moss
- 106) Soft-head *Saussurea involucrata* at 4,300m
- 107) Red-Spotted Stonecrop at 3,900m
- 108) Alpine Azaleas Competing in Beauty (2 pieces)
- 109) *Saxifraga stolonifera* at 4,100m
- 110) *Cardinal Rheum officinale* at 3,200m
- 111) Taoist Nun Playing an Organ
- 112) Woodcut of Ming Dynasty in Tianshi Celestial Cave (2 pieces)
- 113) Emperor Kangxi, Qing Dynasty, Grants Dantai Bidong (red platform, green cave)
- 114) Stone Inscriptions of Tang Emperor
- 115) Poem Carvings by Celebrities

3. Copies of Property Management Plans and Extracts of Laws and Regulations relevant to the Property (Extracts)

1) Duplicate of Property Management Plan and Extracts of Other Plans Concerned

— On March 12, 1996, the Fifth Session of the Dujiangyan Thirteenth People's Congress passed the Dujiangyan City Ninth 5-Year Social and Economic Development Plan and the Outline of the 2010 Long Range Targets (1996-2000-2010).

Comprehensive management of the Property shall follow the Provisional Regulations on the Management of Scenic and Historic Interests Areas promulgated by both the State Council and Sichuan Provincial People's Congress, the Regulations of Sichuan on the Management of Scenic and Historic Interests Areas and the Regulations on the Management of the Dujiangyan Water Conservancy Project. On the basis of actualities of local natural, tourist and cultural resources, all the scenic and historic interests areas have to formulate strict management rules and regulations to ensure legal protections over these resources.

Planning and filing shall be organized for all the above resources in the Property, including ancient cultural sites of historical, artistic and scientific values; ancient graves, ancient project of water conservancy, ancient architecture, ancient kiln site, stone carving, statue and appendage; works of arts, handicrafts, ancient books and documents. These objects and relics shall be strictly protected by advanced scientific means to ensure their sustained uses.

2) Laws and Regulations (Extracts) concerning the Property

— The Constitution of the People's Republic of China (adopted on December 4, 1982 at the Fifth Session of the Fifth National People's Congress, and promulgated on December 4, 1982 by the National Congress Standing Committee)

Article 22 The State protects ancient sites of historical and cultural importance, valuable relics and important cultural and historical heritages.

— The Law of the People's Republic of China on the Protecting of Cultural Relics (adopted on November 19, 1982 at the 25th Session of the Fifth National People's Congress, and promulgated on November 19, 1982 by the National Congress Standing Committee)

Article 2 In the territory of the People's Republic of China, the state protects the following relics of historical, artistic and scientific interest:

- a. cultural sites, graves, architectures, caves and temples, and stone carvings, all of which are of historical, artistic and scientific importance;
- b. architectures, sites, monuments and mementos, all of which record important historical events, revolutionary activities and noted personage, and are of commemorative and educational significance;
- c. valuable works of arts and handicrafts collected and passed down from historical periods;
- d. important revolutionary documents and data, as well as manuscripts and ancient books and reference materials that are of historical, cultural and scientific interest; and
- e. substances and evidences that reflect historical social system, production, nationalities, living habits and customs;

Article 7 On the basis of varying degrees of historical, artistic and scientific values, these relics shall be assorted into the relic protection unit of different levels. They will include revolutionary sites, commemorative buildings, ancient cultural sites, ancient graves, ancient architecture, caves and temples, and stone carvings.

Article 11 No other construction projects are allowed within the protected boundaries of the relic protection

unit. In case of special needs, such project is subject to review and approval by the authorizing people's government and superior cultural administration. Construction within the boundaries of the key relic unit of national protection is subject to review and approval by the provincial, or autonomous region or municipality government and the national cultural administration.

Article 12 In the light of actual needs of relic protection, and under the approval of the provincial or autonomous or municipality government, a controlled zone can be designated for construction within the boundaries of the relic protection unit. However, any renovation or new construction or structure shall not mar the environment and looks of the relic protection unit. The design plan concerned is subject to approval by the cultural administration and the urban planning organ.

Article 14 In the relic protection unit, maintenance, repair and removal of the relics (rated as revolutionary sites, commemorative buildings, ancient cultural sites, ancient graves, ancient architecture, caves and temples, and stone carvings including appendage of the architecture) shall follow the principle that such activities not alter the original looks of the relics.

— The Detailed Implementation Regulations of the Law of the People's Republic of China on the Protection of Cultural Relics, adopted on April 30, 1992 by the PRC State Council, and promulgated on May 5, 1992 by the National Administration of Cultural Heritage.

Article 2 Revolutionary sites, commemorative buildings, ancient cultural sites, ancient graves, ancient architecture, caves and temples, and stone carvings are classified into the national key relic protection unit; the provincial, autonomous region and municipality relic protection unit; and county, autonomous county and municipal relic protection unit.

Article 3 The government at certain level protects the relics at its administration level.

Article 7 According to Article 9 of the Relic Protection, within one year since its promulgation, the scope of relic protection units at different levels shall be re-classified, and corresponding specifications shall be included.

Scopes of the national, or provincial, or autonomous region or municipality relic protection units are designated by the people's government at provincial or autonomous region or municipality level.

Scopes of the county or autonomous county or municipal relic protection units are designated by the people's government at county or autonomous county or municipal level.

Article 8 According to the requirement of varying degrees of relic protection, the people's government above the county level shall formulate the specific protection measures for the relic protection unit, and make known of and implement these measures.

The people's government at the county, autonomous county and municipal level shall formulate its own relic protection measures.

Article 12 According to actual requirements of the relic protection, controlled construction areas, if approved, can be designated and announced within the boundaries of the relic protection unit.

In the controlled construction zone, the facilities to be constructed shall not encroach safety of the relic. Permission shall not be given to construction or structure whose layout, height, size and tone do not harmonize the environment and relic.

— The Law of the People's Republic of China on Environment Protection, adopted on December 26, 1989 by the Eleventh Session of the Seventh National People's Congress, and promulgated on December 26, 1989)

Article 17 The people's government at all levels is responsible to protect and prevent damage of representative domains of natural and ecological systems; natural domains of rare and endangered animal and plant life, important water resource domains, geological structures of important scientific and cultural values, noted domains of karst caves and fossils, natural sites of glaciers, volcanoes and thermos springs, as well as anthropological sites and ancient trees and plants.

Article 18 No industrial and manufacturing facilities nor other related facilities shall be constructed within the scenic and historic interests areas and nature reserves and other reservations rated by the State Council, the State Council responsible administration, the people's government at the provincial, autonomous region and municipality levels. Discharging of pollutants shall be less than the regulated discharging criteria. If the completed facilities discharge pollutants that are over that criteria, regulatory measures shall be carried out within a designated period.

—The Forestry Law, adopted on September 20, 1984 at the Seventh Session of the Sixth National People's Congress, and became effective since January 1, 1985.

(5) Forest of special uses: forest and wood for purposes of national defense, environmental protection, and scientific experimentation, including the defense forest, experimental forest, seed forest, environmental reserve forest, landscape forest, scenic sites, commemorative forest, and nature reserve forest.

Article 27 Regulations binding the forest and wood logging:

(2) of the reserve forest and forest of special uses, the defense forest, seed forest, environmental reserve forest, and landscape forest shall only be logged on a tending and renewing fashion.

(3) of the forest of special uses, logging is strictly prohibited of the forest at scenic sites as well as revolutionary and commemorative forest.

—The Regulations on the Management of the Dujiangyan Water Conservancy Project, passed on June 16, 1997 at the 27th Session of the Standing Committee of the Eighth Sichuan People's Congress.

Article 12 Annual maintenance shall be carried out for the Dujiangyan Irrigation System. The people's government at all levels within the irrigated area should strengthen its leadership in the annual maintenance.

Article 13 Annual maintenance of the Weir Works shall be organized and carried out by the Dujiangyan Irrigation System Administration.

Article 14 Concerning major repairs of large-scale pest disasters and serious damage above the level of the major diversion canal, the Dujiangyan Irrigation System Administration shall formulate the proposed plan and submit it for review and approval by the responsible administration of water conservancy and the relevant provincial departments.

Article 15 Governments at all levels within the irrigated area should strengthen the protection of the irrigating facilities for effective irrigating coverage. No unit or individual is allowed to encroach on the irrigating facilities.

Article 16 The state takes the ownership of the land approved to the Dujiangyan Irrigation System as well as the water surface and water mass, which should be used only by the authorized management organ of water conservancy. No encroachment is allowed to any unit or individual.

Article 20 Within the protected range of the water conservancy project, no construction is allowed without authorized approval, nor is explosion, well-drilling, grave construction, stone and soil quarrying, and nor are other

similar activities that will interfere the safety of the water conservancy project.

No damage should ever be done to the water conservancy structures and facilities as well as amenities.

Article 21 No rubbish, wastes and polluted water are allowed to dump to the Dujiangyan Weir Works nor in the reservoir.

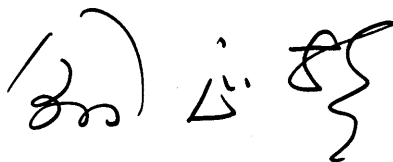
The pollutant-discharging unit shall strictly follow the relevant national regulations, so that the discharged substances will meet the criteria stipulated by the state.

Article 23 Sand quarrying is not allowed within the Dujiangyan Irrigation System unless approval is obtained from the official administration of water conservancy. Such quarrying is subject to the overall project remediation plan, and shall not interfere the safety of the project.

Article 24 No unit or individual is allowed to disturb or hinder the routine performance of the official administration of water conservancy. Management personnel of such official organ are not allowed to operate the project equipment.

Part Eight

SIGNATURE ON BEHALF OF STATE PARTY

A handwritten signature in black ink, consisting of stylized Chinese characters.

(YU Zhengshen)

Minister of Construction, PRC.

May 28, 1999

ANNEXES (Extracts)

Annex I

PROVISIONAL REGULATIONS ON THE MANAGEMENT OF SCENIC AND HISTORIC INTERESTS AREAS (Promulgated by the State Council on June 7, 1985)

Article 1 These regulations are formulated in order to improve the quality of supervision, conservation, utilization and further exploitation of the scenic and historic areas.

Article 2 Those that fall into the following categories should be rated as the "scenic and historic interests areas": places of tourist, cultural or scientific interest; places where views and sights, natural and/or artificial, are relatively concentrated; places where the environment is pleasing, and the area is sizeable and clearly marked out; places where people may relax, may go for sight-seeing and may carry out cultural and scientific activities.

Article 4 The Ministry of Urban and Rural Construction and Environment Protection exercises nationwide supervision with regard to the scenic and historic interests areas. The departments of urban and rural construction and environment protection at all other levels exercise supervision in their respective areas with regard to the scenic and historic interests areas.

Article 5 Each scenic and historic interests area shall set up a people's government, as is provided by the Constitution, which shall assume full responsibility for conservation, utilization, planning and construction.

Where a people's government is not to be established, a supervisory office is to be set up in its stead, responsible to and under the administration of the local people's government, and exercise control over the whole scenic and historic interests area. All organizations, officials or otherwise, while responsible to their respective higher level of authority, are subject to this office as far as the planning and management of the place are concerned.

Article 6 Scenic and historic interests areas at all levels shall incorporate the following into their long-range plan:

- (1) The nature of the place be defined;
- (2) The boundaries and buffer zones be marked out;
- (3) Scenes and other functional areas be designated;
- (4) Measures be determined to be taken for conservation, utilization, and further exploitation of the tourist resources;
- (5) The tourist carrying capacity be determined, and the management details determined;
- (6) Overall consideration be given to utilities, services and other public facilities;
- (7) Estimated expense and benefits; and
- (8) Other matters that deserve planning.

Article 7 Under the leadership of the corresponding people's government, the long-range plan concerning the scenic and historic interests area shall be formulated jointly by the responsible official organ and other related organs.

The long-range plan shall be open to advice and comments from all social sectors, from specialists, and from relevant official organs. The plan is subject to multi-facet comparison and argumentation.

As the authorized organ finalizes the plan, it shall be submitted for review and approval of the relevant official organs, and reported to the relevant official organ at higher level to be filed on record.

Article 8 The Property shall not be annexed by an individual or organization.

All views, sights and the environment of a scenic and historic interests area shall be carefully conserved, and shall not be altered nor vandalized in any way.

All construction projects within a scenic and historic interests area and its buffer zones shall be in harmony with the environment, and prohibit is imposed on any project that will mar the views and sights, pollute the environment, and stand in the way of tourism.

Construction of hotels, guesthouses, and sanatoriums is prohibited where tourists converge. Except for the necessary amenities and maintenance facilities, construction of structures is prohibited bordering the views and sights of high value and of major importance.

Article 9 All scenic and historic interests areas shall take proper measures to protect their vegetation; to keep the place, mountainous or otherwise, afforested, and to keep the forest from fire and pests, so that the animal and plant life may live in their natural habitat. Trees in a scenic and historic interests area or in the buffer zone, to whomever the ownership of them may belong, shall be incorporated into the long-range plan; and shall not be logged. If some trees must be logged for purpose of replacement or of thinning out, permission must be obtained in advance from the relevant official organ. Trees, ancient or famous, shall not be logged.

If plants must be collected in a scenic and historic interests area either as sample or for medical or other purpose, permission must be obtained in advance from supervisory office, a limit must be set for the amount, and an area must be defined in which the collection may be done.

Article 10 In the scenic and historic interests areas, research and appraisalment on the major sights, historical relics, ancient and famous trees must be conducted, and on the basis of which, protection measures shall be determined upon and properly implemented.

Article 11 In the light of the long-range plan, the supervisory office shall take the initiative to develop the tourist potential, to improve transportation, and to provide better service and better sightseeing conditions. But in so doing, the office shall see to it that the volume of tourists shall not exceed the carrying capacity determined in the long-range plan. To receive an unlimited volume over the carrying capacity is prohibited

Article 13 Safety measures shall be strengthened in the scenic and historic interests area to protect the views, sights and tourists.

Tourists and inhabitants in a scenic and historic interests area are responsible to assist protection of the views, sights, facilities, animal and plant life, and shall conform to the relevant regulations.

Article 15 Those who violate the above regulations in ways described below are subject to either financial or administrative disciplinary measures.

- (1) To initiate illegal construction projects on the resources of a scenic and historic interests area. In such case, the relevant supervisory office or official organ shall order that the intruder withdraw and that the illegal project be removed, and a fine may be imposed according to the nature of the case;
- (2) To vandalize the views, sights and vegetation, to poach on animal life, and to pollute and destroy the environment. The relevant supervisory office or official organ shall see to it that the act of vandalism is checked, and that economic losses due to damages are compensated, and a fine may be imposed according to the natures of the case; and
- (3) To disturb peace and order, and to break the safety rules in disregard of remonstrance. The relevant supervisory office or official organ shall either give a warning or impose a fine. If the act violates the Regulations on Public Security, punishment shall be dealt out by the public security organ on the basis of the provisions of the law.

If the above act is in violation of the Criminal Law, the Forestry Law, and the Law on the Protection of Cultural Relics, it must be brought before the court.

Annex II

REGULATIONS OF SICHUAN ON THE MANAGEMENT OF THE SCENIC AND HISTORIC INTERESTS AREAS (Promulgated by Sichuan Provincial People's Congress on May 28, 1998)

Chapter One General Principles

Article 4 Protection of the scenic and historic interests area shall conform to the principles of rigorous conservation, unified management, rational development and permanent utilization.

Article 5 The county or prefectural government ought to strengthen its leadership and supervision over the management of the scenic and historic interests area, organize the relevant official organs in the field of conservation, planning, construction and management of the scenic and historic interests area, in order to obtain the integral purpose of economic, social and environmental benefits.

Article 11 In the course of construction, the local people's government shall take necessary compensatory measures for organize units and individuals concerned to solve problems of living and production incurred from closure of farming, lumbering, herding and production. Priorities and advantages shall be given by the administration of the scenic and historic interests area in the approval to the above units and individuals whenever they are qualified for business operations within the scenic and historic interests area.

Establishment of the scenic and historic interests area shall in no way change the affiliation of the religious temple, economic entities and units, nor the ownership and the usage right of the assets within the scenic and historic interests area.

Article 12 Within the approved boundaries of the scenic and historic interests area, markers and tablets shall be planted by the responsible administration under the supervision of the people's government at and above the county level.

Chapter Three Protection

Article 13 Establishment of the development zone and holiday villas is prohibited within the boundaries and the buffer zones of the scenic and historic interests area, nor rental nor transferal of the resources of the scenic and historic interests area.

Article 14 In coordination with relevant official organs, the responsible administration of the scenic and historic interests area shall investigate the ancient architectures, ancient gardens, historical sites and sights, ancient and famous tree within the scenic and historic interests area. Their records and file shall be well kept, while the boards and signs planted for rigorous protection.

Article 15 Importance and efforts shall be attached by the responsible administration of the scenic and historic interests area to afforestation and prevention from fire, mud-rock flow, landslides, and other mountainous disasters. Importance and efforts shall also be given to proper conservation of the vegetation growth conditions and animal living environment.

Article 16 Within the boundaries and buffer zones of the scenic and historic interests area, woods and trees shall be incorporated into the promulgated regulations, and shall not be wantonly slashed. If some trees must be

felled, review and approval shall be obtained from the responsible administration of the scenic and historic interests area, and permission obtained from the official forest administration at or above the county, the same organ that is to issue the authorized license for such felling.

The scenic and historic interests area of bamboo forests need felling or thinning out may do so under the condition that natural landscape is not damaged. Such felling must be reviewed and approved by the responsible administration of the scenic and historic interests area and permitted by the official forest administration at or above the county level.

Article 17 If plants must be collected in the scenic and historic interests area either as samples or for medical purpose or as forest by products, permission shall be obtained in accordance with the relevant state regulations and from the responsible administration of the scenic and historic interests area. And an area shall be defined in which the collection may be done, and a limit set up for such collection.

Article 18 Neither unit nor individual is permitted to conduct mineral and stone quarrying, enclosing the lake for field, reclaiming wasteland, and other similar activities that might change the landform, or damage the environment and the landscape.

Article 19 Tourists and inhabitants in the scenic and historic interests area have the obligation to protect the resources of the scenic and historic interests area and various public facilities, shall consciously maintain the public sanitation and public orders, and shall conform to the relevant regulations concerning the scenic and historic interests area.

Article 20 The following activities are prohibited within the scenic and historic interests area:

- (1) graffiti on views, sights, and public facilities;
- (2) littering onto waters and ground;
- (3) poaching and farming wildlife;
- (4) climbing the trees, snapping bamboo, destroying flower and grass;
- (5) smoking and making a fire within the fire-off area; and
- (6) damages or vandalism to the resources of the scenic and historic interests area.

Article 21 Rivers and lakes, streams and brooks within the scenic and historic interests area shall be conserved and harnessed in the light of the long-range plan of the scenic and historic interests area. Neither unit nor individual is allowed to change or alter without permission the current status and looks, nor to discharge polluted waters, dump rubbish and other solid wastes.

Article 22 Fire prevention shall be organized and the related facilities upgraded within the boundaries and buffer zones of the scenic and historic interests area.

Article 23 Without permission from the relevant quarantine office, animals and plants are prohibited to enter the scenic and historic interests area.

Article 24 Factories and other similar manufacturing facilities that are likely to pollute and damage the ecological environment are not permitted to be constructed within the boundaries and the buffer zones of the scenic and historic interests area.

Warehouses string inflammable, explosive and toxic materials are prohibited to built within the boundaries of the scenic and historic interests area.

Chapter Four Planning

Article 25 plans shall be prepared before setting up the scenic and historic interests area.

Such preparation and its feasibility assessment shall extensively collect advice and comments from the relevant official organs, specialists and general public.

Article 26 Such preparation shall conform to the following regulations:

- (1) implement the laws and regulations stipulated by the state concerning conservation and utilization of the resources of the scenic and historic interests area, balance between the long-range and short-range considerations, and that between the part and the whole.
- (2) Keep intact the natural and cultural landscapes and symptomatic features, maintain the ecological balance, harmonize the construction of the facilities with the scenic environment.
- (3) Adapt the national and local economic development ability into the consideration of the development scope, progress, criteria and related quotas for the scenic and historic interests area; and
- (4) Scientifically assess the features and importance of the resources of the scenic and historic interests area, give prominence to the outstanding characters of the scenic and historic interests area so as to avoid the artificiality and urbanization of the natural landscape.

Article 27 Planning of the scenic and historic interests area is classified into the General Plan and the Detailed Plan.

The general plan includes: nature and features of the scenic and historic interests area, its boundaries and buffer zones, functions, and landscape subdivisions, tourist threshold carrying capacity, tourist routes, and various specialized outlines.

The detailed plan includes: nature and features of the scenic and historic interests area, conservation of sites and sights, development plan, tourist utilities, tourist services and related service facilities, layouts of other infrastructure, architectures for major sites and sights.

Article 29 Review and approval to planning of the scenic and historic interests area are conducted at different administrative levels.

- (1) The general plan for the state-level scenic and historic interests area is to be reviewed and approved by the local municipal or prefectural government which is to report it to the State Council for review and approval. The detailed plan for the state-level scenic and historic interests area is to be reviewed and approved by the municipal or prefectural government which is to report it to the responsible official construction organ at the provincial level for review and approval;
- (2) The general plan for the provincial-level scenic and historic interests area is to be reviewed and approved by the responsible official construction organ at the municipal, prefectural or county level which is to report it to the provincial government for review and approval. The corresponding detailed plan for the scenic and historic interests area is to be reviewed and approved by the responsible official construction organ of the municipal, prefectural or county government which is to report it to the responsible official construction organ at the provincial level for filing on record; and
- (3) The general plan for the municipal, prefectural or county-level scenic and historic interests area is to be reviewed and approved by the responsible official construction organ at the same level which is to report it to the local government for review and approval. All these reviews and approvals are to be filed on record with the responsible official construction organ at a higher level. The corresponding detailed plan for the scenic and historic interests area is to be reviewed and approved by the responsible official construction organ of the municipal, prefectural or county level.

Before submitted by the municipal, prefectural or county government for review and approval of the people's government at a higher level, the general plan for the scenic and historic interests area shall be reviewed and approved by the people's congress at the same level.

Article 30 Planning of the scenic and historic interests area finalized and approved through all stipulated procedures shall be implemented likewise. Permission is not given for any unauthorized alternation and change by any unit or individual.

Chapter Five Construction

Article 31 Construction in the scenic and historic interests area shall conform to the approved plan. The layout, height, size, style and features shall harmonized the surrounding landscape and environment.

Article 32 Construction activities shall conform to the plan of the scenic and historic interests area. In the respect of siting of the project and farmhouse, the project contractor be obtain the review and approval from the responsible official organ of the scenic and historic interests area. The project contractor shall go through relevant procedures before construction starts.

Article 34 Construction of hotels, restaurants and similar facilities is not allowed at the site of key views and sights within the scenic and historic interests area.

Article 35 Effective measures shall be taken to ensure an unpolluted construction at the scenic and historic interests area in order to conserve vegetation, water resources, and landform. As a means of enforced restoration of the damaged vegetation, thorough cleaning shall be carried out upon completion of the project construction.

Chapter Six Management

Article 36 An administration of scenic and historic interests area shall be established to exercise its management functions. Under the guidance of the people's government at or above the county level, this Administration shall take the overall responsibilities over matters like conservation, utilization, construction and management of the scenic and historic interests area.

Organization and staffing of this Administration are to be specified on the basis of the ranking and scope of the scenic and historic interests area, and duties undertaken by the provincial, municipal prefectural or county government.

Article 37 Responsibilities of the administration of the scenic and historic interests area include:

- (1) publicize and implement the relevant state laws and regulations governing realms such scenic and historic interests areas, ethnic minorities, religion, cultural relics, forestation, state land ownership, and environment.
- (2) Protect the resources of the scenic and historical interests area and ecological environment, conserve the natural and cultural landscapes and sites at the scenic and historic interests area, develop and utilize the resources of the scenic and historic interests area;
- (3) Assist preparing the general plan and implementation of the detailed plan, review and approve them the relevant general plan for the new, enlarged and revised construction projects within the scenic and historic interests area, and supervise all construction activities;
- (4) Construct, maintain and administer infrastructure and utilities of the scenic and historic interests area;
- (5) Formulate the management regulations of the scenic and historic interests area, take responsibilities of tourist safety, public sanitation and public security, manage business and service operations within the scenic and historic interests area; and
- (6) Take other duties authorized by the responsible official organs.

Annex III

PROVISIONAL REGULATIONS ON THE MANAGEMENT OF THE SCENIC AND HISTORIC INTERESTS AREA (Extracts) (Dujiangyan Municipal Government, March 1999)

Chapter One General Principle

Article 2 Scenic and historic interests areas refer to locations with concentrated scenic spots, natural attractions, and considerable scope and tourist conditions. Scenic and historic interests areas shall be reviewed and named by the people's government above the county level. Tourist domains are designated for sight-seeing, appreciation, relaxation, scientific and cultural activities.

Mt. Qingcheng and Dujiangyan Irrigation System (hereinafter the "Property" for short) covers the state-level scenic and historic interests areas ratified by the State Council in 1982, including the Dujiangyan Weir Works, Erwang Temple, Anlan Bridge, Fulong Temple, South Bridge, Kuiguang Pagoda, Kuixing Pavilion, Lingyan Cliff, Lidui Park, Yulei Park, Mt. Qingcheng (front side) and Mt. Qingcheng (back side), Mt. Lianghe Tianguo, Mt. Yutang Zhaogong, Puzhao Temple, and Shanghuang Temple. The Dujiangyan Scenic and Historic Interests Area also includes the "White Dragon Pond" and "Banruo Temple" Scenic ratified the Dujiangyan Municipal Government, including scenic spots like the Dragon Pond, Cracking Water Cave, Azalea Garden, Dragon Stream, Hongkou Primitive Forest, Banruo Temple and Lotus Lake. Other minor spots of the Dujiangyan Scenic and Historic Interests Area are the Imperial Concubine Pond, ruins of Gudao Town, ruins of Qingcheng County, and Mazu Temple. The above scenic spots are designated by the Overall Plan within the controlled boundaries.

Article 3 The Dujiangyan Urban and Rural Construction Commission takes full responsibilities over management of the municipal scenic and historic interests area. Under the leadership of the municipal government, the chief duties of the Commission are to implement laws and regulations concerning the scenic and historic interests areas, organize assessment and application of the resources, prepared planning of the scenic and historic interests area and supervise implementation, approve the siting and design plans for projection construction within the scenic and historic interests area, represent the Municipal Construction Commission in protection, planning, construction and management of the scenic and historic interests area.

Chapter Two Protection

Article 5 The scenic and historic interests areas ratified by the state, the province and the city are the areas under protection. No construction projects nor vacationing facilities shall be developed in the municipal scenic and historic interests areas and important sections of the buffer zones. And the land transferal is prohibited, nor the rental of resources of the scenic and historic interests area. The township and county involved in the above activities shall take immediate correction measures.

Article 7 All units and individuals (villages) in the scenic and historic interests area shall consciously take care of the landscape, trees and woods, facilities and environment, abide by relevant regulations. They shall not damage or alter the mountains, cliffs, stones, water area, forest and vegetation, nor the local objects, ruins and sites, gardens, ancient architecture, ruins, and the kind.

Article 8 The administration (divisions, offices) of the scenic and historic interests area shall take the protection as its primary work, acquire sufficient staff and equipment, establish and improve regulations, and take the responsibility system of the respective works. The important scenic spots, cultural relics, ancient trees and famous wood shall be well protected by investigation, appraisalment, registration, listing, filing, setting up protection signs.

Such protection shall be carried out in a strict manner.

Article 9 In the scenic and historic interests area, effective efforts shall be devoted to forest conservation, vegetating, forestation, fire and pest prevention. Vegetation, animal and plant life, and their growth and habitation conditions shall be well protected.

Trees and woods in the buffer zones of the scenic and historic interests area shall be tended and well managed, to whomever the ownership of them may belong. Wanton logging is prohibited. If logging of replacement and tending, the proposal of such shall be submitted for review and approval the Administration (division, office) of the scenic and historic interests area. This organ then submits the proposal for approval by the municipal forest organ which shall authorized the logging permit.

Article 10 These following activities are prohibited: hunting of birds and beasts, collecting animal and plant samples, collecting wild medicinal herbs, collecting seedlings, seeds and other forest by-products. If collecting is done for scientific and instructional purposes, approval shall be obtained from the administration of the scenic and historic interests area in advance, where a limit must be set for the amount, and an area must be defined in which the collection may be done.

Article 11 Water protection and management shall be strengthened in the scenic and historic interests area, to curb water pollution and destruction. A deadline shall be set for remediation, transformation, changing the line of production and resettlement concerning the polluting source in the scenic and historic interests area. Polluted water shall not be discharged from the hotel and hostels unless such water meets the criteria. Rubbish and wastewater shall be dumped into all water areas.

Article 12 The large-scale construction is prohibited that alters the landform or natural environment. Artificiality and urbanization of the scenic and historic interests area shall is prohibited.

Chapter Three Planning

Article 13 Planning for all spots in the Property shall be prepared and submitted for approval according the Provisional Regulations on the Management of Scenic and Historic Interests Areas promulgated by the State Council and the Provisional Regulations of Sichuan on the Management of Scenic and Historic Interests Areas.

The Overall Plan of the State-Level Property shall be reviewed and approved by the State Council, the detailed implementation plan shall be reviewed and approved by the Dujiangyan Urban and Rural Construction Commission and then the Dujiangyan Municipal Government.

Article 15 No unit nor individual shall alter or change the approved plans which shall be implemented in a strict manner. All of the units and individuals shall safeguard the authority of the overall plan.

In need of major adjustment or revision of the overall plan or the detailed implementation plan, the unit concerned shall go through the same application procedures for review and approval.

Chapter Four Construction

Article 16 Construction in the scenic and historic interests area shall conform to the approved plan. The layout, height, size, style and features shall harmonize the surrounding landscape and environment.

Article 17 Development project within the scenic and historic interests area shall conform to the approved plan.

The unit concerned shall prepare a feasibility report of project details, scope and initial design. This report shall be submitted to the Administration (division, office) of the scenic and historic interests area and then to the Dujiangyan Urban and Rural Construction Commission. Only after receiving approval by the above official organs could the project go through follow-up approval procedures.

Major projects in the state-level scenic and historic interests area shall be submitted to the Chengdu Municipal or the Sichuan Provincial or State Urban and Rural Construction Commission for review and approval.

The permission system for such development projects includes the Proposal of Siting the Development Project, the Permit of Land Plan for Development Use, and the Permit of Development Plan.

Article 18 The unit planning, constructing and designing the development project in the scenic and historic interests area shall submit its qualification license to the Dujiangyan Urban and Rural Construction Commission. Such qualification shall be confirmed before the unit concern may start designing or constructing.

Article 19 The unit of engineering and construction in the scenic and historic interests area of the buffer zones is subject to supervision and management of the administration (division, office) of scenic spots. It shall take effective measures to maintain the landscape and tourist safety, prevent damage to the landscape and environment. Upon completion of the project, the unit concerned shall clear the site and restore vegetation.

Article 20 For projects under construction or finished that affect the natural environment, remedial measures shall be taken to properly handle the site and affects. The facility that mar tourist views shall be covered, reworked or dismantled. A deadline shall be set for the serious polluting project to take correctional measures or resettle outside the site. Expansion is prohibited before resettlement.

Chapter Five Management

Article 22 The administration (division, office) of the scenic and historic interests area shall comply with the Provisional Regulations on the Management of Scenic and Historic Interests Areas promulgated by the PRC State Council, and the Provisional Regulations of Sichuan on the Management of Scenic and Historic Interests Areas. It shall conscientiously fulfill its duties and exercise a unified management over the resource protection, development and construction, business operation within the scenic and historic interests area.

**Formulated by Dujiangyan Municipal Government
March 1999**

REPORT OUTLINE

1. A General Survey of Mt. Qingcheng-Dujiangyan Heritage

Mt. Qingcheng-Dujiangyan Heritage zone is situated in the northwest of Chengdu plain, Sichuan, P. R. China. Located between 103° 25' 45" and 103° 38'15" E and from 30° 52'29" to 31° 01'48" N, the nomination covers an area of 54,749.5 hectares, among which, the core area accounts for 17,891.5 hectares, and the buffer zone 36,858 hectares. On the basis of the characteristics of the resources in the reservation, we classify Longxi - Hongkou as the biodiversity nature preserve, and Mt. Qingcheng - Dujiangyan as the natural and cultural preserve.

The Longxi - Hongkou Biodiversity Nature Preserve is an important habitat for rare and endangered animals like *Ailuropoda melanoleuea*, as well as the major production area of rare, ancient and relic plant species as *Davidia involucrata*, *Cercidiphyllum japonicum* and *Tetracentron sinense*. There might be the complete and most typical vertical zonation of vegetation in the same latitude zone around the world and in the north section of Hengduanshan mountains.

Mt. Qingcheng natural and cultural reservation is the birthplace of Chinese Taoism and Tianshi Tao Sect. It is the only region in mid-subtropical evergreen broad-leaved forests around the world, with *Phoebe zhennan*, the single-species dominant community and the multi-species dominant community of *Machilus pingii*, *Phoebe hui* and *Castanopsis carlesii*. It is a representative coordination of humans and nature.

Built in 256 B.C, Dujiangyan is the world's most scientifically-designed and well-preserved ecological water conservancy project for over 2000 years, which is still in good operation characterized by combination of damless diversion and nature.

In consideration of the above-mentioned striking significance and universal values of the natural and cultural resources of Mt. Qingcheng and Dujiangyan, Chinese government proposes Mt. Qingcheng and Dujiangyan to be included in the list of world natural and cultural mixed heritage, so as to be considered as the shared treasure of human beings and to be well preserved by mankind forever.

2.The Value of Mt. Qingcheng - Dujiangyan Heritage

2.1 Values of the Natural Heritage

2.1.1 In the nomination, there lies the primitive forest ecosystem in the same latitude in other parts of the world and the north section of Hengduanshan mountains and grows the most typical and complete vertical zonation of vegetation in mid- subtropical area.

The summit in the heritage zone, Mt. Guangguang, 4,582 meters high above sea level, is 3,882 meters above Dujiangyan city proper with an elevation of 700 meters, It has 7 apparent vertical zonations which increase progressively by elevation, they are:

- (a). 700m--1500m Mid- subtropical evergreen broadleaf forest
- (b) 1500m--2000m Mountain evergreen deciduous and broadleaf mixed forest

- (c) 2000m--2400m Mountain evergreen coniferous, deciduous and broadleaf mixed forest
 (d) 2400m--3400m Subalpine coniferous forest
 (e) 3400m--3800m Subalpine shrubland
 (f) 3800m--4000m Alpine meadow
 (g) 4000m--4582m Alpine flowstone belt with sparse vegetation

Each vegetation belt contains a number of vegetation types and can be classified into 6 vegetation types and 24 formations, which include most of the types of vegetation in central subtropical system in China, as well it is the only place in the world where you may find the single-species dominant community *Phoebe zhennan* and the multi-species dominant community of *Machilus pingii*, *Phoebe hui* and *Castanopsis carlesii*. Therefore, the vertical zonation of Mt. Guangguang is the most complete and typical in the north section of Hengduanshan mountains and even in the same latitude zone around the globe.

A Comparative Study Between Mt. Qingcheng – Dujiangyan and Mt. Wuyi , Mt. E'mei in the Similar Latitude Inside China:

Name	Elevation (m)	Plant Zonation	Amount of Biological Species					Forest Ecosystem	Remark
			Total Amount of species	Giant Panda (Ind.)	Animal Species	Plant Species	Primitive Family and Genus		
Mt. Qing Cheng Dujiang Yan	4582	7	14012	Over 50	11000	3012	rich	Complete, rich, diverse	Exclude Lower Plant
Mt. Wuyi	2158	5	7998	None	5110	2888	Ordinary	Complete Diverse	Exclude Lower Plant
Mt. E'mei	3099	5	5500	None	2300	3200	Ordinary	Complete Diverse	Exclude Lower Plant

Let us compare the property area with mountains at about the same latitude in other parts of the world. The Longs in the American Rocky Mountains is 4,345 meters, Elbert is 4,399 meters, Blanca 4,365 meters: they are all shorter than Mt. Guangguang; what's more, subtropical evergreen broadleaf forests cannot grow as their basic belt and vertical belt structures are relatively simple. At about 30° northern latitude in north Mexico, Peak Penyanevada is 4,054 meters. This much less elevation does not allow alpine and subalpine belts to develop as Mt. Guangguang does. In Africa the tallest mountain, the Toubkal in Morocco, is 4,165 meters, whose vegetation and vertical belts are absolutely not the match of Mt. Guangguang. In Europe, Mt. Blanc of the Alps is 4,807 meters, a better altitude than Mt. Guangguang except that the basic belt is not broadleaf and that the belt structure is not as diversified.

2.1.2 The nomination is not only the habitat of the endangered rare animal giant

pandas, but the only area to have set up a Green Corridor for them. It is the area with concentration of rare, ancient, relic mid-subtropical plants such as *Davidia involucrata*, *Cercidiphyllum japonicum* and *Tetracentron sinense*.

The nomination is where a wide range of geographical elements meet and transit, generating a sharply differentiated, complex ecological region: a meeting place for species originated from various other areas as well as for its own. Soaring mountains and deep valleys have created complex living conditions favorable to the differentiation of species, making this area the cradle of different species. The property area, with its concentration of a diversity of living things, is one of the world's key regions for the protection of biodiversity. In its territory are 3,012 species of recorded advanced plants in 1,365 genus and 278 families, among them are 397 bryophytes, 203 pteridophytes, 87 gymnosperms, 2325 angiosperms. There are 29 rare, endangered plants among which are: *Davidia involucrata* (a National Protection Class I plant), *Ginkgo biloba*, *Eucommia ulmoides*, *Cercidiphyllum japonicum*, *Tetracentron sinense* and *Cephalotaxus oliveri* and other 5 kinds of National Protection Class II plants, 18 kinds of National Protection Class III plants such as *Euptelea pleiospermum*, *Acer catalpifolium*, *Magnolia officinalis*, *Amentotaxus argotaenia*, *Phoebe zhennan*, *Tapiscia sinensis*, *Dysosma versipellis*, *Trillium tschonoskii*.

In terms of animal geographical distribution, the nomination has about 11,000 animal species, being the transition of the subregions of the Southwest mountains, West China mountains and plateaus, the Huangtu Plateau and the Qinghai-South Tibet. According to available data, there are 586 vertebrates, among which are 99 mammals, 367 birds, 22 reptiles, 23 amphibians, 97 fishes. Out of the 51,426 insect specimens, named insects totaled 1,187 species belonging to 136 families and 21 orders. There is a concentration of rare, special and endangered animals, among which are 93 special animals (28 in the class of fish, 16 amphibians, 33 mammals, 13 birds, 3 reptiles), 34 endangered animals (3 fishes, 1 amphibians, 23 mammals, 2 birds, 5 reptiles). 67 animal species are published in the National Protection Program, among which are 12 Class I animals such as the *Ailuropoda melanoleuca*, the *Pygathrix roxellanae*, the *Budorcas taxicolor*, the *Neofelis nebulosa*, the *Panthera pardus*, and 55 Class II animals such as the *Ailurus fulgens*, the *Macaca thibetana*, the *Mosehus sifanicus*, the *Pseudois nayaur*, the *Macaca mulatta*, the *Selenarctos thibetanus*, *Elaphodus cephalophus* and *Hucho bleekeri*kimura etc. The last one is a kind of freshwater salmon in the world, the endemic specie in the nomination. All these surpass that of other similar heritage areas and of Mt. Emei, a neighbor of Dujiangyan. During the Quaternary Glacier Movement the nomination has not yet been damaged, so the giant panda survived, distributing mainly in the following six mountain ranges, namely, Qinling Mountain range, Minshan Mountain range, Qionglai Mountain range, Daxiangling Mountains, Xiaoxiangling Mountains and Liangshan Mountain range. Due to the rational location between Minshan Mountain range and Liangshan Mountain range, the nomination is a transitional zone, working as a Natural Corridor for pandas in the two mountain ranges to migrate, spread and hybrid. This is playing a very important role in increasing hybridization rate, raise genetic diversity rate and reduce extinction rate. On the altitude from 2800m-3100m where it is mild and humid, a great amount of arrow bamboo communities are distributed under the dense coniferous and broadleaf mixed forest and coniferous forest, providing the most ideal environment for pandas to live and propagate. Apart from being one of the most important distributing centers of the giant panda in China, it is also the only area that has the Natural Corridor. Ever since the last century, environment separated, panda communities have shrunk, and the reproduction rate as been reduced with an average of less than 50 pandas in a community. By close inbreeding, a

lesser fauna is bound to lose genetic variations finally, thus the individual and fauna fitness will be decreased. Individual fitness is usually judged by the success rate of reproduction (Frankel & Soule 1981), while the fauna fitness is evaluated by the adaptability to the ever-changing environment. So lesser fauna can reduce the influence of unfavorable factors by reproducing rapidly. And Mt. Qingcheng-Dujiangyan, the heritage, is functioning to help pandas overcoming the unfavorable conditions. Meanwhile, it connects the isolated areas with the Natural Corridor, a key link in preserving the giant panda. In addition, the nomination is located in the links of Minshan Mountain range and Qionglai Mountain range, the most concentrated distribution area of the giant panda. This makes its geographic location unequalled and more important than any other areas in the world. Years of supervision proves that pandas living within Longxi-Hongkou biodiversity reservation are over 50. On April 18th, 1986 and May 21st, 1991 respectively, pandas looking for food in farmers houses were sighted in Nanyue Village and Dongyue Village within the reservation, and were sent back to their original habitat by the farmers. In 1999, farmers found pandas while patrolling in the mountain for 6 times. Jan. 12th, 2000, a sick panda wandered into the house of a farmer in Sehnxi Village, and were sent by local people to Wolong Giant Panda Rescue Center. With the meticulous care and timely rescue, it is now recovering and expected to be sent back its original habitat in three months.

2.1.3 Mt. Qingcheng-Dujiangyan is a typical representation of the harmonious unification of man and nature.

Mt. Qingcheng is gifted by nature with superior and favorable environment, and the origination of Taoism adds cultural connotations to it. A sea of green covered by luxuriant vegetation, it's said that the tranquility of Mt. Qingcheng is unparalleled. With profound Taoist culture and serene Taoist buildings, Mt. Qingcheng is the sacred land of Taoist pilgrims, attracting men of letters, scholars, poets and hermits to travel, lecture dwell and writ books here. The beauty of nature has molded people's temperament and enlightened people's wisdom. With the thoughts, feelings, intelligence and labor of man merged together with the landscape here, and the unity of man and nature achieved, it is the outstanding representative of the coordination of nature and culture, as well as the treasurehouse in studying Chinese history and brilliant culture, rarely seen among the famous mountains in China.

Dujiangyan Weir works is situated at the junction of the outlet of mainstream of Minjiang River and the top of the fan-shaped Chengdu Plain. Making full use of the natural condition of its descending from northwest towards southeast and in accordance with the rule of gravity, utilizing materials available, it has been automatically dividing, discharging, scouring and diverting characterized by damless diversion sustainably, protecting and optimizing the ecological environment. While utilizing the river bend attraction, building dikes, tunneling Lidui Piles and connecting the two rivers, the wire work merges pursuit and ideal of man and natural rules and ecological regulations into a organic whole, a brilliant example of the harmonious coordination of man and nature. This is unprecedented in the hydraulic history in the world.

2.1.4 The above shows that Mt Qingcheng-Dujiangyan as a candidate for World Cultural and Natural Heritage has the world's most typical, most complete vertical belts of vegetation at about the same latitude. It also has the richest species of plants and animal life unique of China's alpine and sub-alpine areas. Representing a typical harmonious unity of man and nature, this area claims the unique, precious values of a

natural heritage, reaching the standard stipulated in articles 2, 3 and 4 of the World Heritage Convention.

2.2 Values as Cultural Heritage

2.2.1 The Dujiangyan Irrigation System is crystallization of coordinated man-nature relationship, a masterpiece of creativeness in human civilization, a unique evidence of ancient water conservancy that has almost all disappeared.

The Dujiangyan Irrigation System was initiated in 256 BC by the then Qin Dynasty's Shu County magistrate Li Bing and his people dwelling today's Western Sichuan. Integrating science, nature and human work, the Irrigation System is characterized by its damless diversion, which is a brilliant example in human civilization for its long history, rational layout and sustained development. This eco-project is the only available of ancient water conservancy works which have almost all disappeared, and is therefore all the more precious when people begin to reflect upon the negative effects of modern projects and to explore the best combination of project and environment benefits.

The Dujiangyan Irrigation System is a clever utilization of the natural conditions. Built at the site where the Minjiang River's trunk stream in the upper reaches flows out of the mountains and joins the Chengdu Plain, the System is able to control hundreds of canals with just one diversion passage. By cutting through the cliff on the river's northern bank to divert water to the Chengdu Plain, Li Bing realized the quantitative control of water diversion. Based on the Baopingkou Diversion Passage, the Irrigation System kept extending its networks and, following what we know today as principles of systematic engineering, well coordinated the automatic functioning of the Yuzui Bypass Dike, the Feishayan Floodgate and the Baopingkou Diversion Passage. These three are the main works of the System, which, with their scientific planning, rational layout and well coordinated interdependence, serve as a whole to function in branching, guiding, curbing and diverting the water and in discharging flood and silt. So the Dujiangyan has a complete system for water conservancy: in the low water period, water diversion is critical to irrigation and other parts play a supplementary role in guiding and curbing the water; in the flood period when flood discharge is the main concern, the Baopingkou Diversion Passage curbs the water flow and extra water is discharged through the Feishayan Floodgate and the V-shape Embankment. When he first started the project, Li Bing also placed "three stone men" in the water to help observe the regimen. Then he made watermarks on the cliff on the northern bank of the Bottle-neck Dike. This was the world's first example to utilize the interaction of water level and discharge in hydraulic survey practices. With the Dujiangyan's location at the transition point from the mountains to the plains, the river bed load reaches an annual average of 8,450,000 tons of suspended silt, 2,000,000 tons of cobbles with an average of 176 centimeters and a maximum of 1000 centimeters in diameter. In ancient times the Dujiangyan project was built mainly with bamboo cages, sinking rafts and laid cobbles so the annual maintenance was necessary and costly. The easy and cost-saving dry-laid cobble method was then introduced and is still efficient today.

The Dujiangyan has created a water conservancy type characterized by the harmony of man with nature. Its unique hydraulic style architecture greatly influenced the vast areas in South China. The project design, as reflected in water diversion without a dam, which resembles that of a natural river course, and project drawing on local resources for building material, have all been the essence of natural philosophy and is highly referred to as

“nature-friendly” by foreign specialists in hydraulic and environment disciplines. Its unique engineering technologies were followed in the treatment campaigns of the Yellow River, the Yangtze and the Pearl River. The Dujiangyan has created the water environment of the Chengdu Plain, providing it with beautiful views, upgraded human habitat and improved ecological conditions. In the meantime the Dujiangyan is a special witness of the Shu culture in that it exerted great influence upon the city planning and construction of ancient Chengdu and its surrounding towns. In ancient times the Dujiangyan serves not only irrigation / drainage purposes but was also a water course that met demands of water supply, transportation, environment protection and flood prevention. It is an evidence of the Dujiangyan’s influence that in the cities and towns, river courses were planned as the framework. The Dujiangyan has also enriched and developed various other cultures and is actually a combination of them all. The System’s efficiency today is guaranteed by thousands of years’ proper management, which also has reflected the history of a nation’s political and cultural life. At the same time the Qingcheng Taoist culture interacted with the local political and cultural life and the interaction linked the government administration and social organizations. To meet management needs, many maxims have been summed up from water-control experience and many clusters of buildings erected, bringing to a full display the charming harmony of man and nature. Many heads of state, experts and scholars came to the Dujiangyan for visits and none could hold back their admiration. In 1872 German geographer Richthofen (1833 -- 1905) highly commended that the irrigation methodology employed for the Dujiangyan Irrigation System was so perfect that there was no rival in the world. In 1996 Mr. Franim, Secretary General of the International Irrigation and Drainage Association, came to the Dujiangyan together with scholars participating in the International Symposium on River Silt. They left behind high comments on the irrigation and drainage functions of the Dujiangyan. In 1999 United Nations Human Habitat Center officials, after their visit to the Dujiangyan, enthusiastically invited that the System compete for United Nations’ award for “Best Utilization and Disposal of Water Resource” for 2000.

2.2.2 Mt Qingcheng is the birthplace of Chinese Taoism, whose ideology has exerted significant influence upon the Chinese nation and has itself become an important part of the her cultural heritage.

In 143 A. D., Zhang Ling came to the Chicheng Cliff in the Qingcheng Mountains, where, based on the “learning of Emperor Yellow and Lao-tzu”, he created the *Tianshi Tao* (Heaven Master Taoism). Mt Qingcheng therefore is known as the birthplace of Taoism and the ancestral mountain and court hall of the *Tianshi Tao*. Well preserved here are the Heaven Master Cave rock carvings, the stone-carved figure of Heaven Master Zhang Ling from the *Sui* Dynasty, the *Tang* Dynasty monuments, the *Han* Dynasty seals, the unearthed Taoist textbooks rubbed from the *Han* Dynasty bamboo slips and the Ginkgo Tree planted by Heaven Master Zhang Ling himself, all of which are strong evidences of Mt Qingcheng as the birthplace of Chinese Taoism. The Taoism originated from Mt Qingcheng passed down through the dynasties of *Han*, *Jin* and reached its climax in the *Tang* Dynasty when Taoism developed into seven different sects, with more than 40 Taoist temples in the Qingcheng Mountain alone, and hundreds and thousands of Taoist temples spreading throughout China. Today Mt Qingcheng, as the holy land for Taoism, still claims numerous followers and their influence prevails in Southeast Asian nations. Mt Qingcheng Abbots Yi Xinying and Fu Yuantian have been successively elected Vice President and President of the Chinese Taoist Association, posts taken by leaders of Taoists. In 1995, at the second National Assembly of the Quan Chen Taoists held at Mt Qingcheng, Fu Yuantian was

elected the 23rd “Paramount Master of the Quan Chen Taoism”.

Mt Qingcheng Taoism has reached theoretical depths. In the 9th century AD, Taoist scholar Du Guangting lived here for more than thirty years and completed over thirty scholarly works in about 250 volumes, for which he is known in history as the top Taoist theorist and master of Taoism. Taoism preaches that “man is modeled on earth, earth on heaven, heaven on Tao and Tao on nature”, emphasizes reaching a state free of cares and desires and cultivating in both life and sex, in order to return to nature, to win without struggling, to harmonize with nature thus arriving at the realm of great virtue.

The Taoist culture in Mt Qingcheng includes the Qingcheng alchemy, the Qingcheng *Yi* Studies (studies of changes), the Taoist architecture, music, medicine and methods for maintaining life. The Qingcheng Swordcraft is one of China’s four major swordcrafts. The Taoist medicine and methods for maintaining life are of miraculous effects and “played a unique role in modern medicine and health care”, according to Arthur Lee in his History of China’s Science and Technology, Volume II, Taoists and Taoism. The ancient *guqin* music “Running Water”, composed and passed down by Taoist monk Zhang Kongshan, was made part of the gold-plated record in 1977, which the US spaceship Voyager II then took to the universe.

The Qingcheng Taoism has its unique position in religion: its theories, doctrines and regulations has exerted significant influence not only upon religion studies and philosophy, but also upon modern medicine, environment protection and human behavior. In a post-industrial civilization Taoism, in that it advocates for nature, is useful in generating human environment awareness and in promoting the harmonious co-existence with nature.

2.2.3 The Cultural Heritage of Mt. Qingcheng - Dujiangyan Is the Treasure For Studying Chinese History and Splendid Culture

The Mangcheng Ruins, at the foot of Mt. Qingcheng, has been proved to be an ancient city site dating back 4,500 years in the Late Neolithic Age by three large-scale excavation and studies conducted by the Archaeology Institute of Chinese Academy of Sciences, Sichuan Archaeologists Team, Chengdu Archaeologists Team, Japanese Wacada University and Japanese Intl' Research Center On Culture. And it was once the dwelling place where our forefathers had labored, lived and multiplied after they bid farewell to the mountain caves. This excavation has not only enriched the connotation of ancient culture of Mt. Qingcheng, but also has witnessed that Chengdu Plain is the center of cultural origin on the upper reaches of Yangtze River Valley, furthermore, it has provided important scientific basis and historical proof for the further revelation of civilizations along Yangtze River Basin and Shu Kingdom.

The multitudinous relics unearthed from Mt. Qingcheng and Dujiangyan are typical of Chinese civilization at that time .There are one relic unit under the state protection; three under the provincial and 18 under municipal levels. The stone statue of Li Bing carved in 2nd century A.D, Fresh Water Aquatic Culture carved stone, the stone statue of Celestial Master Zhang made in 6th century A.D, and the three emperor statue engraved in 7th century A.D and the Tang Dynasty Tablet inscribed in 724 A.D, all these are of great scientific and research value on studying the development of Chinese nationality, Chinese Taoist culture as well as the craftsmanship of ancient stone carving, as well they are the vital evidences for studying Chinese long history and brilliant culture.

The typical architecture of Mt. Qingcheng and Dujiangyan are as follows: Erwang Temple, Fulong Temple, Ancient Taoist Temple, Zhushi Temple, Shangqing Palace, Yuqing Palace and Town God Temple. All these ancient buildings have reached a high level in the ways of the over-all design, construction site selection, plane layout, construction space utilization as well as the artistic characteristics. The architectural style demonstrates Taoist culture and the features of west Sichuan residence, as well it represents not only the magnificence and sublimity of northern and imperial palace architecture, but also the exquisiteness and ingenuity of the southern and residence.

2.2.4 These demonstrate that Dujiangyan is the civilization classics of ancient human beings as well as the genius masterpiece of creativity, and has provided unique evidences for the vanished ancient water conservancy civilization. Mt. Qingcheng is the birthplace of Chinese Taoism, the cultural heritage of Mt. Qingcheng and Dujiangyan is of precious and unique value, hence it is conformed with the 1,3,5,6 criteria in the world cultural heritage.

3. Value of Cultural Heritage of Mt. Qingcheng-Dujiangyan

Mt. Qingcheng-Dujiangyan (hereinafter the “Property” for short) possesses great values of cultural heritage. Dujiangyan has been playing a significant role in the national unification as well as in political, economic and cultural development. Originating on Mt. Qingcheng, the Chinese Taoism exerts important influence on Chinese history, politics, philosophy, astronomy, geography, medical science, chemistry, literature, arts, folk culture as well as the formation of Chinese psychology. It is an indispensable part of the traditional Chinese culture.

3.1 Dujiangyan Irrigation System

3.1.1 Representative Coordination of Humans and Nature

Dujiangyan Irrigation System is a unique water conservancy model of harmonious coexistence of humans and nature, which effects major areas in China. Its Weir Engineering was built at the junction of the upper and lower Minjiang River. The Minjiang River is characterized by its large coverage of rainfall, abundant water supply, plentiful sediment loads and suspended loads. Entering the Chengdu Plain, it deposits silts and cobbles along the riverbed, and thus resulted to changeable watercourses. On the basis of these features, Li Bing and his people took in full consideration of local conditions and created the Dujiangyan Irrigation System of damless diversion under the condition of conserving and utilizing the eco-environment. This ancient water conservancy project is one of the best examples in following the natural courses and conservation, being highly recommended by foreign environmentalists and water experts as “an environment-friendly water project.” Because of Li Bing’s creation, Dujiangyan greatly improves the natural, living and water environments in Chengdu Plain. The ancient Chengdu and peripheral towns were built closes to rivers. This urban pattern is a best evidence of impact of Dujiangyan water network on urban planning. Of multiple functions including irrigation, flood discharging and navigation, Dujiangyan is displaying manifold effects for water supply, water navigation and flood prevention in Chengdu and peripheral areas. Many cultural

phenomena also derive from Dujiangyan which is known as the “Living Water Conservancy Museum” of China and of the world. As other ancient irrigation civilizations have disappeared from the world, people began to consider the negative effects of modern water conservancy projects, and explore the best form of water conservancy project and environment protection. Dujiangyan is the very unique representation left over from human civilization. The history of Dujiangyan is the history of Southwest China, influencing the regional politics, culture and religion, shaping the regional natural environment. It is a brilliant exemplification of coordination of human activities and nature.

3.1.2 Creative Masterpiece of Ancient Civilization

Li Bing, local governor, let his people build the Dujiangyan Irrigation System at about 256 B. C. He employed the principle of water dynamics in his damless diversion structure for this large-scale ancient water project. Dujiangyan was sited at the conjunction of the unique outlet of the Minjiang River and the fan-shaped top of Chengdu Plain. Builders of Dujiangyan cut open the extending-in-river ridge of Mt. Yulei, to make the Bottleneck Diversion Passage which was used to control water flow. The Yuzui Bypass Dike was built in the riverbed at the bend of Minjiang River for silt discharging purpose. The Feisha Floodgate was built between Yuzui Bypass Dike and the Bottleneck Diversion Passage for automatic flood discharging purpose. These three main components of Dujiangyan were constructed on the basis of scientific planning, rational layout, and smart coordination for joint functions of diversion, flood guiding, water storing, flood and silt discharging. Dujiangyan has become a complete scientific project for automatic water control. Since the completion of Dujiangyan, it realizes the “4-6” water division pattern. During the dry season, 60% of water flows in the Inner Canal, and 40% of water flows out to the Outer Canal. During the rainy season, 40% of water flows in the Inner Canal while 60% of water flows out to the Outer Canal. This not only guarantees the water supply for irrigated areas, but also eliminates water disasters. Minjiang River has an average annual silt capacity of 1,108~1,068 tons, the highest is 2,594 tons. Ability to solve the problem of silt discharging is the key to the success of Dujiangyan. By means of bend flow, Dujiangyan is able to automatically divide and discharge silt. As a result, 74% of the silt and stones are discharged along the Minjiang River, and 75% of the silt and stones after entering the Inner Canal are discharged out from the Feisha Floodgate. Besides, routine harnessing of the riverbed further improves the silt discharging capacity. In building Dujiangyan, Li Bing set up in the river center the “Three Stone Men,” and in the Song dynasty (A. D. 960-1279), the local governor carved the Water Ruler (river gauge) on the cliff to observe the rise and fall of water – the earliest such gauge for hydrographic measurement in the world.

Through 2,350 years of development, Dujiangyan Irrigation System still keeps its original looks of scientific layout. As Li Bing selected it, the Weir Site stands firmly at the first bend after Minjiang River rushes out from mountains. The damless diversion construction created by Li Bing remains intact up to now, and no change is made to the three main components of Dujiangyan. Along with rapid development of modern science and technology, corresponding changes have taken place in building materials and maintenance technology. Since the 30s, the concrete was used for the foundation of Yuzui Bypass Dike. Since 1949 the cemented cobble structure have replaced the original dry cobble structure, they upgraded the engineering’s quality and capacity against water washing. Traditional building materials such as bamboo, lumber and cobbles are still being used in flood prevention works in the irrigated areas, as well as in river harnessing projects. The previous temporary water-blocking works are substituted by permanent works to regulate the water

flow into the Inner Canal, and control the total water flow. However, these changes never alter the nature of three main components of Dujiangyan Irrigation System.

3.1.3 Rich Water-Control Experience and Splendid Traditional Technology of Dujiangyan are Unique in the Science History of World Water Conservancy

For a long time, summarized from the operation and management of Dujiangyan are the 6-character maxim “deepening the riverbed so as to build low dikes,” and the 8-character axiom “construction in the light of general conditions and circumstances,” “cutting off the sharp angle at the bend, and harnessing on the straight watercourse”, and other outstanding experiences. Builders of Dujiangyan have solved the problem in management of movable riverbed. The unique techniques created for management and maintenance of Dujiangyan include “cage-stone technique,” “raft technique”, “dry cobble technique,” “stake and sheep pen technique,” “river earthwork technique”. These time saving methods take local materials, and are easy to construct. They not only guarantee the effect harnessing of Dujiangyan, but also contribute a lot to harness the Yangtze River, Yellow River and Zhujiang River. They are of high values in the water conservancy science of China and even of the world.

3.1.4 Brilliant Example in Management of Ancient Water Conservancy Project

Management is the key to survival of Dujiangyan for over 2,200 years. In Qin dynasty (211-206 B. C.), Qingshi Prefecture set up an official management organ; in Han dynasty (202 B. C. – A. D. 204), the “Dumuyuan” and “Dushuizhang” were leading officials in charge of Dujiangyan affairs. The Shu Kingdom set up local officials and “organized 1,200 people for maintenance and repair works.” Similar organs were set up in Jin (265-316), Tang (617-907) and Song (960-1279) dynasties. Affairs of Dujiangyan were managed by counties and stationed military forces in Yuan dynasty (1206-1368), and by “Water Conservancy Ministry” in Ming dynasty (1368-1644) and in Qing dynasty (1616-1911). Since 1911, Sichuan set up a number of management organs, such as water conservancy bureau, Dujiangyan Engineering Division, and Sichuan Dujiangyan Management Division. Since 1949, these specialized organs are still kept for routine management and maintenance. This way of uninterrupted management is the very guarantee of long-term and unflinching operation of Dujiangyan. Such management model of ancient water project is making greater and greater contributions to local cultural and economic development.

3.1.5 Dujiangyan Provides a Unique Witness to Disappeared Ancient Water Civilization

There are world-renown irrigation cultures in ancient Middle East, North Africa and South Europe. Why did all of them disappear?

3.1.5.1 Building materials of these ancient water works are mainly rocks and lumber. Discontinuance of management ends up in their extinction.

3.1.5.2 What are these types of water works of ancient irrigation cultures? Except channels and launders from archaeological discoveries, we understand there is no written records of other water works built on watercourse except Dujiangyan. Uninterrupted recording of Dujiangyan enables us to understand the process of its development. It is well grounded to conclude that Dujiangyan basically maintains its original architectural layout and model.

3.1.5.3 Existence of Dujiangyan proves the ancient Chinese water conservancy engineering, provides a historical basis for understandings of human utilization of water resources, of an ancient model of architecture, and of the history of Chengdu Plain.

3.1.5.4 According to archaeological discovery, people make use of flood seasons of the Nile River of Egypt and Euphrates River of Syria, to store water for irrigation. Except maintenance during local water interceptions, Dujiangyan is able to provide water source and for navigation. This is also one of the features of damless water works like Dujiangyan.

3.1.6 Great Achievements of Dujiangyan Exert Far Reaching Impact in China and the World

It is Dujiangyan that creates the Land of Abundance, making great contributions to national unification and development, to relieving flood-stricken people, to fighting against foreign invasion, and to creating the modern civilization of Chengdu Plain. Only 100 years after Dujiangyan was complete, it became well known throughout China and was favorably recorded in history. Its comprehensive utilization of water resources draws frequent visits from many national leaders and foreign scholars. In 1872, the German geographer Richer Hoffen commented, “the complete technology of Dujiangyan is unrivaled throughout the world.” In 1986, Mr. Francis Jim (general secretary of the International Irrigation Society) and specialists from the International River Silt Society visited Dujiangyan, highly commended on its silt discharging performance. In March 1999, officials from the UN Human Habitation Center recommended during their visit that Dujiangyan Irrigation System was qualified to apply for the “2000 UN Best Water Utilization and Disposal Award.”

3.2 Mt. Qingcheng

3.2.1 Mt. Qingcheng is the Birthplace of Chinese Taoism, and the ancestral land of Tianshi Tao Sect.

During the Shundi Reign of the East Han dynasty (126-144), Zhang Ling and his disciples moved to Sichuan and settle on Mt. Qingcheng. They remodeled the Yellow Emperor - Laozi School into the Wudoumi Sect or what is today called Tianshi Sect, compiled 24 volumes of Taoist scriptures, established the Chinese Taoism, and set up “24 regulations” to govern the believers. In A. D. 156, Zhang Ling “ascended to heaven” on Mt. Qingcheng, where relics of Zhang Ling are still seen today, including “Devil Subduing Stone,” “Pen-Throwing Groove,” “Tianshi Celestial Cave.” Mt. Qingcheng is the birthplace of Chinese Taoism, and ancestral land of Tianshi Tao Sect, where Taoist masters come from all corners of China to pay their homage.

3.2.2 Profound Taoist Theories of Mt. Qingcheng

It is over 2,000 years since creation of Chinese Taoism on Mt. Qingcheng. Taoist theories were extensively disseminated in Han and Jin dynasties, and developed in North & South dynasty, and came to its height in Tang, Song, Yuan and Ming dynasties, and this indigenous religion is still popular today in China. The Chinese Taoism has the following features:

- a) “Tao” is the paramount belief - Taoists believe that “Tao” is omnipresent and

everlasting, the source of all beings, and the highest moral that deserves full and perfect respects.

- b) Respect to birth and life – By means of religious cultivation, Taoists believe they could integrate themselves with Tao, for longevity. This formulates a perfect ideological system.
- c) Worship of deities and reverence of ancestors – Such worship means advocacy of their good morals to encourage the coming generations. It also means remembrance of their forefathers.
- d) Do good deeds – It guides people to the right course to kindness and charity.

There are plentiful literatures about Taoism, the *Anthology of Taoism* is one of the three treasures of traditional Chinese culture.

3.2.3 Mt. Qingcheng Makes Great Contribution to Development of Chinese Taoism

Since Taoism created by Zhang Ling, Mt. Qingcheng has nurtured generation after generation of Taoist reverend masters who make outstanding contribution to the development of Chinese Taoism. In Han and Jin dynasties, Fan Changsheng “is good at astronomy and religious tactics. He is worshipped by folks like an immortal.” He compiled the 10-volume Book of Yi. In the late Tang dynasty, the well-known Taoist master Du Guangting lived on Mt. Qingcheng for about 30 years, integrating all related schools, compiled 30 books of some 250 volumes which take an important position in the Chinese Taoist scriptures. He was revered as the Master Taoist. In South Song dynasty, Zhang Jixian (Xuqing Master) came to settle in Mt. Qingcheng, and rejuvenated Taoism in the Changdao Temple. In Yuan dynasty, Wang Jixu became the Suzerain of Qingcheng Taoism. In 1669, Cheng Qingjue of the Longmen School came to Mt. Qingcheng and established the “Quanzhen Longmen Dandai Bidong Sect.” In contemporary and modern times, Qingcheng Taoist masters like Peng Chunxian, Yi Xinying and Fu Yuantian are leading figures in the Chinese religious circles. Yi Xinying and Fu Yuantian were selected as vice chairman and chairman of the Chinese Taoists Association. In 1995, the Second National Sermon Meeting of Quanzhen School was held on Mt. Qingcheng, Fu Yuantian was elected the “23rd Paramount Master of Quanzhen Celestial Sect.”

3.2.4 Long and Splendid History of Mt. Qingcheng Taoist Culture

The Taoist culture of Mt. Qingcheng includes Qingcheng alchemy, Yi theory, internal cultivation, medical regimen, martial arts, and Taoist music, which are important components of traditional Chinese culture. The Qingcheng alchemy has a long history, and many Taoist priests engaged in it, who have left a number of written works about it, such as the Secret of Alchemy Cultivation, Poetry of Alchemy, and Medical Erya. In the chapter “Taoists and Taoism” of the History of Chinese Science (chapter 10, vol. 2), the British scholar Joseph Lee comments, “Taoism puts theory into practice, thus it originates chemistry, mineralogy, botany, zoology and pharmacology in South Asia. The Qingcheng “Yi Sect” is an important part of Qingcheng traditional culture. Many Taoist hermits and priests studied the Book of Yi on Mt. Qingcheng, the leading scripture is the “Zhou Yi (10 volumes). The Qingcheng Internal Cultivation and Medical Regimen are nationwide known. In the same book, Dr. Joseph Lee comments that Taoist medicine and regimen “take a unique place in modern medicine and health care.” The Qingcheng martial arts are equally known as Shaolin, Wudang and Emei wushu. The Qingcheng sword arts is known as one of the four sword arts schools in China. The Qingcheng Taoist music refers to vocal

music and instrument music. The former covers musical melody, chanting, and meditation. The instrument music is further divided into delicate and vast music. Zhang Kongshan, Taoist priest and dulcimer master of the ancient Shu school, composed the *Flowing Water*, which was in 1997 recorded into the gilt disc in the United States and sent to space by the *Voyager II*.

Taoism takes a unique place in Chinese religion. Its theory, doctrines, and canons have exerted positive impact on religion, philosophy, social science, as well as modern medicine, environment protection, and behaviorism. Today, the world has gone through industrial civilization, while Taoism respects the nature, and the return to original purity and simplicity. It is significant to enhance the public awareness of environment, and to promote harmonious coexistence of humans and nature.

3.3 Rich Cultural Relics of Mt. Qingcheng – Dujiangyan Are Treasures in Studying Chinese History and its Splendid Culture

Mangcheng Ruins, at the foot of Mt. Qingcheng, have been proved to be an ancient city site dating back 4,500 years ago in the late Neolithic Age. The 3 large-scale excavation studies were conducted by the Archaeologists Institute of the Chinese Academy of Sciences, Sichuan Archaeologists Team, Chengdu Archaeologists Team, Japanese Waceda University, and Japanese Int'l Research Center on Culture. And it was once the dwelling place where our forefathers worked, lived and multiplied after they bid farewell to the mountain caves. This excavation has not only enriched the connotation of ancient culture of Mt. Qingcheng, but also witnessed that Chengdu Plain is the center of cultural origin on the upper reaches of Yangtze River Valley. Furthermore, it has provided important scientific basis and historic proof for further revelation of civilizations along Yangtze River Basin and Shu Kingdom.

Multitudinous relics unearthed from Mt. Qingcheng and Dujiangyan are typical of Chinese civilization at that time, including the stone statue of Li Bing carved in 2nd century, Fresh Water Aquatic Culture carved stone, the stone statue of Celestial Master Zhang made in 6th century, the three-emperor statue engraved in 7th century and the Tang Dynasty Tablet inscribed in 724. They are of great scientific and research values in studying the development of Chinese nationality, Chinese Taoist culture, as well as the craftsmanship of ancient stone carvings. Besides, they are the vital evidences for studying Chinese long history and brilliant culture. Here in Dujiangyan are 1 relic unit under state protection, 3 under provincial and 18 under municipal protection.

The representative architectures of Mt. Qingcheng and Dujiangyan include the Erwang Temple, Fulong Temple, Ancient Taoist Temple, Zhushi Temple, Shangqing Palace, Yuqing Palace, and Town God Temple. All these ancient buildings have reached a high level in terms of overall design, selection of construction site, plane layout, construction space utilization, as well as artistic characteristics. Their architectural styles demonstrate Taoist culture and features of West Sichuan residence, and they represent not only the magnificence and sublimity of northern and imperial palace architecture, but also the exquisiteness and ingenuity of the southern residence.

To sum up, Dujiangyan is a masterpiece of ancient human civilization as well as an exclusive evidence of the disappeared ancient water conservancy civilization. Mt. Qingcheng is the birthplace of Chinese Taoism, which makes great contribution to

dissemination and development of Chinese Taoism. The cultural heritage of Mt. Qingcheng and Dujiangyan is of significant and unique value, hence it is conformed with the criteria stipulated in Articles 1, 3, 5 and 6 in the World Cultural Heritage Convention.

4. Preservation and Management of the Heritage

4.1 History of Preservation and Management

4.1.1 History of Preservation and Management of Dujiangyan

Over 2000 years' uninterrupted performance of Dujiangyan Irrigation System results from continuation of its management. The centralized and specialized management on Dujiangyan has evolved through the ages, and it is a management example of ancient water conservancy projects in terms of its scientific and perfect management system. Early in Qin Dynasty, a special official was designated in charge of Dujiangyan; In Han Dynasty, a post of water conservancy official responsible for Dujiangyan was set up; In the Shu Kingdom, 1200 young men were recruited for protecting the Dujiangyan Irrigation System; In Jin, Tang and Song dynasties, the county magistrate was in charge of the Weir Works of the project; Starting from Yuan dynasty, the county government and the army took over the duties of management for the Weir Works of Dujiangyan; From the 6th year of Yongzheng Emperor in Qing dynasty till the end of Qing dynasty, a high-ranking water conservancy official was appointed. During the period of the Republic of China, an important post of water conservancy official to Guanxian county, Sichuan Provincial Water Conservancy Administration, Dujiangyan Engineering Department and Sichuan Dujiangyan Drainage Area Administration had been set up successively. Since the founding of P. R. China, a special institution in charge of Dujiangyan has been established by Sichuan Provincial Government.

4.1.2 History of Preservation and Management On Mt. Qingcheng

Mt. Qingcheng Scenic & Historic Interests Area has always been preserved and managed in the past dynasties. In the 2nd Century B.C, after Qin Kingdom unified China, Mt. Qingcheng was listed as one of the 18 sacred mountains and rivers. Since the founding of Taoism in Mt. Qingcheng, it has been jointly managed by the central government and the Taoist masters. In 1937, a special governmental institution for the management of Mt. Qingcheng, the Guanxian-Jiazhou-E'mei Scenic Spots Administration was set up by Sichuan Provincial Government; In 1950, the Guanxian Scenic & Historic Interests Area Administration was set up. In 1951, Guanxian Cultural Relics and Places of Historic Interests Protection And Management Commission, Mt. Qingcheng Branch was founded; In 1976, Mt. Qingcheng Management Department was set up. In 1990, Mt. Qingcheng Management Administration was established.

4.1.3 History of Preservation and Management In Longxi-Hongkou Nature Preserve

The Longxi - Hongkou Biodiversity Preserve has been managed by the department of forestry in the government. In October, 1988, Academia Sinica set up the West China Sub-alpine Botanical Garden in this reservation, which was inscribed as one of the five basis for biodiversity reservation; In 1996, the Longxi - Hongkou Nature Reserve Administration was founded; In December, 1997, approved by the State Council, it was formally appointed as Longxi - Hongkou State-Level Nature Reserve. For a long time, a special team

organized by the departments of forestry has made regular monitoring on changes of vegetation and key plant species and they have made fruitful results in the monitoring and protection on Giant Panda. From 1982 to 1984, arrow bamboo was found bloomed, which greatly threatened the survival of Giant Panda. The local government took immediate measures to transplant the arrow bamboo and prepare alternative food for Giant Panda. Furthermore, the local government also awarded the meritorious people involved in the protection of Giant Panda and offered compensation to the local farmers whose houses were damaged by Giant Panda, so as to guarantee the survival and breeding of Giant Panda.

4.2 Perfection of the laws and Regulations on Preservation and Management

To legislate the preservation and management on the heritage, Sichuan Provincial Government has formulated provisional regulations on heritage management; In line with the laws and regulations promulgated by the State and Sichuan province, Dujiangyan Municipal Government has drafted The Provisional Regulation On The Management of Scenic and Historic Interests Areas, Proposal on Further Enhancing The Protection of Cultural Relics and Overall Planning On Mt. Qingcheng and Dujiangyan Scenic and Historic Interests Areas approved by the State Council as well as a series of regulations on heritage protection in terms of forest ,water recourses, project building, scenic spots environment and security, etc.

4.3 Preservation and Management In Line With The Law.

4.3.1 Goal Setting and Scientific Planning

The basic principles of preserving and managing Mt. Qingcheng and Dujiangyan are strict protection, unified management, rational development and continuous utilization, while the main target is to implement related laws and regulations, protect the precious natural recourses, ecological environment and historical and cultural heritage of Mt. Qingcheng and Dujiangyan supported by advanced technology and management and on the precondition of strict protection, we will make rational development and realize the integration of protection and utilization so as to make Mt. Qingcheng and Dujiangyan to be a first-class natural and cultural heritage reservation.

4.3.2 Improving Administrative Structure and Personnel Performance

Mt. Qingcheng-Dujiangyan Administration of Scenic and historic Interests Areas is founded according to the law, responsible for the unified planning and management of the whole inscribing area. Accordingly, Administration of Mt. Qingcheng, Administration of Scenic and Historic Interests Areas, Administration of Longxi-Hongkou Nature Reserve, Dujiangyan Administration and Administration of Cultural Heritage are also set up on the basis of regional distribution and functions.

We are supposed to emphasize personnel training to improve on the managerial performance. The number of administrative personnel of all kinds within the inscribing areas amounts to 850, among which there are 32 with senior technical titles, accounting for 3.76% of the total, 285 with intermediate technical titles, accounting for 33.5%, and 312 with elementary titles, accounting for 36.7%.

4.3.4 Comprehensively Monitoring and Ensuring the Key Protection Point

In line with the planning, ecological and cultural heritage protection are considered as key protection point of the inscribing areas.

We carried out overall monitoring over hydrological, geological, meteorological, environmental and species changes. Firstly, boundary tablets and markers are set up to delimit the protection areas. Secondly, hunting is prohibited and forest fires are guarded to preserve the habitat of giant pandas and other wild animals. Thirdly, biological management is combined with engineering administration so as to prevent water loss and soil erosion. Fourthly, in order to protect precious trees and animals, measures as setting up documents, protecting and hanging up boards are taken. Particularly, the Natural Corridor between Minshan mountain range and Qionglai mountain range, where genetic genes of the giant panda are proliferated, should be well preserved, the crossbreeding rate should be improved to the maximum, and the extinction rate should be cut down. Fifthly, we should perfect protective infrastructure and harness industrial wastes. Lastly, professional personnel should combined with the participation of the masses, and train and organize people to take part in the ecological protection in an active way.

Authorities at state, provincial and municipal level have organized four large-scale general survey over the cultural relics within Mt. Qingcheng-Dujiangyan areas, clarifying protection level and setting up tablets. We complement Act of Cultural Heritage Protection, strictly follow the laws concerned and the procedures of repairing cultural relics while renovating cultural heritage, so as to reserve the authenticity of the cultural heritages on the ground and kept in museums.

4.3.4 Strengthening Science and Technology, Attaching Great Importance to Education

West China Sub-alpine Plants Institute of Chinese Academy of sciences and other scientific institutions of forestry, hydrology, hydraulic, environmental and cultural relics have been founded, and modern sciences and techniques have been taken to carry out wide and in-depth study. Moreover, we issued academic treatises as *'94 Collected Works of the International Seminar on the 2250th Anniversary of the Creating of Dujiangyan, Sichuan, China, Study and Preserve of the Biodiversity of Dujiangyan City, Development and Utilizing of Medical-Use Plants and Animals, the Unique Resources* etc.

We emphasize propagation and education to promote public awareness of protection, giving full play to public media of all kinds to the popularizing education on the nature, historical culture and sciences, carrying out public activities as Adopting Trees, Freeing Captive Animals, and fostering the sense of Loving Dujiangyan, Preserving the Heritage.

4.3.5 Ensuring Administrative Outlay

Administrative outlay of Mt. Qingcheng-Dujiangyan is collected by financial allocations from the state, provincial, municipal and local authorities, and units gains and other channels.

4.4 Planning and Administrating Comprehensively

Local government of past ages attached great importance to the preservation of Mt.

Qingcheng-Dujiangyan inscribing areas. Nevertheless, due to some historical reasons, especially between 1950's and 1960's, cutting trees and mining were popular in the low-elevation areas in the preservation, leading to damages to the vegetation to different degrees. In an aim to restore the original conditions of the inscribing areas, bring timely protection and scientific administration to the areas and benefit future generations, Dujiangyan Municipal People's Government grasps the opportunity of inscribing, carrying out unprecedented comprehensive environmental administration and preservation over Dujiangyan in compliance with the standards of world natural and cultural heritage.

Luckily, the inscription of Mt. Qingcheng-Dujiangyan to be listed in world natural and cultural heritage is receiving support and concern from departments concerned at state, provincial and municipal levels. Premier Zhu Rongji gave decisive order to the protection of the ecology in the upper stretches of Minjiang River:” resolutely turn the cultivated lands back into forests and cutting trees is forbidden.” After the regular seminar of the provincial government on Nov. 30, Mr. Zou Guangyan, vice governor of Sichuan, Mr. Wang Rongxuan, mayor of Chengdu and other leaders from the General Office of provincial and municipal government carried on-the-spot work here, and required us to carry out the renovation in line with the law and according to the planning, to avoid constructive damage. Leading Group of Mt. Qingcheng- Dujiang Environment Renovation is set up by Dujiangyan government, responsible for the overall work of renovation. Hence, totally, 1,097 households were removed and the demolish areas covers 280,000 square meters, 61 factories mines and 1 school were removed out of the areas, costing RMB 206 million. This demonstrates the resolution and deep concern of the government, unrivalled in the environmental preservation in China, and even in the world.

We earnestly hope our efforts will be a success, and thus we can contribute more to the preservation of the precious heritage of the world.

Overall Plan of Mt. Qingcheng – Dujiangyan Scenic Place (Excerpts)

Chapter One General Principles

- 1.1 Necessity (omitted)
- 1.2 Grounds in Preparing the Overall Plan (omitted)
- 1.3 Guidelines and Principles

1.3.1 Guidelines

- 1) On the basis of state laws and regulations, relevant government organs should follow the principle of “overall planning, scientific management, active conservation and sustained utilization,” and build Dujiangyan into the first-class state-level place of cultural and historic interests.
- 2) Base our works on actualities, abide by natural and economic laws, and formulate feasible, scientific and long-range plans for guidance.
- 3) Fully display the geographical, cultural, historical and resource advantages, utilize local eco-environment to provide favorable conditions for international giant panda protection projects. Actively carry out foreign exchange programs for eco-recovery engineering, strengthen our own abilities in construction and development in the Nature Preserve, and realize the sustain utilization of natural and cultural resources, and benign cycle of ecological environment.

1.3.2 Planning Principles

- 1) Conservation First – Overall planning of the Scenic Place (of Mt. Qingcheng – Dujiangyan, hereinafter for short) should first of all aim at protection of natural environment and natural and cultural resources, and aim at conservation of biodiversity and saving endangered species. All human activities within the Nature Preserve should not exert negative impact on conservation and protection, should emphasize protection of endangered plant and animal species including giant panda, Dujiangyan Irrigation System and Taoist culture. Conservation and management should be strengthened over forest ecosystem and its evolution process within the Nature Preserve.
- 2) Under the condition of protecting rare and endangered species, relevant organs should follow the principle of overall planning, rational distribution and phase-by-phase construction. It should focus on management system, protection engineering and infrastructure, as well as unified planning other constructions within the Scenic Place, so that conservation and management are able to proceed in a healthy and orderly way.
- 3) omitted
- 4) Principle of scientific management – strengthen scientific management, fulfill duties of management, coordinate each organ with the other, establish a well-structured and high-efficient organization, organize a qualified and able contingent of conservation staff, fully carry out the relevant national policies, rules and decrees concerning management of Scenic Places.

Chapter Three Overall Layout and Division Planning

- 3.1 Overall Layout (omitted)
- 3.2 Term and Objectives of Planning (omitted)
- 3.3 Range of the Scenic Place

The planned range of the Scenic Place are Mt. Guangguan in the north, Lianghe

Township with Chongzhou City in the south, Youguanding with Pengzhou in the east, and Xiong'er Hill of Lianghe Township in the west. The total area is 54,749.5 hectares, including 17,891.5 hectares of the core zone, and 36,858 of the buffer zone.

3.4 Natural and Cultural Protected Zone of Mt. Qingcheng

It starts from Wangpo Rock in the east, Xiong'er Hill in the west, boundary with Chongzhou in the south, and south bank of the Minjiang River in the north, with a core zone of 1,522 hectares.

3.5 Natural and Culture Protected Zone of Dujiangyan

It starts from Nanqiao and Mt. Yulei in the east, Baisha River and Minjiang River in the west, Qingcheng Bridge in the south, and South Highway of Lingyan Mountain, with a core zone of 231.5 hectares.

3.6 Longxi-Hongkou Biodiversity Protected Zone

It starts from Youguanding in the east, boundary with Wenchuan County in the west, north bank of Mnjiang River in the south, and Mt. Guangguan in the north, with a core zone of 16,138 hectares.

Chapter Four Detailed Rules of Planning

4.1 Planning of Scenic Sites (omitted)

4.2 Planning of Protection Engineering (omitted)

4.2.1 Protection engineering of giant panda

The protection of giant pandas centers on protection of wild giant pandas and their habitat, including saving the wild giant pandas, breeding the bamboo for food of giant pandas, provide a stable food source for them, avoid threats to their existence due to bamboo blossom.

4.2.2 Protection engineering of biodiversity

The Longxi-Hongkou Nature Preserve is located in the key transition zone among the West Sichuan alpine valleys, north of Hengduanshan Range. Here are complicated land forms, varied climatic conditions, and rich animal and plant resources. It is the area with the complete subtropical alpine animals and plants in the world. The central task of this protected zone is conservation of forest ecosystem and wild animals and plants. The protection measures are planned as follows:

4.2.2.1 During the term of planning, establish a sampling and monitoring system on biodiversity of forest ecosystem and wild animals and plants, by means of modern monitoring facilities. Monitoring the biodiversity of forest ecosystem has two aspects. The first is to sample and monitor the composition, structure and ecological process of ecosystem. On the basis of nature of ecosystem and objective of monitoring, different measures should be adopted for different sample areas, monitoring indicators and time intervals. The second is to use the remote sensing and GIS computer technologies to monitor different biospheres and distributions in a given region. On this basis, objectives shall be set up on key ecosystem types, key biological communities and key sites, so as to serve overall conservation of Chinese biodiversity, for sustained utilization and coupling with related fields of studies in the world. The researchers should adopt the unified methods of standardization and normalization, in connection with ground network. Establishing the "Dynamic Monitoring Network of Biodiversity" will be an effective means

to provide basic data for overall conservation of Chinese biodiversity, so as to establish a model for sustained utilization of biodiversity.

4.2.2.2 Take active and positive measures for domestic and international cooperation concerning biodiversity, wild animals and plants.

4.2.2.3 Employ all available mass media to educate the public about significance of the Longxi-Hongkoug Nature Preserve and resident wild animals and plants. Strive for care and support from the public for conservation in the protected zone, and introduce scientists and technicians, particularly professors and specialists, to be engaged in research and development.

4.2.2.4 Establish a complete patrol system for forest protection. The protection station is the basic unit, which is entitled to carry regular patrol and monitoring at key sites and road sections. Relevant organs should provide funds for patrol teams and purchase patrol facilities. Repairs and maintenance should be made for road sections of patrolling which are of great danger (cliffs, rapids).

4.2.2.5 Strictly control collecting herbal medicines - The protected zone is rich with wild herbal medicines, such as *Gastiodia elata*, *Radix polygoni multiflori*, *Gynostemma pentaphylla*, *Flos Ionicerae*, *Akebiaquinata*, *Epimedium*, *Schizandra*, *Fritillaria*, *Saussurea involucrata*. Due to excessive collection in recent years, their number and quality are drastically reduced and degraded. To effectively protect the herbal resource of Sichuan Basin, the entrance permit should be issued to local villagers, management methods taken such as setting up experimental or buffer areas for collection. But no one is permitted to enter the core zone for herbal collection, people outside the protected zone should not be allowed for such collection. This will reduce the pressure on resources and environment, and promote sustained development of herbal plants.

4.2.2.6 Effectively protect the wild animals and their habitats – Full game-hunting shall be prohibited in the protected zone and peripheral zone. Conservation staff should carry out regular patrols and strengthen public education of local residents. The Management Division of Protected Zone should establish direct business connections with corresponding organs of Dujiangyan City and neighboring towns as well as Pengzhou City and Wenchuan County. They should adopt the method of joint defense, to prohibit hunting wild animals, and attack illegal personnel hunting the wild animals. Furthermore, material and spiritual awards will be granted to personnel with merits in protection. A grand sum of award will be given to those who make important achievements in protecting the giant panda. To guarantee sufficient food supply for giant pandas, collection and sales of wild and fresh bamboo shoots shall be strictly prohibited within the protected zone.

4.2.2.7 Build necessary food bases and habitation facilities for wild animals. The Longxi River, Baisha River and their branch streams are places being frequented by wild animals. Necessary food bases, salt/alkaline pools, water ponds, sand ground and shelters shall be built to improve their living and habitation conditions.

4.2.3 Eco-reconstruction engineering (omitted)

4.2.4 Protection engineering of cultural resources

4.2.4.1 Strengthen protection of Dujiangyan Weir Works, permanently protect the three original structures of engineering. The engineering model and layout shall not be changed. Protect the vegetation on both riverbanks, and prevent the Erwang Temple from damage of landslides.

4.2.4.2 Rigorously protect the Taoist culture of Mt. Qingcheng and surrounding natural beauty, and protect vegetation of evergreen broad-leaved forests.

4.2.4.3 Strengthen protection of ancient architecture, conduct timely maintenance and upkeep, keep their original features intact, prevent damage by termites, and strengthen protection and studies of the Mangcheng cultural relics.

4.2.4.4 Control the tourist flow in Mt. Qingcheng and Dujiangyan, keep the normal tourist flow within 1.2 million times / person per year.

4.3 Planning for Cultivation and Breeding (omitted)

4.3.5 Planning for greenery cultivation

4.3.5.1 Protection of natural vegetation

Well protect the natural forests and plant scenery. While protecting and breeding the forest vegetation in the protected zone, measures should be taken for artificial species renewal, nurturing, and renovation. Makeup plantation should proceed to damages of natural vegetation, to expand multiplication of plants and species diversity, to prevent pests and diseases, restore the completeness of primary vegetation. All these measures aim at protecting natural vegetation and at maintaining a high forest coverage in the Scenic Place.

4.3.5.2 Protection of rare and endangered trees

The Scenic Place is of advantageous natural conditions, has fostered many rare and endangered plants as well as ancient trees of historical and cultural significance. Planned protection shall be taken to these plants, by means of regular examination and maintenance, explore ways to breed rare, endangered and endemic species, such as artificial cultivation for reproduction, and complete the re-exploration process of reproduction.

4.3.5.3 Cultivation of artificial greenery

Greenery should be cultivated at scenic sites, temples, roads, service locations and residential quarters. Cultivation shall be distributed according to different latitudes and features of plant growth. Select suitable saplings, develop a characteristic plant background. According to the plan, imported pine and parasol trees should be replaced by local trees.

4.3.5.4 Cultivation of agricultural eco-scenery

Agricultural land in the Scenic Place shall be returned for forestry. For other agricultural land, the agricultural eco-scenery shall be fostered according to different latitudes and landforms, for instance, building up greenery around the agricultural land.

4.4. Planning for Land Utilization (omitted)

4.5 Planning for Social and Economic Regulations (omitted)

4.6 Planning for Infrastructure Construction (omitted)

4.7 Planning for Environment Protection

4.7.1 The protected zone is classified as of Dujiangyan Class-I Environment & Air Quality, for which the corresponding Class-I standards shall be adopted. New constructions and expansion of pollution sources are strictly prohibited.

4.7.2 Rivers and streams in the protected zone are classified as Class-II Water Area (the river source is classified as Class-I). Waste water shall be not drained into these rivers until it is disposed as clean. Construction of sewage outlets are strictly prohibited.

4.7.3 Return the agricultural land for forestry will reduce water and soil losses. The agricultural land with a slope more than 25 degrees shall be immediately and entirely returned for forestry. That of 2-0-25 degrees shall be returned gradually.

4.7.4 Waste disposal facilities shall be constructed at residential quarters and tourist service centers in the Scenic Place. Such disposal facilities shall also be built for other wastes, mainly in the form of marsh gas pools. The water from the marsh gas pools shall not be discharged into the waters, and could only be used for agricultural or forestry irrigation.

4.7.6 Landfills are shared by both the protected zone and Dujiangyan City, with a total area of 142 mu (1 mu = 667 square meters) in Fengle Village of Xudu Township. Solid wastes shall be collected in bags. Concentrated collection stations shall be built up at residential and tourist service locations. Trash cans and other similar waste containers shall be installed at scenic sites, tour paths and streets.

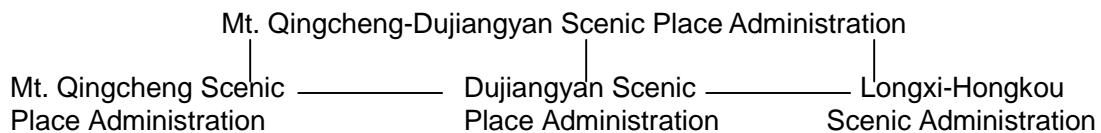
4.7.7 Rational distribution of public lavatories – such lavatories shall be built at residential quarters, service locations, scenic sites, or along the tour path at the interval of average half-an-hour walk. Management of public lavatories should include providing clean washing water, construction of a group of high-standard lavatories. After fermenting, the manure from public lavatories shall only be used for agricultural or forestry purposes, and shall not be discharged into the waters system.

4.8 Planning for comprehensive prevention of pests and diseases (omitted)

Chapter Five

5.1 Management Organization

5.1.2 Unified management – Establish the Mt. Qingcheng / Dujiangyan Administration for unified management of land, gardens, tourism, relics, environment protection, agriculture and forestry, science and development, industry and communication, commerce, service, hygienic affairs, and public security in the Scenic Place.



5.2 Organization of Staff (omitted)

5.3 Strict Execution of Laws and Regulations (omitted)

5.4 Financial Support and Management (omitted)

Chapter Six Supplementary Articles (omitted)

Validity and Uniqueness of Dujiangyan

Tan Xuming, director, Hydraulics History Institute, China Hydraulics Academy

1. Historic and Scientific Values of Dujiangyan

Chengdu is the alluvial fan-shaped plain of the Minjiang River and Tuojiang River, with a land slope of 0.5%, a favorable condition for natural water diversion. Construction and maintenance of the Dujiangyan Irrigation System is closely linked with the natural environment of Chengdu Plain, as well as with its position as a political and economic center in the region. History of Dujiangyan reflects the history of Southwest China, being influenced by regional politics, culture, and religion. These change the natural environment of the region.

1.1 Origin of Dujiangyan Irrigation System

The Minjiang River and Tuojiang River are running through the margins of the Chengdu Plain, and there is no abundance water source across the heartland of the Plain, except some small and unstable interval rivers or streams. In the late Warring States (about A. D. 250), the Qin Kingdom started construction with the purpose of diverting water from the Minjiang River to Chengdu and guarantee water source for Chengdu rivers. Li Bing led local people to cut open the Bottleneck Diversion Passage and dig canals which later became a waterway connecting Chengdu and Minjiang-Yangtze River system. The Bottleneck Diversion Passage is the earliest project of Dujiangyan Irrigation System, a starting point of all canals of the Plain and an important water inlet. The Bottleneck Diversion Passage is the only facility without any change for over 2,000 years. Validity of the Bottleneck is a historic witness of the validity of Dujiangyan.

1.2 Completion of Dujiangyan, Features and Current Status of Engineering

In Han dynasty (A. D. 100), Chengdu Plain became the politic, cultural and economic center in Southwest China. Dujiangyan was a main water construction project for irrigation, navigation, living and environment of Chengdu Plain. The canals of Dujiangyan become rivers of the Plain, and by this time, all the engineering works of Dujiangyan had been completed. The existing layout of Dujiangyan Irrigation System remain unchanged since then.

The Dujiangyan Irrigation System is composed of three main parts: water diversion engineering (Yuzui), flood and silt discharging engineering (Feishayan Floodgate, V-shaped Dike), and water inlet (the Bottleneck Passage). These engineering works were designed in different forms according to the landform. In ancient times, the building materials were local sources of lumber, bamboo and cobbles.

Changes on the Dujiangyan Irrigation System are mainly part of building materials, and the temporary works are made into permanent ones.

These changes are due to manifold reasons. The System was built of timber piles, bamboo cages, and rock fills, part of which were rushed away by summer floods and repaired in winter. Under autocracy government, large forced labors were called for to harness the Dujiangyan canals and rebuild the works. Most labors came from counties of the Chengdu Plain. Demands for this construction structure resulted to unchecked cutting of forests around Dujiangyan, heavy forced labor, and extensive bamboo plantation. The original dry cobble structure of dams is substituted by cemented cobble structure with cobbles half exposed. This change is effective against flood washing.

1.3 Historical Reasons of Engineering Operation Mechanics and Continuity

Dujiangyan is a natural and ecological engineering, fully making use of landform on riverbanks, and running water dynamics, to control the amount of diversion, flood and silt discharging.

The V-shaped Dam and Feishayan Floodgate are well distributed according to the function of the Bottleneck Diversion Passage; the Jingang Dike and Yuzui Bypass Dike are made under the force of the river center, which resulted to cavetto rivers. The cliffs can regulate and shape the water flow, so that water is discharged from Feishayan Floodgate and V-shaped Dike. Water flow is under control of different heights of the Yuzui Bypass Dike, Feishayan Floodgate and V-shaped Dike, and by the width of the Bottleneck and depth of the riverbed. This greatly reduces the incoming silt and cobble into the Bottleneck Diversion Passage.

The construction features and engineering structure of Dujiangyan determine that its continuation depends on uninterrupted management, without which, the Dujiangyan Irrigation System could not have been maintained up to now. As early as in A. D. 100, there were been management officials stationed in Dujiangyan. In about A. D. 300, a special management organ was set up, it was a specialized and centralized organ across administrative regions. It was funded by the national treasury and water fees charged from local users (demonstrated by unearthed relics and historic literatures). This management model is still being used now.

The official management and low-level management by water users were closely linked under government coordination, as well as by religious influence. Religious worship of water and sacrificial activities started from the Tang dynasty (A. D. 500), being chaired by officials and Taoist reverend priests. They also undertook the duties to maintain the engineering and water distribution. From A. D. 300, some Taoist priests became technical supervisors of the Dujiangyan Irrigation System, many of their experiences were collected into books, or engraved on the buildings of the Erwang Temple.

1.4 Values

- (1) Architecture and model of Dujiangyan embody the planning thought of harmony with the Nature. Comprehensive utilization of water resources is realized even without dams. This makes possible to navigate, utilize the natural river system, improve natural environment of Chengdu Plain, create architectural styles of Chengdu urban settlements, and provide irrigation and living water for urban and rural people.
- (2) Management of Dujiangyan is influenced by political, religious and architectural cultures. Religious activities such as water worship promote management of Dujiangyan, and in return it promotes the government's concern on religious architectures.

2. Uniqueness of Dujiangyan

There are other world-renown irrigation cultures in ancient Middle East, North Africa and South Europe. Why did all of them disappear? (1) Building materials of these ancient water works are mainly rocks and lumber. Discontinuance of management ended up in their extinction. (2) What are those types of water works of ancient irrigation cultures? Except channels and launders from archaeological discoveries, we understand there is no written records of water works built on watercourse except Dujiangyan. Uninterrupted recording about Dujiangyan enables us to understand the process of its evolution. It is well grounded to conclude that Dujiangyan basically maintains its original architectural layout and model. (3) Existence of Dujiangyan proves the ancient Chinese water conservancy engineering, provides a historical basis for understandings of human utilization of water resources, of an ancient model of architecture, and of the history of Chengdu Plain. According to archaeological discovery, people make use of flood

seasons of the Nile River of Egypt and Euphrates River of Syria, to store water for irrigation. Except maintenance during local water interceptions, Dujiangyan provides water sources and navigation for over 10 months per year. This is also one of the features of damless water works like Dujiangyan.

3. Inclusion of Dujiangyan in the World Heritages will be Constructive for its Protection

Population growth and urbanization result in increasing demands for water resources from Dujiangyan. There frequently appear conflicts between its protection and water utilization of the Minjiang River. If Dujiangyan is included in the World Cultural Heritage, protection of Dujiangyan will be given much priority when Central Government review and approve the Minjiang hydraulic engineering projects.

Supplementary Specifications on Some Issues In Applying for Inclusion of Mt. Qingcheng-Dujiangyan In World Natural & Cultural Heritages

Prepared by the Ministry of Construction, PRC (March 15, 2000)

1. Connections of functions of Mt. Qingcheng and Dujiangyan as Natural and Cultural Heritage

As specified in the "Application for Inclusion of Mt. Qingcheng and Dujiangyan Irrigation System" (hereinafter the "Application" for short), the applied range in fact covers Mt. Qingcheng, Dujiangyan Irrigation System, and Longxi-Hongkou (hereinafter the "Property" for short). As these areas would result to a long title, the Application adopts the same title for them as a site of historical and cultural interest approved by the People's Republic of China. These areas are located on the transition zone between the north margin of Chengdu Plain and Qing-Zang Plateau. Its vertical zonation mainly includes the 700m-1,500m belt that includes Dujiangyan (726m), Mt. Qingcheng (below 1,500m), other 6 plant zones such as that above 1,500m on Mt. Qingcheng, Longxi-Hongkou (1,500m-4,582m). The area below 1,500m sees the only distribution of consociation (*Phoebe zhennan*) and co-dominant variety (*Machilus pingii*, *Phoebe hui*, and *Castanopsis carlesii*) in China, a representative area of harmonious integration of humans and nature. Mt. Qingcheng is the birthplace of Chinese Taoism as well as ancestral land of Tianshi Tao Sect. Zhang Ling, Taoist founder, created Taoism on the basis of the Pre-Qin Laozi philosophy (Yellow Emperor-Laozi school), and its theoretical foundation is worship of nature, and integration of humans and nature. Religion is an important binding force for management of Dujiangyan Irrigation System. For a long time, government officials and Taoist masters shared their duties in water distribution and maintenance. Therefore, following the natural law of water flow, Dujiangyan organically integrates human ideal with natural and ecological laws. It is a concordant representation and an ecological engineering of humans and nature. The Longxi-Hongkou Nature Preserve is an important habitat and central place of origin for rare and endangered species like *Ailuopoda melanoleuca*, *Davidia involuocrata* Baill, *involuocrata*, *Cercidiphyllum japonicum*, and *Tetracenron sinense*. (Such species are also seen on other heritage sites but they are not centers of their origin.) This area preserves the complete and most representative of plant vertical zone in comparison with other regions at the same latitudes and in the north Hengduanshan Mountain Range. In the Longxi-Hongkou Nature Preserve, there are 43 streams running through Longxi River and Baisha River to the Yangtze River. Lush vegetation on Mt. Qingcheng and in Longxi-Hongkou Nature Preserve is the very reason of soil and water keeping on both sides of Dujiangyan from exposed washing. This provides favorable settings for protecting the Dujiangyan irrigation system and for its straightway watercourse free of silt damages.

2. Validity of Dujiangyan Water Conservancy Works and Comparison with Similar Outstanding Works in the World

We attach an article by research fellow Tan Xuming of China Hydraulic Science Academy as a reply to this issue. The existing Dujiangyan Irrigation System maintains the original looks when Li Bing and his people cut open the Bottleneck. Remaining intact are also the Yuzui Bypass Dike and Feishayan Floodgate. In ancient times, bamboo cages and cobbles were used to build the dike-dams, which are now replaced by cemented cobbles for floods prevention. In Li Bing's time, the "raft technique" was used for water interception, which is still being used in flood seasons. The flood control principle of bamboo cage, cobble and raft techniques are introduced to flood-control works in the

Zhujiang River and Yangtze River.

3. Protected Area

The Application mentions that the protected area of 17,891.5 hectares is the core zone, including Mt. Qingcheng (1,511 hectares), Dujiangyan Irrigation System (231.5 hectares), and Longxi-Hongkou Nature Preserve (16,138 hectares). The buffer zone refers to an general protected area of 36,858 hectares. The core zone and the buffer zone make up a total area of 54,749.5 hectares, covering Mt. Qingcheng, Dujiangyan, and Longxi-Hongkou Nature Preserve. (Note: the “36,856 hectares” in 3.2 of the Application is a mis-translation.)

4. Since Longxi-Hongkou Nature Preserve is a main part of the core zone and buffer zone, why is it not included in the nominated area? Why is it not included in the core zone?

In the Application, the Longxi-Hongkou is included in the nominated area, and is within the protected zone. The Application lists 16,138 hectares as the core zone out of the total 34,000 hectares of Longxi-Hongkou Nature Preserve, the rest is included in a buffer zone.

5. In terms of plant characters, what are those in comparison with that of nearby areas?

At the expertise symposium on March 1, Prof. Chen Changdu of Beijing University, Prof. Fu Dezhi, deputy director of the Institute of Botany of the Chinese Academy of Sciences, and Dr. Ma Keping, Director of China Biodiversity Research Center answered the questions raised by Dr. Les Molloy. They agreed to include the Property in the world biodiversity. They believe that the plant particularity and abundance within the Property is unrivaled in comparison with that of other heritage sites and nearby Mt. Emei.

- 1) The proposed Property is located in the transition zone of the “Rainy Screen Belt of West China” in a very humid alpine area with abundant rainfall. This provides favorable conditions for plant growth, which are not seen in other heritage sites. Furthermore, it is only 30km from Chengdu. The elevation rises sharply from 500m to 4,582m, a most sharp-ascending alpine valley landform in West Sichuan, featuring complicated geological structures and changeable climatic environment. The direct results are multiplication of complex, rich flora and fauna. Other heritage sites like Mt. Emei and Mt. Wuyi do not have such conditions, therefore with less abundant plant and animal species than that of the Property.
- 2) The Property is of prominent values different from Mt. Emei
 - 2.1) The Property is not only a nature preserve determined by the Chinese Government, but also one of the Five Bases of Chinese biodiversity determined by the Chinese Academy Sciences. None of other heritage sites is included in the Five Bases. Located in the interacting place of a number of biotas, the Property possesses a variety of biological components, such as of subtropical flatland, and high-cold zone, while Mt. Emei is a biota only.
 - 2.2) The highest peak of Mt. Emei is 3,099m, while the highest of the Property is Mt. Guangguang of 4,582m. The highest elevation of Mt. Emei is 1,483m lower than Mt. Guangguang, and the vertical zonation of the former is simpler than that of the latter. There are 5 vertical zones in Mt. Emei, while the Property has 7 such zones including subtropical alpine meadow and alpine rock streams, as well as alpine glacier, which are not seen in Mt. Emei.
 - 2.3) Mt. Emei and the proposed Property have a similar number of plant species, the former has 3,200 species of vascular plants and the latter has 3,012. Since the early last century, Chinese and foreign scholars have conducted extensive investigations on Mt. Emei. In contrast, as the Property is still at the status of primitive forest, there are

insufficient investigations and studies conducted here. There is almost no complete records concerning the actual number of plant species. In the 1980's, Prof. Fu Dezhi led an investigation team to survey the Longxi-Hongkou for 15 days, and collected specimens of over 2,800 species. It is concluded that we have not yet acquired the full number of plant species unless overall investigations are conducted.

2.4) The Property is inhabited by rare and valuable species including *Ailuropodda melanoleuca*, *Pygathrix roxellanae*, and *Budorcas taxicolor* which are not seen in Mt. Emei.

2.5) The Property has abundant and unique plant species of sub-alpine and alpine vertical zones – an area with the most abundant species in sub-alpine, alpine and high-cold environment in China. It has 102 species of the genus *Rhododendron*, while Mt. Emei has only 29 species. Like in the Property, both in Mt. Emei and Mt. Wuyi, there are ancient and relic plants such as *Davidia involucreta* Baill. *Involucreta*, *Tetracentron sinense*, *Cercidiphyllum japonicum*, and *Euptelea pleiospermum*, but they are more and concentratedly founded in the Property. *Aconitum* spp. And *Saussurea* spp. are endemic to the Property, and are not seen in other heritage sites including Mt. Emei.

2.6) Mt. Emei is an independent mountain range, while the Property is a conjunction place of many mountains of the Hengduanshan Range.

2.7) Compared to other heritage sites, the vegetation of Mt. Huangshan is simple with a small number of species, and is mostly noted for its peculiar stones and pine trees. Not far from the Property, dominant plants in Huanglongsi and Jiuzhaigou Valley are rose and poplar species, and that of Mt. Wuyi are camellia and beech species. Floras of these heritage sites differ greatly from that of the Property.

- 3) In terms of animal species, the Property has most of the animal species commonly encountered in other heritage sites, but it has 99 unique mammal species, equal to the total of that of Zhejiang Province or Anhui (where Mt. Huangshan is located). Of the local mammal species genera, there are 110 endemic to China, 60 endemic to Sichuan and 33 endemic to the Property. Furthermore, the Property is an important habitat of giant pandas, and an essential area for their genetic communication. In contrast, Jiuzhaigou Valley and Huanglongsi do not have giant pandas, nor are they connected with the Qionglai Range and Minshan Range.

6. If the giant panda is an essential reason for the Application, is the Property the best area for that? Or if other areas may independently or jointly be included for the Application?

The Property is not only an important habitat for endangered giant pandas, but also the only area to establish a natural and green corridor for them. In 1938, the first giant panda was discovered in the Property; in 1953, the first giant panda for exhibition in China came from the Property. Giant pandas are mainly distributed in 6 mountain ranges: Qinling, Minshan, Qionglai, Daxiang Ridge, Xiaoxiang Ridge, and Liangshan. 80% of world's existing giant pandas is distributed in the Minshan and Qionglai Ranges, between which sits Dujiangyan – the only ideal place to establish a green corridor for them. Conservation of giant pandas is to focus on protection of their habitat, to connect the isolated habitats, and to establish a green and natural corridor for them. These are keys to all of our conservation efforts. Compared to other places, the Property ties up the two mountain ranges, with a significant and irreplaceable geographical position. According to Professor Hu Jinchu (a nationwide known expert of giant panda) and Mr. Zhang Hemin (director of China Giant Panda Conservation Center, and deputy director of Wolong Nature Preserve Administration), the average daily activity is 14.2 hours, and in fact giant pandas are active mostly at night. At the age of two, giant pandas leave far from their mothers. In addition, giant pandas are good swimmers. On May 21, 1982, local people saw a giant panda lowly got across the river valley and moved up on the opposite mountain. Two years ago, Professor Hu Jinchu saw with his own eyes that a giant panda swam across the torrent Baishui River and Dadu River to their habitats on the opposite banks. In the Wolong Nature Preserve, people see giant pandas walking carefree across highways.

According to research fellow Zhang Hemin, their individuals in the Wolong Giant Panda Breeding Center increases by 20% annually, and the ultimate objective of artificial propagation is to reintroduce them back to their natural range. As the two mountain ranges share similar climatic, and geographical conditions, and so the common species, the Property is the only area for natural genetic communication of giant pandas, as well as the only area for their artificial genetic communication. (See the attached Current Status of Giant Pandas in Dujiangyan by Professor Hu Jinchu). In reply to “whether other areas will join the Property for Application, Mr. Weng Weixiang (vice secretary-general of Sichuan Province Government) expressed of Dr. Les Molloy on behalf of Sichuan Provincial Government that, “Sichuan Provincial will take full consideration of the proposal. But because of administrative zoning, we need some time to come to the decision. I believe, this would not be a barrier for successful application for inclusion of the Property in the World Natural & Cultural Heritage.”

7. How many human and material sources have been input for conservation of the natural and cultural heritage?

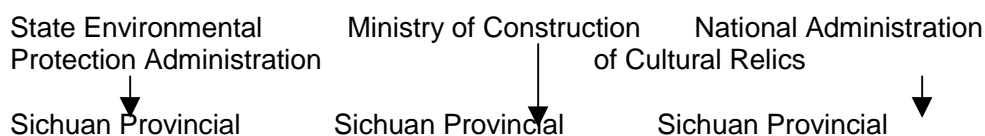
In regard to conservation of the Property, great attention has been paid by governments throughout the history for effective protection. Since 1949, governments have strengthened conservation and management of the Property. Between September 1999 to January 2000, the government concerned input RMB 206 million for environment improvements and 480,000 labors, including a total resettlement of 280,000m² (61 enterprises, 1 school, 1,097 households), completion of vegetation inhabilitation of 240,000m². These greatly improve the eco-environment within the Property.

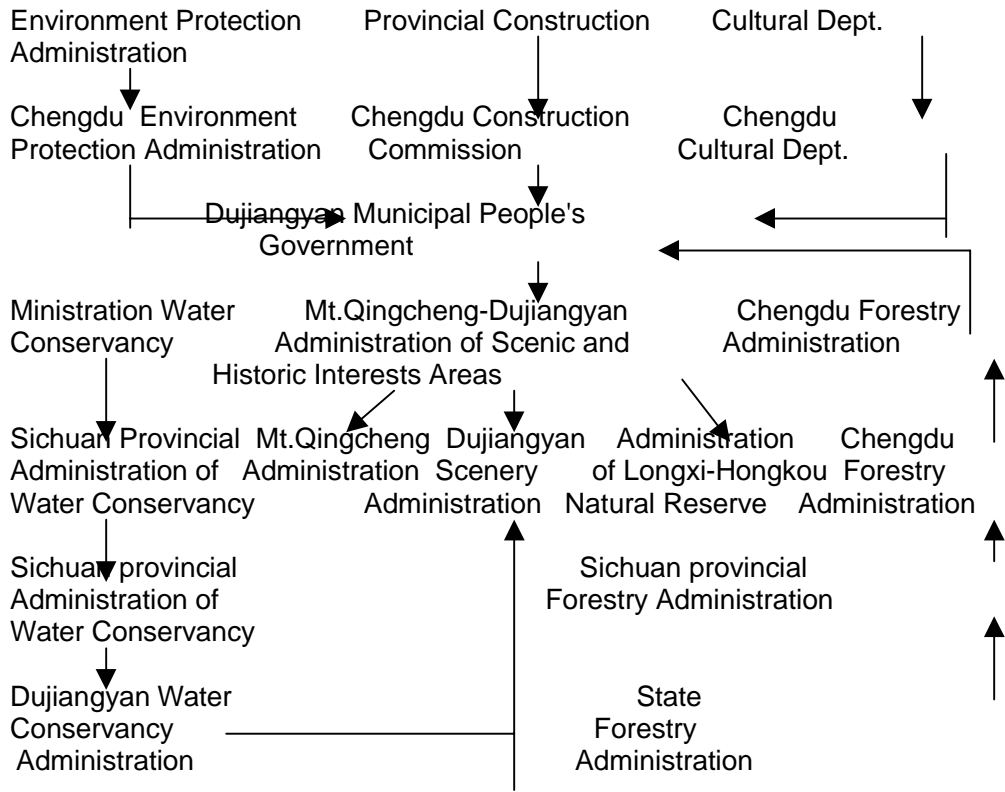
8. Is there any plan (scheme) for the Property itself?

Early in 1993, the Dujiangyan People’s Government proposed an overall plan for Mt. Qingcheng-Dujiangyan, which was revised in 1998 and discussed for many times by related experts. This plan was submitted from lower to high ranking governments. It involves conservation of Longxi-Hongkou biodiversity. Since the plan is too long to print out here, we have attached some important chapters.

9. Who takes the lead in management organization?

The Ministry of Construction takes the lead in management of the Cultural and Natural Heritages, and corresponding commissions of construction are responsible for provincial and municipal works. Dujiangyan People’s Government set up Mt. Qingcheng-Dujiangyan Administration of Scenic and Historic Intrestes Areas, which represent the local government to exercise its rights in planning, management and conservation of the Property. Under this Administration are Mt. Qingcheng Administration, Dujiangyan Scenery Administration, and Longxi-Hongkou Natural Reserve, which are responsible for effective and actual management of the Property. The National Administration of Cultural Relics, provincial cultural department and municipal cultural bureau act on behalf of Dujiangyan government to exercise their rights in supervision and professional management of the Property. The Ministry of Water Conservancy, corresponding provincial and municipal organs act on behalf of Dujiangyan government to exercise its rights in management of Dujiangyan irrigation and water conservancy projects. Dujiangyan Relics Bureau and Forestry Bureau act on behalf of Dujiangyan government to exercise their rights in supervision of the Property according to government laws and regulations. (See the organization chart below)





(Attn: in page 42 of the Document "the Dujiangyan Urban Construction Commission" changed into "Dujiangyan Scenery Administration".)

10. Are sensitive places capable of controlling a large number of tourists?

To protect the sensitive places within the Property, Dujiangyan Government has taken five measures:

- a) to reduce the number of ticket booking offices to control the tourist entrance;
- b) to raise the admission price to control the tourist entrance;
- c) to organize tour groups and offer reserve services to disperse tourist high time;
- d) to organize tourists in groups to major relics, religious architectures and bridges;
- e) to enhance the reception capacity of the buffer zone, in order to divert tourists from the core zone.

Current Status of Giant Pandas in Dujiangyan

By HU Jinchu

The local giant pandas are distributed in East and West Dujiangyan, of more than 50 in total. East Dujiangyan belongs to the southwest foot of Chaping Mountain of the Minshan Range, and is now included in the Longxi-Hongkou National Nature Preserve. Here, conservation objectives are sub-tropical biosystem of alpine forests of a total 34,000 hectares. Across through Pengxian, Shifang, Mianzhu and the south foot of Chaping Mountain, the giant pandas in this area are connected with those in Pingwu and Qingchuan at the south foot Motian Ridge of the Minshan Range. The giant pandas in East Dujiangyan form a large community. West Dujiangyan belongs to the Qionglai Mountain Range, where Balang Mountain neighbors Sanjiang in the Wolong Nature Preserve. West Dujiangyan has an area of 1,200 hectares as habitats for giant pandas. Across Chongzhou, Dayi, Luxian, Baoxing and Tianquan at the south foot of Jiabin Mountain, giant pandas here form another community of the Qionglai Range.

Significance of giant panda communities in East and West Dujiangyan lies in their connection of two mountain ranges, and each mountain range nurtures a large and effectively reproductive community, where it is possible for diffusion of genes by means of mutual migrations. It is favorable to upkeep and enhance the genetic diversity and heterozygosis, as well as to reduce the rate of extinction. It will also stabilize the giant panda community in each mountain range, and eventually be beneficial to long-term survival of giant panda communities.

The latest DNA fingerprint technology has been employed to study genetic diversity of giant pandas. The research on swirl model demonstrates that the average heterozygosis rate in the Minshan Mountain Range is 66%, while that of Qionglai Mountain Range is 69%. Both rates are not up to the standards set by conservation biologists, that is, the species extinction rate should be no more than 2%, the gene heterozygosis should be no less than 90%.

The giant panda is characterized by its low birth rate, narrow ecological niche, single feeding habit, and sensitivity to environment. Therefore, it is very crucial to expand their habitat, well-protect the natural "corridor belt" like Dujiangyan, enlarge the community, avoid separation and isolation, reduce pressures of human interference and environment deterioration. These are effective and necessary means to be taken to save the giant panda from endangerment and for their long-range survival.

The alpine valleys left over by the Quaternary glacier reserve the existing habitat for giant pandas. In Dujiangyan, in addition to world-famous and rare species like giant panda *Ailuropoda melanoleuca* and *Pygathrix roxellana*, there are other rare plant species such as *Davidia involurata* and *Tetracentron sinense*. As the crust rises, other species endemic to the Himalayas are preserved and settle down from their East migration, including those relic species like *Ailurus fulgens* and *Budorcas taxicolor*, being called the "living fossils" of the relic animal and plant species.

Left over from the Nature, these species are the treasure of China and all humankind. They deserve our common concern, care and all-round protection.

March, 23, 1999

**SOME SPECIFICATIONS ON INCLUSION OF
MT. QINGCHENG – DUJIANGYAN IN THE
WORLD HERITAGE LIST**

**ADMINISTRATION COMMITTEE OF
MT. QINGCHENG – DUJIANGYAN SCENIC AREA**

September 2000

Dujiangyan, Sichuan, China

Contents

Some Specifications on Inclusion of Mt. Qingcheng – Dujiangyan in the World Heritage List	4
1. Natural Integrity and Management System of the Buffer Zone of the Nominated site	4
2. Overall Plan and Implementation of Longxi-Hongkou Nature Reserve	5
3. On some Issues Required to be Included in the Plan	5
3.1 Measures to Ensure Long-term Management Funds for Nature reserve	6
3.2 Training of Management Personnel	8
3.3 Measures for Effective and Controlled Tourism Development and Activities	8
3.4 Planning and of Monitoring, Research, and Public Education	9
3.5 Planning of Scientific Research	11
3.6 Planning of Public Education	13
Reply to the Overall Plan of the Mt. Qingcheng - Dujiangyan Scenic Area	16
Reply to the Overall Plan of the Longxi - Hongkou State-level Nature Reserve	18
Overall Plan of the State-Level Longxi-Hongkou Nature Reserve	20
Leading Group for Preparation of the Overall Plan of the State-level Longxi-Hongkou Nature Reserve	20
Designing Team	20
Chapter 1: Overview	21
1.1 Project Background & Necessity of the Overall Plan	21
1.2 Grounds for Preparing the Overall Plan	22
1.3 Guideline of Planning Principles	23
Quantitative Indicators of the Overall Plan of the	23
State-Level Longxi-Hongkou Nature Reserve	23
Chapter 2: General Situation & Current Status of the Nature Reserve	24
2.1 Natural and Geographical Situation (<i>omitted</i>)	24
2.2 Biological Resources (<i>omitted</i>)	24
2.3 Social and Economic Status (<i>omitted</i>)	24
2.4 Assessment of Current Status (<i>omitted</i>)	24
Chapter 3: General Layout	25
3.1 Nature and Objectives of the Nature Reserve	25
3.2 Term and Objectives of the Overall Plan	25
3.3 Divisions of Functional Zones	26
Chapter 4: Planning of Conservation Programmes	28
4.1 Conservation Programmes of the Giant Panda	28
4.2 Conservation Programmes of Biodiversity	28
4.3 Ecological Restoration	29
4.4 Forest Protection and Fire Prevention (<i>omitted</i>)	30
4.5 Environment Protection (<i>omitted</i>)	30
4.6 Construction of Protection Stations and Points (<i>omitted</i>)	30
4.7 Publicity, Public Education and Training	30
4.8 Law-Enforcing Force of the Nature Reserve (<i>omitted</i>)	31
Chapter 5: Planning of Research Programmes	32
5.1 Investigation of Background Resources in the Nature Reserve (<i>omitted</i>)	32
5.2 Key Research Projects	32

5.3	Buildup of Research Facilities	33
5.4	Buildup of Research Personnel	34
5.5	Organization of Research Projects (<i>omitted</i>)	34
5.6	Management of Research Data and Files (<i>omitted</i>)	34
Chapter 6: Planning of Infrastructure Construction		35
6.1	Buildup of Administrative Organs (<i>omitted</i>)	35
6.2	Road Works (<i>omitted</i>)	35
6.3	Power Supply, Water Supply, Drainage, Telecom and TV Works (<i>omitted</i>)	35
6.4	Setting up Signs and Posters (<i>omitted</i>)	35
Chapter 7: Planning of Support Programme for Adjacent Communities		36
7.1	Planning Principles (<i>omitted</i>)	36
7.2	Planning of Eco-Tourism	36
7.3	Support Plan of Mixed Farming (<i>omitted</i>)	36
7.4	Economic Support Plan for Adjacent Communities (<i>omitted</i>)	36
Chapter 8: Organization and Staffing		37
8.1	Organization and Management System (<i>omitted</i>)	37
8.2	Management Organs (<i>omitted</i>)	37
8.3	Staffing (<i>omitted</i>)	37
Chapter 9: Estimated Investment and Sources of Fund		38
9.1	Major Construction Projects	38
9.2	Estimated Investment for Proposed Projects	38
9.3	Sources of Construction Funds	39
9.4	Distribution of Investments	39
9.5	Estimated Operation Expenses and Other Related Costs	39
Chapter 10: Analysis of Effects and Comprehensive Assessment		40
10.1	Analysis of Ecological Effects (<i>omitted</i>)	40
10.2	Analysis of Social Effects (<i>omitted</i>)	40
10.3	Analysis of Economic Effects (<i>omitted</i>)	40
10.4	Comprehensive Assessment	40
Chapter 11: Measures to Implement the Overall Plan		41
11.1	Measures of Administrative Management (<i>omitted</i>)	41
11.2	Measures to Strengthen the Management of Natural Resources (<i>omitted</i>)	41
11.3	Measures to Strengthen the Research Management (<i>omitted</i>)	41
11.4	Measure to Promote Economic Development in Adjacent Communities (<i>omitted</i>)	41
Minutes of Assessment Meeting on Overall Plan of the State-Level Longxi-Hongkou Nature Reserve		42
Expert Panel in Assessment of the Overall Plan of the Longxi-Hongkou Nature Reserve		44
Implementation of the Initial Plan of Longxi-Hongkou Nature Reserve		45
Overall Plan of the Nominated World Heritage Site Mt. Qingcheng – Dujiangyan		46
Chapter 1: Overview		47
1.1	Project Background and Necessity of Preparation of the Overall Plan (<i>omitted</i>)	47
1.2	Grounds of Preparation of the Overall Plan	47
1.3	Guideline of Planning and Principles (<i>omitted</i>)	47
1.4	Major Quantitative Indicators (<i>omitted</i>)	47
Chapter 2: Basic Data		48
2.1	Natural and Geographical Overview (<i>omitted</i>)	48

2.2	Biological Resources of the Nominated site (<i>omitted</i>)	48
2.3	Current Status of the Nominated site (<i>omitted</i>)	48
Chapter 3:	General Layout	49
3.1	Nature and Scope (<i>omitted</i>)	49
3.2	Terms and Objectives of the Plan (<i>omitted</i>)	49
3.3	Division of Functional Zones (<i>omitted</i>)	49
3.4	General Layout	49
Chapter 4:	Planning of Conservation Works	50
4.1	Conservation of Dujiangyan Irrigation System	50
4.2	Conservation of Mt. Qingcheng – Dujiangyan Cultural & Natural Sites	51
4.3	Conservation of Biodiversity	52
4.4	Conservation of Water Resources	55
4.5	Environment Protection	55
4.6	Construction of Conservation Stations and Points	56
4.7	Organization of Law Enforcement Personnel	57
4.8	Construction of Signs and Posters	58
Chapter 5:	Planning of Research and Monitoring	59
5.1	Planning of Scientific Research	59
5.2	Planning of Supervision and Monitoring	61
5.3	Construction of Research and Monitoring Facilities	62
Chapter 6:	Planning of Public Education & Training	64
6.1	Planning of Public Education	64
6.2	Planning of Training	65
Chapter 7:	Planning of Tourism	66
7.1	Overview of Tourist Resources in the Scenic Areas (<i>omitted</i>)	66
7.2	Divisions of Scenic Areas (<i>omitted</i>)	66
7.3	Estimation of Environment Capacity	66
7.4	Measures to Control the Number of Tourists in Busy Seasons	66
7.5	Measures to Control Construction of Tourist Developments	66
Chapter 8:	Management Organs & Staffing	67
8.1	Leading Body	67
8.2	Executive Organs	68
8.3	Expert Panel	68
Chapter 9:	Estimated Costs and Source of Fund	69
9.1	Overview of Completed Investments	69
9.2	Estimated Investment of Major Constructions	69
9.3	Source of Fund	70
Chapter 10:	Guarantee Measures for Implementing the Overall Plan	73
10.1	Legal and Policy Guarantees	73
10.2	Organization Guarantee	73
10.3	Guarantee Measures for Conservation of Heritage Resources	74
10.4	Guarantee Measures for Strengthening Research and Monitoring	74
10.5	Guarantee Measures of Fund Management of the Nominated site	75

Some Specifications on Inclusion of Mt. Qingcheng – Dujiangyan in the World Heritage List

The 24th Presidium Meeting of the World Heritage Committee was held on 27 June, 2000, in Paris, and the preliminary review of inclusion of Mt. Qingcheng – Dujiangyan in the list of the World Natural and Cultural Heritages was conducted. The meeting accepted the nomination of Mt. Qingcheng and Dujiangyan Irrigation System (hereinafter the “nominated site”). The Presidium considered that this area accords with the Article 2 and 4 of the Criteria of Natural Heritage, but there are three issues to be clarified and remained for further discussion at the meeting at the end of this year. To meet the requirement, we are pleased to provide the specifications on the three issues as follows:

1. Natural Integrity and Management System of the Buffer Zone of the Nominated site

The nominated site covers a total area of 54,749.5 hectares for conservation, among which the core zone occupies 17,891.5 hectares including Mt. Qingcheng of 1,522 hectares, Dujiangyan Irrigation System of 231.5 and Longxi-Hongkou Nature Reserve of 16,138 hectares. Among the three zones are the buffer zones with a total area of 36,858 hectares. The core zone is closely linked with the buffer zone, and their functions are interrelated, forming a natural whole with a high geographical and functional integrity. Mt. Zhaogong is a buffer zone between Mt. Qingcheng and Dujiangyan Irrigation System, being sparsely inhabited by people and also by giant pandas in the dense forests. The buffer zone in the west of Mt. Qingcheng neighboring Wolong Nature Reserve reveals a marvelous ecological environment. Mt. Yuanbao is the buffer zone between Dujiangyan Irrigation System and Longxi-Hongkou Nature Reserve at an average elevation of 2,000 - 3,000 meters, being featured by low-altitude secondary forests and abundant high-altitude rare animals and plants. The buffer zone around Mt. Guangguan is also involved in the whole range for conservation.

In accordance with Chinese situation, the management mechanism contains the cultural and natural management led by the Ministry of Construction, and supervised by Sichuan and Chengdu Construction Commissions. The Administration Committee of Mt. Qingcheng-Dujiangyan Scenic Area (ACQDSA) is governed by Dujiangyan City Government, executing city authority in coordination of planning, management and conservation of the nominated site. The institutes and units in the buffer zone are under directly administration of ACQDSA. Thus, the ACQDSA is an executive office representing the city government in charge of the various affairs of the nominated site. The supervising and advisory sectors are the State Administration of Cultural Heritage, provincial and city department (bureau) of cultural affairs. The Ministry of Water Conservancy, provincial and city department (bureau) of water and electricity are responsible for management of irrigation and water conservancy projects of Dujiangyan Irrigation System.

2. Overall Plan and Implementation of Longxi-Hongkou Nature Reserve

Authorized by the State Council in 1997, the Longxi-Hongkou Nature Reserve was established for protecting forests, wildlife and plants, with primary missions for conservation of rare and endangered species, such as giant panda, *Pygathrix roxellana*, *Budorcas taxicolor*, *Davidia involucrata*, *Tetracentron sinense*, *Cercidiphyllum japonicum*, as well as integrity of forest ecosystem.

- On 1 September, 2000, the Overall Plan for the Longxi-Hongkou State-Level Nature Reserve was ratified by the State Bureau of Forestry Administration, and the Bureau requested the Reserve to “protect giant pandas and their habitats, and integrity of biodiversity, forest ecosystem and natural landscapes in the Reserve by following the Overall Plan”. Concerning funds for conservation, “funds shall be applied and approved case-by-case and stage-by-stage, following basic construction procedure, when the central government financial support is needed.”
- Before the Overall Plan was made, since Dujiangyan City Government has taken measures according to relevant laws and regulations, the forests and ecosystems in the region have been well preserved.
- In May 1986, Western China Sub-Alpine Botanic Garden in Longxi-Hongkou Nature Reserve, conducting research and conservation of rhododendron and other state-level protected rare and endangered species was established jointly by the Dujiangyan City Government and Chinese Academy of Sciences.
- In October 1988, Longxi-Hongkou was listed by Chinese Academy of Sciences as one of the five national leading bases for biodiversity conservation, and a County-Level Nature Reserve was established.
- In 1992, the Longxi-Hongkou Nature Reserve was upgraded as the Chengdu Municipal-Level Nature Reserve.
- In 1993, the above Reserve was upgraded as Sichuan Provincial-Level Nature Reserve.
- In June 1997, the State Forestry Administration ratified the Long-xi-Hongkou was upgraded as a State-Level Forests and Wildlife Protection Nature Reserve.
- In December 1997, the State Council (Document [1997] No. 109) formally ratified it as the Longxi-Kongkou State-Level Nature Reserve.
- The financial supports on development of Longxi-Hongkou Nature Reserve has been provided by the governments at various levels from the beginning of the establishment of the Reserve. Early or late, the State Bureau of Forestry Administration, Sichuan Provincial Department of Forestry and Chengdu Municipal Government have invested RMB 1.4 million. Particularly, Dujiangyan City Government has input huge man power and funds, and gathered experts to conduct background survey, collect specimens and develop conservation plans. The Overall Plan of the Nature Reserve was prepared based on the above work in 1999, and approved at the Appraisal Meeting of the Overall Plan of Longxi-Hongkou Nature Reserve in 5 June this year, which was hosted by Sichuan Provincial Department of Forestry.

3. On some Issues Required to be Included in the Plan

3.1 Measures to Ensure Long-term Management Funds for

Nature reserve

3.1.1 Estimated Investment

On the bases of the *Standards of Engineering Construction* and the *Estimation Standards of 1995 Sichuan Engineering Construction*, the construction scope and cost estimation are determined on the bases of the consideration on the extent of difficulties of constructions in the nominated site, and our experiences of other domestic properties.

According to our estimation, the nominated site will need a total of RMB 315.16 million for major conservation and management constructions from 2001 to 2010.

Of this sum, the conservation work covers RMB 211.5 million, making up 67.1% of the total investment; the research and monitoring cover RMB 24.86 million, making up 7.9%; the public education and training cover 14.5 million, making up 4.6%, and the infrastructure construction covers RMB 64.30 million, making up 20.4%, respectively (See Table 9-2).

3.1.2 Source of Fund

3.1.2.1 Financial Allocation from Government

The funds for the ACQDSA is allocated by the Dujiangyan City Government.

3.1.2.2 Special Funds

- (1) The expenditures of Dujiangyan Irrigation System are allocated by the Ministry of Water Conservancy and Sichuan Department of Water Conservancy on a project-by-project basis;
- (2) The conservation and construction funds of natural resources are allocated by the State Forestry Administration and Sichuan Department of Forestry on a project-by-project basis;
- (3) The funds for ecological construction are allocated from the special fund for returning farmland to forest;
- (4) The funds for maintenance of ancient architecture, environment monitoring, research and public education, and construction of scenic area are allocated on a project-by-project basis by the Ministry of Construction of China, Sichuan Construction Commission, Sichuan Department of Cultural Affairs, Chengdu Construction Commission, and Department of Cultural Affairs of Chengdu.

3.1.2.3 Foundations

- (1) A portion of ticket charges of the scenic areas shall be retained to set up the Natural and Cultural Heritage Conservation Foundation for conservation subsidies, research and monitoring, public education and training.
- (2) A portion of water charges of the Dujiangyan Weir Engineering Works shall be collected as part of the special fund for conservation of the Weir Engineering (it is also a part of famous scenic spot of the nominated site).

Table 9-2

Cost Estimation of Major Constructions

Unit: RMB 10,000

No	Investment Projects	Sum	InAvestment Channels			Remarks
			State	Local	self	
	total	31516				
1	protection	21150				
1.1	protection of Weir Engineering	10000				
1.2	protection of ancient architectures	2000				
1.3	protection of cultural relics	1000				
1.4	cultivation of bamboo	530	430	100		
1.5	environment protection	3500				
1.6	ecological conservation	2500	2500			returning farmland to forest
1.7	construction of protective facility	1020	670	200	150	conservation stations, fire observatory, and road signs
1.8	equipment purchase	600	450	150		fire fighting equipment, vehicles
2	research and monitoring	2486				
2.1	construction of facilities	2186	1186	800	200	research buildings, monitoring stations, rhododendra garden
2.2	equipment purchase	300	250	50		
3	public education and training	1450				
3.1	training center	300	300			
3.2	expansion of nature history museum	150	150			
3.3	water conservacy museum	500	200	300		
3.4	exhibition of Taoist culture	200		200		
3.5	equipment purchase	300	200	100		
4	construction of infrastructure	6430				
4.1	maintenance of infrastructure	2500		2000	500	
4.2	construction of offices	3580	1580	1500	500	
4.3	equipment purchase	350	150	150	50	

3.1.3 Collection and Management of Funds

In the nominated site, the long term funds shall be managed by timely collecting, by establishing complete capital auditing and supervision mechanism, to ensure legal, scientific and efficient uses of these funds.

3.2 Training of Management Personnel

The training of staff employed in the nominated site includes the professional training courses for management personnel in conservation work and those for tourist management personnel.

3.2.1 Training of Personnel Engaged in Conservation Management

A training center shall be established in the nominated site, offering organized and well-planned training courses to enhance the trainees' ability in their respective works of conservation management. The details of the training courses will cover the forest fire prevention and fighting, field rescues of giant pandas and other rare and endangered species, forest patrol techniques, diversified agricultural technologies, eco-agriculture, and eco-tourism.

3.2.2 Training of Tourism Management

- (1) The well-trained personnel for re-education or vocational training or further studies in the provincial tourism schools and technology schools should be selected. These people will form the "pyramid" of personnel in business operation, service sector and tourism.
- (2) Experts shall be invited to Dujiangyan on a regular basis to offer seminars and lectures for tourist managers. Training courses for tourist managers will also include field visits, simulated classes, off-job or short-term courses, and courses by turns. All personnel employed in management, operation and service sectors shall receive one or more of above training items.

3.3 Measures for Effective and Controlled Tourism Development and Activities

3.3.1 It is estimated that the nominated site has an annual tourist capacity of 600,000 and a daily reception capacity shall be controlled at the level of 8,000 persons per day in the busy seasons of tourism.

3.3.2 Controlling Measures of Tourists at Busy Seasons in the Nominated site

- (1) Reduce the number of ticket offices and the number of tickets sold, control the number of incoming tourists;
- (2) Offer reserved tours to avoid peak time of tourism;
- (3) Raise the ticket price and take economic measures to control the peak time number of tourists;
- (4) Arrange visits by groups at major relics, halls and bridges;
- (5) Enhance the reception capacity of the Buffer Zone, develop the "farmhouse tourism" to

distract the total number of tourists in the core protective zone; and

- (6) Control on the tourist routes – control the density of tourist routes which should be built in the light of the landform, protecting vegetation and environment. Digging and earthwork are strictly prohibited in this tourist area.

3.3.3 Control of Reception Facilities

- (1) Prohibition shall be imposed on new constructions of housing, restaurants, teahouses and other service facilities in the core zone. The service facilities near the core zone shall be built in benefit to the conservation of the core zone, while their construction scope shall be strictly controlled and limited.
- (2) We should make full use of existing farmhouses and their reception facilities, support special tourism like “farmhouse tour” and “(summer) holiday tours” to expand the overall reception capacity and distract the number from major scenic areas.
- (3) Strict control shall be imposed on the number of Inhabitants in the Buffer Zone, and government supports shall be initiated for farmers to live away from these areas.
- (4) No individual and unit is allowed to transgress the resources and land of the nominated site, nor transfer or lease in any nominal ways. No such resources or land shall be listed at any stock exchanges.

3.4 Planning and of Monitoring, Research, and Public Education

3.4.1 Planning of Monitoring

The nominated site has a long history of monitoring, and protective measures and techniques are improving. In order to better and more effective protection of the nominated site, the monitoring of natural landscapes, water resources, geology, animals and plants, and eco-environment should be further strengthened.

3.4.1.1 Major Types of Monitoring

- (1) Conventional monitoring: to cover the regular monitoring of surface water quality, atmosphere quality, and pollution, and provide grounds for scientific management.
- (2) Monitoring of wildlife: to formulate detailed monitoring plans, establish a monitoring system and monitoring sites, and file the wildlife records of wildlife.
- (3) Monitoring of forest ecosystem: to establish the permanent observation stations of forest eco-system in the nominated site, for regular monitoring and detailed recording of vegetation, plant zonation as well as changes of existing environments and vegetation variations. The major monitoring targets include changes of major species communities, changes of vegetation types and (natural and man-made) eco-environment and monitoring restoration of natural status in some secondary communities.
- (4) Monitoring of tourists and reception capacity: to organize assessment and statistics on the

tourist environment of the nominated site, conduct analyses of the dynamic of visitor sources and conditions of tourist markets, strengthen the monitoring of existing tourist facilities and the impact of tourist activities on animal, plant and ecological environments, strengthen monitoring over harmful influences on cultural sites, well coordinate the relation between heritages and tourism.

- (5) Patrol monitoring: to actively organize the patrols in the nominated site, for prevention, discovery and elimination of fire, pest, disease and human damages.
- (6) Monitoring of social status: covers the social and economic conditions and the impact of social developments on heritage resources.
- (7) Monitoring of prototypes: to attach importance to the monitoring of the Weir Engineering of the Dujiangyan Irrigation System. Firstly, the sectional monitoring shall be conducted, that is, monitoring of silt changes of riverbeds. Secondly, the water surface concerning the ratio data of water flows at different riverbeds and flows should be monitored, Thirdly, mainly the monitoring of the sand structure of the riverbed. Fourthly, the monitoring shall also be conducted on sediment loads of cobblestones, suspended matters, water level, and water flows.
- (8) Monitoring of ancient architectures and cultural ruins: regular examination shall be conducted on the ancient architectures and cultural ruins, since their status and changes are to be monitored. The monitoring shall focus on the impact of peripheral conditions (by natural and man-made factors) on the ancient architectures and cultural ruins which is to be monitored.

3.4.1.2 Responsibility System of Monitoring

- (1) Sichuan Provincial Construction Commission shall take the responsibility for the overall monitoring of the nominated site.
- (2) The Administrations of Nature Reserve and the Dujiangyan Forest Bureau shall take the responsibility for the monitoring of biodiversity and forest fire prevention in the nominated site.
- (3) Dujiangyan Administration shall take the responsibility for the monitoring of the Weir Engineering.
- (4) Dujiangyan Environment Protection Bureau shall take the responsibility for the monitoring of the environment.
- (5) Dujiangyan Bureau of Cultural Relics shall take the responsibility for the monitoring of the cultural relics and ruins.
- (6) Already completed hydraulic monitoring projects include monitoring systems and flood forecasting systems. Three observation stations and prototype observation teams are set up at Zipingpu, Erwangmiao and Baopingkou in the nominated site. They are responsible for monitoring the changes of water conditions, suspending matters, and sediment loads on a daily basis.
- (7) The management organs of the nominated site are responsible for supervision and

examination of monitoring work of the executive organs.

3.4.1.3 Methodology of Monitoring

The responsible organs take the responsibility of routine monitoring. The research institutes and universities are engaged in coordinated monitoring of high technology content projects or large projects, such as the fields of biodiversity, ancient architectures and cultural heritage.

3.4.1.4 Construction of Research and Monitoring Facilities

Construction of research and monitoring facilities is one of the key works of the overall construction of the nominated site. It means the material foundation to achieve the research objectives. On the basis of related research and monitoring works, the following buildup of facilities is planned:

- (1) Rescue Station of Rare and Endangered Species - A rescue station of rare and endangered species is planned to be built at Longxi-Hongkou Biodiversity Protection Area, which will be equipped with veterinary houses, clinics, activity ground, medical instruments, research equipment and rescue vehicles.
- (2) Location monitoring Station of Forest Ecosystem - A permanent sub-alpine monitoring station of forest ecosystem is planned to be built in the core zone along the upper Baisha River, at sample plots of 2 4 hm² of selected forest land. This station will monitor the change of the composition of forest system, structures, principal species and the ecological process of Tchief missions are as follows:
 - To provide long-term data concerning dynamic features of growth, death, and renewal of trees;
 - To provide information concerning biodiversity studies and public education of the nominated site to serve the official decision making;
 - To understand the ecosystem functions, its structure, and sustenance mechanism, to study restoration and reconstruction of degraded eco-systems, and to research on the relation between forests and human activities.

3.5 Planning of Scientific Research

3.5.1 Research Projects of Major Cultural Relics

The research of the nominated site shall focus on the Dujiangyan Irrigation System, Mt. Qingcheng Taoist culture, and other related relics for the purpose of good conservation of these cultural relics.

- (1) Studies on the Dujiangyan Irrigation System - According to features of the irrigation system, the following research topics are proposed on:
 - The protection of ancient water conservancy works of Dujiangyan;
 - The water control experiences of Dujiangyan;
 - The impact of eco-environment along the upper Minjiang River Valley on the Dujiangyan Irrigation System;
 - The natural disasters and prevention;

- The historical role of the Dujiangyan Water Conservancy Project; and
 - Dujiangyan water culture.
- (2) Studies on Mt. Qincheng Taoist Culture – Mt. Qingcheng is the originating place of Chinese Taoism, with high values of profound Taoist culture and learning. According to its characteristic features, the following studies are proposed on:
- History of Mt. Qingcheng Taoism;
 - Taoist music of Mt. Qingcheng;
 - Taoist Wushu (martial arts) of Mt. Qingcheng;
 - Taoist regimen of Mt. Qingcheng;
 - Taoist architectures of Mt. Qingcheng;
 - Impact of Taoist thoughts on conservation of nature.
- (3) Studies on other cultural relics include studies on conservation of ancient architectures, repair and maintenance of ancient relics, conservation of ancient trees, and studies on Mangcheng and other cultural ruins.

3.5.2 Major Study Projects of Natural Heritages

These studies shall follow the spirit of the China Action Plan for Protection of Giant Pandas and their Habitats and the Action Plan of Biodiversity, and those topics which are related to the projects assigned by the State Forestry Bureau, State Science Commission, Chinese Academy of Sciences, Provincial Forestry Department and environment protection organs shall be selected. The research shall focus on breeding and conservation of sub-alpine endangered wildlife and related topics, and coordinate with the Institute of Botany and the Institute of Animal of the Chinese Academy of Sciences. We should exert ourselves in making the nominated site a protection research base of sub-alpine wildlife centered on giant pandas.

(1) Studies on giant pandas

The nominated site is a “natural corridor” for existence and regeneration of giant pandas, where live 1/20 of the world’s giant pandas. Strengthening the overall studies on giant pandas has a great national and international significance. As this area neighbors the China Giant Panda Research Center of Wolong Giant Panda Nature Reserve, it ought to start close cooperation with Wolong China Giant Panda Research Center, sharing views in our research and joint projects. Furthermore, the following research orientation shall be emphasized:

- The studies on giant panda communities, including monitoring of giant panda communities, eco-biology of giant pandas, and number of giant pandas in the wild, individual habits of giant pandas, environment quality of giant panda habitats, environmental impact on their habitats, rescuing and saving of giant pandas in the wild;
- The studies on the staple bamboo of giant pandas. To build a bamboo breeding garden in Changheba of the upper Longxi River, collecting and planting quality bamboo species is planned. The research projects will include those on selection of quality bamboo species, nutrition of bamboo and laws governing bamboo growth, pest and disease prevention, treatment of bamboo species, and impacts of environment quality and natural conditions on bamboo growth.

(2) Studies on breeding of rare and endangered animal and plant species

- Studies on breeding of rare and endangered plant species - All the remaining rare and endangered species collected in the nominated site are considered for research purposes. They will serve as species resources at research and teaching bases. These species include *Davidia involucreata*, *Ginkgo biloba*, *Cercidiphyllum japonicum*, *Qingcheng elm*, *Qingcheng oak*, *Tetracentron sinense*, *Cephalotaxus oliveri*, *Taxus chinensis*, *Euptela pleiosperma*, *Acer catalpifolium*, *Tapiscia sinensis*, *Dysosma*, and *Trillium tschonoskii*. The major research concerns shall be on conservation of migrating rare and endangered plant species, domestication and breeding, biological and ecological studies on rare and endangered species, and rational utilization of rare and endangered plant species.
- Rhododendra Garden - The studies on Rhododendra communities should be strengthened. The nominated site is noted for its great variety and abundance of azaleas. In 1992, the West China Alpine Botanical Garden was established by Chinese Academy of Sciences, and some plants of Rhododendra species were reintroduced. Now, there are 250 Rhododendra species being existed in the Garden, making the largest number in China. The garden will continue its cooperation with other research institutions and try its best to expand the scope of the garden and number of species, while conducting biological and ecological studies on azaleas, as well as their introduction and acclimatization.
- The studies on bryophytes - According to the features and rarity of bryophytes, which is characterized by its rarity in the world that plenty of growing bryophytes is concentrated within the nominated site, to build a bryophyte garden for studies on their biology and ecology, on their role in environment protection and soil conservation, and on their comprehensive utilization is planned.

3.5.3 Other Research Projects

- (1) studies on modern management of the nominated site;
- (2) studies on sustainable development of the nominated site;
- (3) studies on conservation and utilization of wild plant resources.

3.5.4 Organization of Scientific Research Personnel

- (1) increasing the staff number – In three to five years, the number of full-time scientific research personnel will increase to 1/6 of our total staff of the nominated site;
- (2) improving capacity – a group of research leaders should be trained for studies in the related fields, so that they are able to independently chair individual research projects.

3.6 Planning of Public Education

3.6.1 Objectives of Public Education

- (1) To utilize all possible means for public education, enhance the conservation awareness of people in all circles, particularly the awareness of people in peripheral areas of the nominated site, enhance their understanding of values and significance of the nominated site, correctly handle the relations between conservation and development, develop the conservation

projects in a healthy manner, and promote the conservation in the course of development.

- (2) Extensively publicize the conservation knowledge so that the general public are able to learn more about scientific, historical and legal knowledge, while initiating and arousing their awareness in protecting the heritages, regulating their acts and consciously participating in the conservation work.

3.6.2 Details of Public Education

- (1) A book "Nominated site - Mt. Qingcheng and Dujiangyan" will be compiled, introduce to the residents and tourists, what about the long history and special roles of the Irrigation System, as well as about Mt. Qingcheng Taoist culture, ancient architectures and relics, natural and geographical features, abundant natural resources, natural beauties, rare and endangered species in the nominated site will be introduced, and, efforts should also be made for public understanding of great significance of the nominated site in aspects of the national and human development and social progress.
- (2) To enhance the conservation awareness of government officials: by means of organized visits and meetings, the basic concepts of resource management, importance of the nominated site should be introduced to them, and to enhance their consciousness concerning the conservation of natural resources, cultural relics, their functions, and management.
- (3) The public education about conservation Laws and Regulations of the world heritage – books such as the Collection of Laws and Regulations for conservation of World Heritages and the Collection of Conservation Cases of World Heritages will be compiled, and, these books will be released to the general public and people of the nominated site for education about the importance of world heritages. The management organs of the nominated site shall send its staff to assist public education and publicize the conservation policies and regulations.
- (4) Strengthen The public education about patrols and fire prevention, print and distribute education sheets and brochures of fire prevention shall be strengthened, set up the withholding offices for fire kindling materials at the major entrances shall be set up, and the cable broadcasting facilities shall be used for public education to enhance the public awareness for forest fire prevention.
- (5) Set up information stations in the nominated site, conduct public education to tourists and enhance their protection awareness.

3.6.3 Basic Forms of Public Education

- (1) To make use of such means for routine public education as radio broadcasting, TV, video, Internet, pictorials, wall newspaper, slogans, warning boards, and printed matters;
- (2) Education on protecting heritages shall address the young people. Lectures and courses of the "Basic Knowledge of Conserving the Nominated site" shall be offered in elementary and middle schools and colleges in the nominated site and in the peripheral zone, and such education program will also influence their family members.
- (3) Eye-striking signs, posts, warnings and watchwords shall be set up at the major entrances of

the nominated site, on the main streets and highways of Dujiangyan City, living quarters of the Buffer Zone and eco-tourism areas.

- (4) In combination of eco-tourist activities, the original Zoological Sample Building will be transformed and extended into the Natural Museum of the Nominated site, collecting and exhibiting animal, plant and mineral samples of the nominated site, with the assistance of modern high technology to display the natural beauties of the nominated site. The museum will serve as a comprehensive museum for popularization of sciences, public education and publicity, appreciation, and exhibition.
 - (5) The Museum of Ancient Water Conservancy will be built in downtown of Dujiangyan, collecting and exhibiting photos, graphics, and models of the Dujiangyan Irrigation System, and informing domestic and foreign visitors of the history, role and significance of this great water conservancy project.
 - (6) The Water Culture Plaza will be build in the downtown of Dujiangyan City as a principal place for publicizing the brilliant water culture and history of Dujiangyan Irrigation System.
 - (7) The Exhibition House of Chinese Taoist Culture will be built just outside the gate of Mt. Qingcheng, explaining to the general public the Taoist history and culture.
4. According to the requirements of the 24th Presidium of the World Heritage Committee, we have prepared the "Overall Plan of the Nominated site – Mt. Qingcheng and Dujiangyan Irrigation System." The Overall Plan has been reviewed and approved for implementation by Sichuan Provincial People's Government.

Date: August 31th, 2000
From: Ministry of Construction
To: Sichuan Construction Department
Subject: Reply to the Overall Plan of the Mt.Qingcheng - Dujiangyan Scenic Area

Your report of "the Overall Plan of the Mt.Qingcheng - Dujiangyan Scenic Area" has been well received. With carefull consideration, comments are given as follows:

1. The Overall Plan is agreed on in principle, and should be strictly implemented.
2. This scenic area is famous for the Dujiangyan Irrigation System and Chinese Taoism Mountains. It is considered a special sight that includes mountains, water, forest, weir and city, and additionally has the multiple functions of biodiversity conservation, tourism, education and scientific research.
3. The total size of this area is 224 km², and the core area is 150 km². It extents from Mt. Jiuding in the north to Mt. Heiding-Huangjia in the south, adjoins with Zhongxing, Yutang and Qingchengshan Townships in the southwest, and reaches 200m to the east of the Dashan Road in the east. Boundary signs and archives should be set up accordingly. Measures should also be taken to protect the environment within the 94 km² surrounding zone.
4. This is required to protect cultural relics, the river system, vegetation, rare and endangered species and geological landforms following the *Temporary Management Regulations on Scenic Areas* and related national regulations. Illegal logging, mining, collecting of plants, polluting water, hunting without permission, damaging historical relics and constructions at discretion are strictly prohibited.
5. As the request of the Overall Plan, detailed construction plans should be made for each scenic spot and in the rear of the mountain. These plans should be examined first by the Sichuan Construction Department, and then submitted to the Ministry of Construction for approval. The whole construction of the scenic area should be conducted according to the approved detailed plan by stages. All activities of land occupancy and construction against regulations

are strictly prohibited. Any project which may cause damage to the environment and/or cultural scenery is not allowed in the scenic area. Construction projects that have been started, or planned to be started in the area should be carefully reviewed.

6. The tourist reception and service will be mainly based in Dujiangyan and Qingchengshan. Programs for these towns should be made and strictly implemented. The towns are required to strengthen the environment restoration and improve infrastructure conditions including the facility for sewage disposal. The development of tourism facilities are not permitted within the scenic area as well as Hongyan, Baiyun and Youyi villages. Hotels, guest houses, training centers and sanatoriums must be rectified by steps. Infrastructure such as trails, water and power supply, telecom and sanitation also needs to be improved gradually.
7. Governments of Sichuan Province, Chengdu and Dujiangyan are required to strengthen the leadership of the Mt. Qingcheng-Dujiangyan Scenic Area, make local laws and related regulations for conservation and management, set up a coordinating management organization, strengthen the roles of the government, and the programming and management of the scenic area. All institutions and people in the scenic area should follow the Overall Plan and management of the administration, and develop the Mt. Qingcheng – Dujiangyan Scenic Area together.

Cc: Sichuan Provincial Government, Chengdu Municipal Government, Dujiangyan City Government

Date: September 1, 2000
From: State Forestry Administration
To: Sichuan Forestry Department
Subject: Reply to the Overall Plan of the Longxi - Hongkou State-level Nature Reserve

Your report of "The Overall Plan of the Longxi - Hongkou State-level Nature Reserve and the construction projects of 2001 year" has been well received. With careful consideration, comments are given as follows:

The Plan indicates that the main task is to protect endangered animals (mainly Giant panda), their habitats and forest ecosystems. The Plan is agreed in principle and should be strictly implemented.

Having verified, the division of functions in the plan was approved. The funds for developing infrastructure, based on the different features of projects, may come from the central and local government. Proposals of non-commercial projects which need support from the central government shall be submitted and approved case by case and stage by stages. As to the projects which require local funds, bank loans and raising funds--your department should provide strong support and explore multiple ways for management according to the features of the Reserve.

Your department should follow the Overall Plan and organize the work of protecting the Giant panda and its habitat, and integrity of biodiversity, forest ecosystem and natural landscape. On the basis of preserving the natural resource of the Reserve, you can engage in multiple industries to increase its ability of self-development. However, it is strictly prohibited to develop commercial activities which may cause damage to the ecosystem. Implementation of the Plan must fit in with the local construction layout and accords with social-economic sustainable development. The construction and management level of the Reserve should also be further improved, and efforts should be made to develop the Reserve into a first-class nature reserve.

Cc: Office of the State Forestry Administration, Bureau of Conservation, Bureau of Planning

State-Level Longxi-Hongkou Nature Reserve

Overall Plan (Excerpt)

Institute of Forestry Inventory and Planning, SFA

Sichuan Forestry School

Administration of Longxi – Hongkou Nature Reserve

September 2000

Dujiangyan, Sichuan, China

Overall Plan of the State-Level Longxi-Hongkou Nature Reserve

Construction Unit: Administration of the Longxi-Hongkou Nature Reserve
Designing Unit: Prospecting and Designing Academy of the State Forestry
Administration, and Sichuan Forestry School
Design License: Class A 0100321
Design Code: 00-02-03
Director of Academy: Lin Jin
Executive Deputy Director of Academy: Zhao Zhongnan

Leading Group for Preparation of the Overall Plan of the State-level Longxi-Hongkou Nature Reserve

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Wan Jun, Director, Dujiangyan Economic Planning Committee
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Chapter 1: Overview

1.1 Project Background & Necessity of the Overall Plan

1.1.1 Background

The State-Level Longxi-Hongkou Nature Reserve was reviewed and approved by the State Council in 1997 for conservation of forest and wildlife. Its chief mission is to protect rare and endangered species including giant panda (*Ailuropoda melanoleuca*), golden monkey (*Pygathirx roxellana*) and takin (*Budorcas taxicolor*) as well as the forest ecosystem.

The State-Level Longxi-Hongkou Nature Reserve (hereinafter the “Nature Reserve”) is one of the most important nature reserves in China, with outstanding values for conservation and scientific studies. Currently, some achievements have been made concerning conservation of rare and endangered species and the forest ecosystem. The Nature Reserve is located at the transition belt of three climatic zones of the north subtropical area and Qingzang Plateau, with an elevation range of 820m – 4,582m. It is in the Rain-Screen Belt of West China where the vertical variations of climate are distinct. With deep river valleys of great drop height, and complete and distinct vertical plant zonation, it has a variety of best-preserved forest zones from subtropical montane evergreen broad-leaved forests to alpine rock-stream vegetation. The Nature Reserve also has a high forest coverage rate, complicated floras and various endemic species. It is listed as the nation’s gene bank of biological species for its best biodiversity in the northern part of the Hengduanshan Mountain Range. The core zone of the Nature Reserve well preserves the primitive forest vegetation that has been not yet interfered by human activities, thus being regarded as an extremely rare primitive specimen of natural vegetation in the mountains and valleys of West Sichuan.

From medium-height to high elevation in the Nature Reserve, there grows a large area of azaleas of different varieties. This has formulated a complete vertical zonation of Rhododendra flora which is rarely seen in China, and becomes the most distinctive scenery of the Nature Reserve.

The fauna of this Nature Reserve belongs to that of the transition belt of the Oriental Realm and Palaearctic region, as well as that of the transition belt of nine fauna zones including the sub-region of Southwest mountain area, West montane plateau and Qingzang South-Asia area. It is also located at the middle of the narrow arc habitat of giant pandas, neighboring the world-famous Wolong Giant Panda Reserve just across the river. Like Wolong, the Nature Reserve constitutes an important component of the giant panda’s habitats. Its notable feature is that it directly connects the two wild giant panda communities in the Minshan and Qionglai Mountain Ranges, and is the key area or a “natural corridor” for the existence, breeding and domestication of giant pandas. Now the area is thought to be the best zone for wild giant panda protection in the whole Hengduanshan Mountain Range including the Southwest China.

The Nature Reserve is established to be not only in favor of conservation of giant pandas, other endangered species and the diversity of subtropical upland ecosystems, but also of great importance for the studies on upland ecosystem and occurrence and evolution of flora and fauna in this transition belt of two landforms and climatic types, as well as the formation and evolvement of biodiversity.

The Nature Reserve is under the administration of Dujiangyan, a city of long-standing historical and cultural importance. With a straight-line distance of less than 40 km from Chengdu, it is one of the reserves which is closest to the central city and has the best facilities in China. This renders unique geographical advantages and convenience for international exchanges, scientific studies and environmental protection education.

The rivers within the Nature Reserve are important tributaries of the Minjiang River. The establishment of the Nature Reserve is extremely significant in conservation of water sources, soil erosion prevention, protection of high-quality drinking water sources and the balanced social and economic development of Chengdu.

Since it came into being, the Nature Reserve has been establishing a management system and operation mechanism, under the vigorous support and leadership of relevant administrative organs of higher responsible organs and local governments.

In order to well implement the Document [1997] No. 109 of the State Council, the Administration of the Nature Reserve entrusted both the Prospecting and Designing Academy of the National Forest Bureau and Sichuan Forestry School to prepare the Overall Plan for the Nature Reserve, all to place it on the right track of benign development from the very beginning.

1.1.2 Necessity of Preparing the Overall Plan

The Overall Plan is a fundamental project, a guideline document for scientific conservation and management of the Nature Reserve. Furthermore, it provides substantial grounds in determining amounts and sizes of investments, particularly for the initial stage of construction. In the course of constructions, the Overall Plan will provide guidance for baseline thoughts, rational layout of construction projects, clear-cut work focuses, rational capital arrangement, and high institutional efficiency. Under the guidance of the Overall Plan, we are able to build the Nature Reserve in a planned and step-by-step manner, exerting our uttermost to avoid repeated construction or blindness in our work, and going for the conservation, research, development and utilization on high standards and criteria. We should make full use of various effects of the Nature Reserve, and contribute our shares to China's undertaking in conservation of the Nature.

1.2 Grounds for Preparing the Overall Plan

- Document [1997] No. 109 of the PRC State Council – The State Council Notification on the List of the State-Level Nature Reserves including the Luyashan Mountain;
- Document [1997] No. 327 of Sichuan Provincial Government – Sichuan Government Notification on Tightening up Management and Construction of the Gongga Mountain and Other Nature Reserves.

- Document [1997] No. 60 of the Ministry of Forestry – Written Reply on Classifying the Gongga Mountain and Other Areas of Sichuan as the Forest & Wildlife Nature Reserve;
- The PRC Law of Forest;
- The PRC Law of Wildlife Conservation;
- The PRC Regulations for Protecting Wildlife;
- The PRC Regulations of Nature Reserves;
- The Management Methods of the Forest and Wildlife Nature Reserves
- The PRC Law of Environment Protection;
- The PRC Action Plan for Conservation of Biodiversity;
- The National Plan for Conservation and Management of Giant Pandas and their Habitats.

1.3 Guideline of Planning Principles

1.3.1 Guideline (*omitted*)

1.3.2 Principles of the Overall Plan (*omitted*)

Quantitative Indicators of the Overall Plan of the State-Level Longxi-Hongkou Nature Reserve

(See Table 1-1 for details)

Table 1-1: Major Quantitative Indicators

No.	Items	Unit	Indicator	%	Remarks
1	Total area	hm ²	31000	100	
1.1	Core zone	hm ²	16138	52.1	
1.2	Buffer zone	hm ²	7842	25.3	
1.3	Experiment zone	hm ²	7020	22.6	
2	Peripheral zone	hm ²	11700		Of Longchi & Hongkou Townships
3	Living trees	10000m ³	114.2		On 1993 data
4	Staff number				
4.1	Current staffing	Person	30		
4.2	Planned staffing	Person	45		
5	Construction cost	¥10000	5094.6	100	
5.1	Protection projects	¥10000	1988.6	39.1	
5.2	Research projects	¥10000	479.5	9.4	
5.3	Infrastructure projects	¥10000	1112.5	21.8	
5.4	Support to nearby area	¥10000	1514	29.7	

Chapter 2: General Situation & Current Status of the Nature Reserve

- 2.1 Natural and Geographical Situation (*omitted*)**
- 2.2 Biological Resources (*omitted*)**
- 2.3 Social and Economic Status (*omitted*)**
- 2.4 Assessment of Current Status (*omitted*)**

Chapter 3: General Layout

3.1 Nature and Objectives of the Nature Reserve

3.1.1 Nature of the Reserve

The Nature Reserve focus its primary mission on protecting giant pandas and their habitats, as well as habitats and forest ecosystems of other rare and endangered species. It is a comprehensive State-level nature reserve performing diverse functions in ecological conservation, scientific studies, international cooperation, public education, water catchment, eco-tourism and sustainable use.

3.1.2 Objectives of the Nature Reserve

The primary objective of the Nature Reserve is to implement the national policies and principles concerning development of nature conservation, concentrate on protecting rare and endangered species, especially giant pandas, and local natural resources, ensure that their habitats will not be destroyed, and actively conduct researches on conservation, and provide scientific information and experiences in conservation, development, and sustainable use of natural resources. Furthermore, the Nature Reserve shall take advantage of its role as the national biodiversity conservation base, to preserve diversity and representativeness of biological species in the Reserve. It is expected that the Nature Reserve will be developed into a gene bank with the richest species diversity in China as well as a permanent research base for studying biological relationship and evolution of species and natural environment.

3.2 Term and Objectives of the Overall Plan

3.2.1 Term of the Overall Plan

This Plan will cover the period from 2000 to 2010, which is divided into two phases – Phase I: 2000 to 2005, and Phase II: 2006 to 2010.

3.2.2 Objectives of the Overall Plan

The Overall Plan is prepared by following the relevant State laws, regulations and policies concerning management of nature reserves, and in accordance with international obligations in application for being listed in the World Heritage, while taking full considerations of the nature and mission of the Nature Reserve. The objectives for construction and development of the Nature Reserve are set to protect giant pandas and their habitats, conserve the biodiversity and the integrity of forest ecosystem and natural landscapes in the Nature Reserve, follow up high starting point and high standards and requirements for a coordinated development of conservation, scientific research, and social progress. The objectives are set up to substantialize in a step-by-step manner the scientific protection and modernized research activities, sustainable and comprehensive utilization, systematic social development, standardized infrastructure works, and rational institutional organization. Implementation of these objectives are expected to enable the

Nature Reserve to become a comprehensive State-Level nature reserve with multiple functions, that is able to couple with the world by its rich resources, complete facilities, flexible operation, and efficient management, thus making greater contributions to the general nature conservation of China

3.3 Divisions of Functional Zones

3.3.1 Principles of Division

- Constructive to protecting the integrity of forest ecosystem, habitations and living environment of protected targets, and to expanding the number of communities of rare and endangered species;
- Constructive to conservation and management of natural resources and ecological environment, and to fulfilling the multi-functional role of the Nature Reserve;
- Constructive to economic development of the communities living within the Nature Reserve;
- Constructive to conservation management of natural resources within the Nature Reserve, scientific studies and sustainable utilization, and to realizing to the maximum the Nature Reserve's three effects: ecological, social and economic effects;
- Constructive to protection and construction of research infrastructure, and to international cooperation and exchanges

3.3.2 Division of Functional Zones

In the light of the above principles, full consideration shall be given to the division of natural and eco-environment of the Nature Reserve, to the current status of the structures of montane vertical zonation, and to the local differentiation and utilization of groupings of bio-species and vegetation. Consequently the Nature Reserve is divided into three functional zones, namely, the core zone, the buffer zone, and the experimental zone

- (1) The Core Zone – located in the north of the Nature Reserve, having the best-preserved natural forest ecosystem and concentrated distribution of giant pandas and other rare and engendered species. On the uninterrupted stretches of land are the state-owned forests without human interference. This area neighbors Penzhou City in the east, Wenchuan County in the north and west (all are natural ridges), and the Huangqinggang Ridge in the south, descending from the ridge to the east bank of the Baisha River (contour line of 1,600m) and the Heshang Bridge. It ends up at the Changheba Ridge and the Mountain Ridge of Wenchuan County.

The core zone has an area of 16,138 hm², making up 52.1% of the Nature Reserve.

No organ or individual is allowed to reside or settle in the core zone. Any individual concerned shall apply to the Administration of the Nature Reserve for reviews and approval by relevant State forest organs and authorized departments before being allowed to enter the core zone for research purposes.

- (2) The Buffer Zone – is the transition belt between the core zone and the experiment zone, functioning for conservation and buffering of the Nature Reserve, expanding and extending the theater of growth and activities of protected species. Human interference within the buffer zone shall be reduced to minimum. In case of scientific research or teaching, the person concerned shall apply to the Administration of the Nature Reserve for review and approval before being allowed to enter.

The buffer zone neighbors the core zone in the north, Pengzhou City in the east, and the End Ridge of Dacagou in the south. It runs over the south ridges of Dacagou, Liaoyeping, Baisha River, Mozigou, Sanjiaojie, Longchi Ridge, and ends up at the hilltop (elevation 3,290m) in the west of the Nature Reserve.

The buffer zone has an area of 7,842 hm², making up 25.3% of the Nature Reserve.

- (3) The Experimental Zone – an area with relative frequent human activities therein. Ecological construction shall be the focus of the experimental zone, while scientific experiments, teaching activities, visits and inspection, eco-tourism shall be carried out within the limit of State laws and regulations.

The Experimental Zone has an area of 7,020 hm², making up 22.6% of the Nature Reserve.

- (4) The Peripheral Zone – In order to strengthen conservation of giant pandas and other rare and endangered species, the peripheral zone is to be set aside covering Longchi and Hongkou townships, with a total area of 11,700 hectares.

See for details the Map of Division of Functional Zones of the Nature Reserve.

See the Overall Planning Map for conservation, scientific research and construction within the Nature Reserve.

Chapter 4: Planning of Conservation Programmes

4.1 Conservation Programmes of the Giant Panda

They will focus on conservation of the giant panda in the wild and its living environment, including rescues of wild giant pandas, breeding bamboo (the staple of the giant panda) to provide them with stable food sources, and prevention of bamboo blossom - a main threat to their existence.

The core zone is the center of this Plan, and the construction of protection stations / points as its base, covering works like procuring facilities for the conservation network, and timely rescues of giant pandas in the wild. A special rescue team shall be organized to handle emergencies at any time, and fulfill the designated rescue tasks in a timely and accurate manner. Furthermore, monitoring and patrolling shall be strengthened in conservation of giant pandas and other protected wildlife, collecting information concerning giant pandas within the Nature Reserve for prediction of the upcoming problems or disasters.

In order to prevent the bamboo blossoms – a threat to the existence of the giant panda, bamboo species shall be inter-planted in the new forests, sketching out the area where the giant panda is supposed to move about. It is planned that 40 hm² of the fine quality bamboo samplings should be planted annually.

4.2 Conservation Programmes of Biodiversity

4.2.1 In the term of the Overall Plan, a system shall be accomplished for sampling and monitoring biodiversity of the forest ecosystem and wildlife, supported by means of modern monitoring facilities. Biodiversity of the forest ecosystem shall be monitored in two ways. First, unified methods shall be adopted for monitoring composition, structure and major eco-processes of the ecosystem. Different methods shall be taken for the different size of sample plot, monitoring indicators and time intervals on the basis of different properties of ecosystem and monitoring objectives. Secondly, the remote sensing and GIS computer technologies shall be employed for monitoring of different sizes, types and distributions of the ecosystem. On this basis, the monitoring data will be collected concerning the major types of ecosystem, major biological communities, and major localities. These data shall be utilized for purpose of conservation and sustainable utilization of China's biodiversity, and for formulating the principles to couple with corresponding fields of studies in the world. Standardized and normalized methods shall be combined with field studies, to establish the "dynamic monitoring network of biodiversity" within the Nature Reserve, to provide basic data and effective means for China's biodiversity conservation, and to establish the model for sustainable utilization of biodiversity.

4.2.2 Active and vigorous activities shall be undertaken in domestic and overseas cooperation for wildlife conservation.

4.2.3 All possible media shall be employed to publicize the value and significance of biodiversity and wildlife in the Nature Reserve. Great efforts shall be given to arouse

general awareness and support from the public and all social sectors, and attract scientists and experts to be engaged in research works and development in the Nature Reserve.

4.2.4 An effective and complete patrol system shall be completed, by setting up the protection stations as grass-root protection organs, regularly patrolling and monitoring the key sections of the Nature Reserve. Necessary funds shall be collected for patrolling works, and equipment and facilities procured for patrolling. Repair and maintenance shall be made for dangerous sections of roads (cliffs, rapids) which are harmful to the patrolling personnel.

4.2.5 In order to well conserve the wildlife and their habitation, hunting shall be prohibited within the Nature Reserve and Peripheral Zone. In addition to regular patrols of wildlife habitations, emphasis should be given to public education over people residing in the Nature Reserve. The Administration of the Nature Reserve should keep close contacts with townships within the Nature Reserve as well as relevant organs of Pengzhou City and Wenchuan County to take joint-protection measures of shared management. Hunting of wildlife shall be strictly prohibited, and illegal hunters shall be seriously punished. Furthermore, the people outstanding in protecting wildlife in the Nature Reserve and Peripheral Zone shall be given corresponding spiritual and material awards. Sizeable awards shall be given to the people rescuing and saving the giant panda. To ensure sufficient food sources for giant pandas, commercial collection of bamboo shoots shall be strictly prohibited.

4.3 Ecological Restoration

4.3.1 Returning farm fields to forestry purpose and restoring the primary vegetation

Except the flat land retained near the farmers' houses, all the cultivated slope land on the banks of the Longxi River, Baisha River and their tributaries shall be returned to forestry purposes. Currently, there are 1,067 hm² of the slope land in the Longchi and Hongkou townships, all of which shall be to return to forestlands within 3 to 5 years.

Primary vegetation shall be restored on the land with a slope >25°. And the area with an elevation below 1,600m shall be planted with camphor trees such *Phoebe Zhennan*, black *Zhennan*, Sichuan cherry bay, oil camphor, as well as beech trees such as thin-leaved *Qinghong*, *Manqinghong*, and *Lithcarpus cleistocarpus*. The area with an elevation of 1,600~2,000m shall be planted with *Davidia involucreta*, *Tetracentron sinense*, *Sabina pingii*, *Betula insignis*, bright-leaved birch, *Perostyrax psilophyla*, lacquer tree and various *Aceraceae*.

4.3.2 Renovation and Improvement of Forest Plantations (*omitted*)

4.3.3 Programmes of Seedling Breeding Bases

To ensure the ecosystem restoration and needs of seedling breeding, it is planned to build a seedling breeding garden in Hongkou Township to provide quality seedlings for restoration of forest vegetation. The garden will have an area of 6.67 hm².

4.4 Forest Protection and Fire Prevention (*omitted*)

4.5 Environment Protection (*omitted*)

4.6 Construction of Protection Stations and Points (*omitted*)

4.7 Publicity, Public Education and Training

4.7.1 Publicity and education

Publicity and public education shall be strengthened to enhance the awareness of the public residing in the Nature Reserve - an important measure to improve all works of the Nature Reserve.

(1) Contents

We shall organize qualified personnel to compile the book Longxi-Hongkou Nature Reserve, the Basic Knowledge of the Nature Reserve, the Collection of Policies for the Nature Reserves, the Collection of Case Studies for Nature Reserves, and other manuals and handouts. These literatures shall be distributed to people living in the Nature Reserve as well as to tourists for their understanding of natural and geographical features of the Nature Reserve, rich natural resources, beautiful scenery, and necessity of conserving rare and endangered species. The target readers are expected to become fully aware of significance of the Nature Reserve's presence and development and its role in existence and progress of the nation and the mankind. These efforts aim at mobilizing the public to participate in the conservation and construction of the Nature Reserve.

(2) Basic Forms

- All possible media shall be employed including broadcasting, TV, wall posters, watchwords, warning broads, letters expressing regards and sympathy, for regular and active publicity and education activities.
- Eco-tourism shall be integrated in these activities, and efforts shall be given to expand and transfer the existing museum of animal and plant specimens into a comprehensive museum with mutli-functions of science education, publicity, popular education, visitation, and demonstration. Reasonable charges will be collected to compensate for the fund of the museum, to expand the Museum and its social influence.

4.7.2 Training

Training covers two aspects of work. One is to train the staff of the Nature Reserve, the other is the training of vocational skills concerning all works in the Nature Reserve.

- (1) Establish the Training Center of the Nature Reserve - As the Nature Reserve is only 60-odd km from Chengdu, with advantageous transportation and communication conditions, it is planned to establish within the Nature Reserve the largest training

center of the kind in Southwest China, to be equipped with advanced modern equipment and facilities. The Training Center shall serve as a permanent base for various training activities in the Nature Reserve, and it is also a precondition for routine training and guarantee of training quality. To meet all the training requirements the center shall be equipped with necessary facilities such as classrooms, tables and chairs, and experiment equipment, as well as dormitories, offices and office equipment. Establishment of this training center will not only improve the training on all aspects of work of the Nature Reserve, but also provide locations for training of information exchange personnel engaged in biodiversity conservation of the world. It will play an conspicuous role in the conservation undertakings in Southwest China.

- (2) Staff training – To meet the needs of management, research, development and utilization of the Nature Reserve, various training activities shall be conducted in a planned, organized and purposeful manner to upgrade the management level and the conservation capacity. This is a strategic measure for continuous progress of our conservation. Therefore, once the Nature Reserve is under normal operation, such training shall be organized and emphasized. The Administration is responsible to formulate and implement the training plan, organize the examination and implement the punishment and award mechanism, to ensure the training quality and strive for the designated goals.
- (3) Training of vocational skills for conservation– Conservation is a public undertaking crucial to sustenance of the nation. People from all social sectors shall be mobilized to actively participate in substantial conservation works. The people residing in the Nature Reserve and in the peripheral zone are the primary, fundamental and most reliable force for such conservation works. However, due to their lack of needed knowledge and skills, training shall be oriented to improve their conservation skills, such as fire prevention, rescue of giant pandas and other rare and endangered species, patrol and forest protection, mixed farming, and eco-agriculture.

4.8 Law-Enforcing Force of the Nature Reserve (*omitted*)

Chapter 5: Planning of Research Programmes

5.1 Investigation of Background Resources in the Nature Reserve (*omitted*)

5.2 Key Research Projects

5.2.1 Studies on giant pandas

(1) national research project of the “Project of Giant Pandas and their Habitation;

(2) ecological studies on giant panda communities

- monitoring the giant panda communities;
- biological studies of giant pandas;
- numbers of giant pandas in the wild;
- bionomics and behavior of giant pandas in the wild;
- animals associated with giant pandas;
- impact of environment quality of the giant panda habitation on their existence;
- exchanges of giant panda communities in the corridor between the Minshan and Qionglai mountain ranges; and
- rescuing and nursing giant pandas in the wild.

(3) Studies on Bamboo, the Staple of Giant Pandas

In Changheba of the upper Longxi River, an area of 13.3 hm² will be set aside as a bamboo breeding garden for giant pandas, planting on large spaces the quality bamboo for studying the staple food of giant pandas.

Studies on the staple bamboo of giant pandas include:

- selection and breeding of the quality staple bamboo;
- nutrition and long-term growth law of staple bamboo;
- impact of environment quality and natural conditions on staple bamboo;
- prevention and treatment of bamboo pests and diseases.

5.2.2 Studies on Breeding the Rare and Endangered Plant Species

(1) Studies on breeding the rare and endangered plant species

On the bank of the Longchi Lake where the Natural Museum is located, such rare and endangered species shall be mainly planted as *Davidia involucrata*, *Cercidiphyllum japonicum*, *Tetracentron sinense*, *Chines catalpa*, *Cephalotaxus*, *Taxus chinensis var. mairei*, *Amentotaxus*, *Euptela*, *Acer catalpifolium*, *Tapiscia*, *Dysosma*, and *Trillium*. One function of the garden is to preserve species resources; the other function is to serve as a research and training base. It is planned to plant 13.3hm² for the following purposes.

- allopatric conservation of rare and endangered species;
- domestication and breeding;
- biological and ecological studies on rare and endangered species;
- rational utilization of rare and endangered species.

(2) The Rhododendra Garden shall continue its construction, and strengthen studies on Rhododendra communities. The Rhododendra species in the garden are characteristic of rich varieties, beautiful shapes and large and bright patterns of flowers, with high ornamental values. Because of rich Rhododendra species resources in the Nature Reserve, the CAS Institute of Botany sponsored and established in 1992 the West China Sub-Alpine Botanic Garden in Longchi, collecting and introducing 250-odd Rhododendra species into this Rhododendra garden with the largest collection of species in China. The Nature Reserve shall further cooperate with the CAS Institute of Botany to expand the scope of the Botanic Garden and to increase the number of Rhododendra species by means of following studies on:

- biology and ecology of sub-alpine azaleas;
- domestication and introduction of sub-alpine azaleas.

(3) Establish the Bryophyte Garden for studies of bryophytes

On the basis of the bryophyte density in the Nature Reserve, (a rare case in the world), it is planned to set aside 3.3 hm² for the Bryophyte Garden for the following research purposes:

- biology and ecology of bryophytes;
- environment protection and water/soil conservation for bryophytes;
- comprehensive utilization of bryophytes.

5.2.3 Other Research Projects

- (1) modern management of the Nature Reserve;
- (2) sustainable development of the Nature Reserve; and
- (3) conservation and utilization of wild plant resources.

5.3 Buildup of Research Facilities

5.3.1 Construction of the Research Institute

A research building shall be constructed, and equipped with advanced facilities to meet the needs of actual research works. The major equipment thereof includes the giant panda monitoring equipment, GIS geographical information system, testing equipment, microscopic equipment, and analytical equipment.

5.3.2 First-Aid Station for Rare and Endangered Animals

A first-aid station is planned to be built near the office building of the Administration with an area 2,000m², 8 animal rooms, 1 emergency operation room, 1 animal theater, a

number of medical and research equipment and ambulances.

5.3.3 Locating and Monitoring Station of Sub-Alpine Forest Eco-System

It is planned to build this permanent observation station of sub-alpine ecosystem near the core zone on the upper Baisha River and Heshang Bridge, with a 2 ~ 4 hm² sample plot for sub-alpine forest monitoring. The station will chiefly monitor composition, structure, and major species of the sub-alpine forest ecosystem as well as major ecological processes.

This Monitoring Station shall well cooperate with other research institutes, for studies on biodiversity of forest ecosystem.

5.4 Buildup of Research Personnel

5.4.1 Increasing the number

Research personnel of the Nature Reserves will largely come from Dujiangyan Forest Bureau and Dujiangyan Forest Farm. Preferential policies shall be given to attract outstanding personnel from research institutes and universities. Within 3 to 5 years, the number of full-time research personnel will be one out of every four staff employed by the Nature Reserve.

5.4.2 Upgrading the quality

Training of research personnel shall be strengthened to enhance their political and professional accomplishments, and strengthen their sense of enterprise and responsibility. Pragmatic training plans shall be formulated to train a group of research leaders. Initiative mechanism shall be adopted to galvanize continuous training, fine style of self-taught study and spirit of hard working. Favorable research conditions shall be offered while a certain number domestic and foreign experts or guest research fellows shall be invited for regular on-the spot researches for conservation of the Nature Reserve. Close ties of cooperation and business shall be built up with the CAS Botany Institute and Zoology Institute, as well as with domestic and foreign institutes and individual experts.

5.5 Organization of Research Projects (*omitted*)

5.6 Management of Research Data and Files (*omitted*)

Chapter 6: Planning of Infrastructure Construction

- 6.1 Buildup of Administrative Organs (*omitted*)**
- 6.2 Road Works (*omitted*)**
- 6.3 Power Supply, Water Supply, Drainage, Telecom and TV Works (*omitted*)**
- 6.4 Setting up Signs and Posters (*omitted*)**

Chapter 7: Planning of Support Programme for Adjacent Communities

7.1 Planning Principles (*omitted*)

7.2 Planning of Eco-Tourism

7.2.1 Scenery resources (*omitted*)

7.2.2 Current developments of eco-tourism (*omitted*)

7.2.3 Estimation of visitor capacity in eco-tourism

(1) Daily capacity of environment and that of tourists

It is calculated that the daily capacity of environment at Longchi Scenic Spot is 900 times/person, that of tourists is 640 times/person. The daily capacity of environment at Hongkou Scenic Spot is 960 times/person, that of tourists is 680 times/person.

(2) Calculation of annual capacity

The annual capacity is predicted by seasons on the basis of daily capacity and features of eco-tourism, as well as geographical location, transportation and climatic conditions, and resources of the scenery.

The environment capacity of Longchi is estimated as 127,000 times/person; that of tourists is 89,000 times/person. The annual environment capacity at Hongkou is 135,000 times/person; that of tourists is 95,000 times/person.

7.2.4 Planning of Eco-Tourism for Longchi Scenic Spot (*omitted*)

7.2.5 Planning of Eco-Tourism for Hongkou Scenic Spot (*omitted*)

7.3 Support Plan of Mixed Farming (*omitted*)

7.4 Economic Support Plan for Adjacent Communities (*omitted*)

Chapter 8: Organization and Staffing

8.1 Organization and Management System (*omitted*)

8.2 Management Organs (*omitted*)

8.3 Staffing (*omitted*)

Chapter 9: Estimated Investment and Sources of Fund

9.1 Major Construction Projects

Since the founding of Longxi-Hongkou Nature Reserve, the State has allocated an accumulated RMB 1.4 million for startup fund. The Exhibition Hall and its decoration and publicity works have been completed duly. However, conservation, research and management of the Nature Reserve are still at their initial stage due to lack of funds.

As a newly approved State-Level nature reserve, the Longxi-Hongkou Nature Reserve needs to proceed a large number of construction projects. However, such constructions are dictated by our own forces and sources and priorities, and full consideration shall be given to local needs and fund availability in determining the proposed construction projects and scope of construction.

9.2 Estimated Investment for Proposed Projects

9.2.1 Grounds for Estimation

The scope and difficulties of proposed projects are determined according to the official documents of the Standard Constructions, and the 1995 Calculation Allotment of Constructions in Sichuan. The technical indicators of constructions in the Nature Reserve shall be determined in reference to the experiences of other nature reserves in China.

9.2.2 Specifications of Calculation

The investment for the first-phase constructions of the Nature Reserve shall be allotted on the annual basis. Investment for the second phase has to be reimbursed on a case-by-case basis by comparing the actual costs with that of the first phase. That mentioned in this Overall Plan is not listed in the project investment. Costs for equipment renovation in the second phase and other routine costs shall be compared with that of the first phase, and corrected by the then commodity prices. Thus the comprehensive investment can be determined and listed in the year's financial plan for review by relevant organs before being implemented.

9.2.3 Estimated Investment

It is estimated that investment for the first-phase constructions of the Nature Reserve amounts to RMB 50.946 million as in the following breakdowns:

(1) Investment by projects -

Conservation works: RMB 19.886 million making up 39.1% of the total;
Research projects: RMB 4.795 making up 9.4%;
Infrastructure works: RMB 11.125 million making up 21.8%;
Community works: RMB 15.14 million making up 29.7%.

(2) Investment by component:

Construction of project : RMB 44.26 million making up 86.9%;

Equipment procurement: RMB 6. 686 million making up 13.1%.

9.3 Sources of Construction Funds

Investments for proposed projects will come from the State, provincial, municipal, unit and individual sources as well as self-collection or foreign solicitation. In the respect of special investment for fixed assets, the non-commercial projects shall be funded by the State and provincial sources, and the commercial projects shall be invested by local sources or self collection or loans or foreign solicitation.

According to the above sources of investment, for the first phase -

State investment: RMB 29.846 million, making up 58.6% of first-phase total;

Provincial investment: RMB 9.75 million, making up 19.1%;

Local self-collection: RMB 8.25 million, making up 16.2%;

Other sources: RMB 3.1 million, making up 6.1%.

9.4 Distribution of Investments

In consideration of actualities of the Nature Reserve as well as priorities and difficulties of the proposed projects, the investments for the first phrase are distributed as follows:

2000 RMB 6.04 million, making up 11.9% of the first phase total;

2001 RMB 11.27 million, making up 22.1%;

2002 RMB 11.111 million, making up 21.8%;

2003 RMB 9.015 million, making up 17.7%;

2004 RMB 6.88 million, making up 13 .5%;

2005 RMB 6.68 million, making up 13.7%.

9.5 Estimated Operation Expenses and Other Related Costs

In accordance with relevant criteria and standards, the operation expenses and other related costs shall be offered for a staffing size of 30, starting from an amount of RMB 15,000 for each staff. These costs will increase to RMB 4,5000 from the year 2000 when another 15 staff are added to the staffing pool at the rate of 3 staff added per year.

It is calculated that the total operation expenses and other related costs for the Nature Reserve will amount to RMB 6.75 million, among which that for the first phase (2000 –2005) is RMB 3.375 million, that for the second phase (2006 – 2010) is RMB 3.375 million. (See Table 9-1 for details)

Table 9-1: Annual Arrangement of Operation & Other Costs Unit: RMB 10,000

Total estimate	1st phase							2nd phase 2006-2010
	As of	2000	2001	2002	2003	2004	2005	
675	337.5	45	49.5	54	58.5	63	67.5	337.5

The operation expenses shall be included in the Dujiangyan City budget provided by the local finance. The research fund shall be applied to responsible administrative organs, thus not being listed in the Overall Plan.

Chapter 10: Analysis of Effects and Comprehensive Assessment

All the projects proposed in the Overall Plan of the Longxi-Hongkou Nature Reserve are designed to accelerate its construction and development, anticipating the Nature Reserve to fully realize the designated ecological effects and social and economic effects.

10.1 Analysis of Ecological Effects (*omitted*)

10.2 Analysis of Social Effects (*omitted*)

10.3 Analysis of Economic Effects (*omitted*)

10.4 Comprehensive Assessment

To sum up, construction and development of the Nature Reserve will generate not only tremendous ecological and social achievements but also outstanding economic benefits. This is an undertaking of boundless beneficence with prominent ecological, social and economic prospects. Constructions and developments in the Nature Reserve are crucial to conserving and saving the giant panda and its habitation, and are also significant to conserving the forest ecosystem and species resources. It will increase the ability of sustainable development of the Nature Reserve as well as its peripheral areas, to meet the spiritual and material needs of the local people. Enhancement of awareness of conservation will exert an immediate and far-reaching impact in tapping and developing the nature conservation in China.

Chapter 11: Measures to Implement the Overall Plan

- 11.1 Measures of Administrative Management (*omitted*)**
- 11.2 Measures to Strengthen the Management of Natural Resources (*omitted*)**
- 11.3 Measures to Strengthen the Research Management (*omitted*)**
- 11.4 Measure to Promote Economic Development in Adjacent Communities (*omitted*)**

Minutes of Assessment Meeting on Overall Plan of the State-Level Longxi-Hongkou Nature Reserve

On 5 June, 2000, Sichuan Provincial Department of Forestry organized the assessment meeting on the Overall Plan of the State-Level Longxi-Hongkou Nature Reserve in Chengdu. The meeting was presided by Sichuan Provincial Department of Forestry. Organs participating the meeting are the CAS Biology Institute, China Project Office of the World Natural Foundation, the CAS Zoology Research Institute and Botany Research Institute, the Animal and Plant Protection Division of Sichuan Provincial Department of Forestry, the Public Security Division, the Afforestation Business Division, the Financial and Auditing Division, the Forest Resource Division, the Protection and Management Station of Sichuan Wildlife Investigation Department, Chengdu Branch of the National Rare & Endangered Species Management Office, Sichuan Wildlife Conservation Association, Sichuan Academy of Forestry Science, Sichuan Forestry Prospecting & Designing Academy, Chengdu Forestry Bureau, Dujiangyan City Government, Dujiangyan Economic Planning Commission, Dujiangyan Agriculture Commission, Dujiangyan Organization & Staffing Commission, Dujiangyan Urban Planning Bureau, Dujiangyan Forest Bureau, the Administration of Mt. Qingcheng – Dujiangyan, Longchi Township Government, Hongkou Township Government., as well as relevant specialists and leaders.

During the meeting, the Assessment Expert Panel was formulated (See the List of Experts attached), who heard the reports from the State Forest Prospecting & Planning Academy and Sichuan Forestry School. In a scientific manner of seeking truth from facts, the expert panel made serious discussions and came to the following consensus:

1. The State-Level Longxi-Hongkou Nature Reserve is a large-scaled and compound eco-transition belt between Sichuan Basin and Qingzang Plateau, with unique geographical features, rich biodiversity and complete vertical plant zonation – one of the principal humid and subtropical gene banks in China. In order to strengthen the effective conservation and management of the Nature Reserve, it is utterly necessary to prepare the Overall Plan in a scientific way.
2. The Overall Plan correctly comments the Longxi-Hongkou Nature Reserve as a major habitation of giant pandas, emphasizes its importance as the “natural corridor” environment between the Minshan and Qionglai mountain ranges, describes its complete vegetation, vertical plant zonation and rich animal and plant species. The panel proposes that this area takes a unique position in biodiversity of China, and the Overall Plan offers an accurate outlining which well conforms to the actualities.
3. The Overall Plan is supported by full and well-grounded evidences, delineating distinct guidelines and development objectives. In comparison with similar plans of other nature reserves in China, this Overall Plan is of greater scientific and comprehensive features.
4. In combination of conservation, research, management and community support of the

Nature Reserve, the Overall Plan is rational, specific and operational in classifying three types of works respectively in conservation, research, and management.

The Overall Plan was accepted by full votes of the meeting except for a number of proposed revisions as follows:

1. Change the *community development plan* to the *support and shared management plan of adjacent communities*;
2. The projects designed shall be formulated in accordance with basic requirements of effective management of the Nature Reserve, and priority actions and investment scope shall be determined by the existing standards of quota for infrastructure construction stipulated by the state.
3. Other constructive suggestions proposed by expertise.

It is so expected that the designers of the Overall Plan will take immediate actions for revisions according to the above proposals.

Wang Jinxi (*signature*), Head of Expert Panel:

Wang Sung, Hu Tieqing (*signature*), Vice Head of Expert Panel:

Expert Panel in Assessment of the Overall Plan of the Longxi-Hongkou Nature Reserve

Head:

Wang Jinxi, Research Professor & Deputy Director, Sichuan Institute of Forestry Science

Vice Head

Wang Sung, Research Professor, Institute of Zoology, CAS

Hu Tieqing, Senior Engineer & Secretary General, Sichuan Wildlife Conservation Association

Members

Yu Changqing, Project Director for Natural Reserves, WWF China Programme Office, Beijing

Tong Fengqin, Deputy Director, Bureau of Life Science and Biotechnology, CAS

Kang Le, Deputy Director, Bureau of Life Science and Biotechnology, CAS

Han Xingguo, Director, Institute of Botany, CAS

Fu Dezhi, Deputy director, Institute of Botany, CAS

Ma Keping, Deputy Director, Biodiversity Committee of CAS

Liao Zhikang, Deputy Director, Afforestation Division of Sichuan Forestry Department

Li Jianguo, Deputy Director, Conservation Division of Sichuan Forestry Department

Gong Ji'en, Deputy Director, Chengdu Office of the CITES Management Authority

Yang Xuyu, Senior Engineer, Sichuan Wildlife Survey and Conservation Station

Cao Cahngkai, Senior Engineer, Sichuan Institute of Forestry Inventory and Planning

Li Ming, Senior Engineer, Sichuan Institute of Forestry Inventory and Planning

Zhang Liming, Engineer, Sichuan Wildlife Survey and Conservation Station

Implementation of the Initial Plan of Longxi-Hongkou Nature Reserve

The Longxi-Hongkou Nature Reserve is a primitive unpopulated area, representing the nature and biological diversity of the northern part of Hengduanshan Mountain Range. The Nature Reserve has been well preserved by government in the past.

- In 1982, this area was included in the water resource and forest conservation area in the First Agricultural Division of Dujiangyan.
- As this area is inhabited by Giant panda, the Dujiangyan City Government set up a Leading Group and an Office for Conservation of the Giant Panda in 1984, formulating relevant regulations to strengthen the protection of the species..
- In 1993, Longxi-Hongkou was approved by the provincial government as a Provincial Level Nature Reserve.
- In 1995, the Overall Plan of the Longxi-Hongkou Nature Reserve was formulated.
- In June 1997, the State Forestry Administration approved the Longxi-Hongkou as a State-Level Forest and Wildlife Nature Reserve. In accordance with the PRC Forest Law and the Regulations of Nature Reserves, the Dujiangyan People's Government divided the Reserve into the core area, buffer zone, experimental zone and peripheral belt, set up four protection stations at Dashuigou, Shiziping, Luchitang and Masangping accordingly. As the main authority for protection and management, Dujiangyan Forestry Bureau terminated commercial logging of 330,000 hectares of state-owned forests, and imposed strict limitations on logging in collectively-owned forests (within the peripheral belt). This intensified the protection and conservation of ecosystem of natural forest where the giant panda and other endemic wildlife occur.
- In 1998, in the light of the direction of the central and provincial governments, the overwhelming ban on logging was implemented in all natural forests within the Nature Reserve, leading to an effective conservation of its ecosystem.
- In 1999, the Administration of the State-Level Longxi-Hongkou Nature Reserve was established, and returning cropping fields to forests and pastures of 530 hectares in the peripheral belt was implemented by restoration of forest, which would greatly improve the ecological significance and benefit of the area.

**Overall Plan of the
Nominated World Heritage Site
Mt. Qingcheng – Dujiangyan**

(Excerpt)

Prepared by

Institute of Forestry Inventory and Planning, SFA

Dujiangyan City Government

Sichuan Forestry School

September 2000

Dujiangyan, Sichuan, China

Chapter 1: Overview

1.1 Project Background and Necessity of Preparation of the Overall Plan (*omitted*)

1.2 Grounds of Preparation of the Overall Plan

- (1) UNESCO Convention for Conservation of World Cultural & Natural Heritages
- (2) Law of Forest of the People's Republic of China
- (3) Law of Environment Conservation of the People's Republic of China
- (4) Law of Water Resource Conservation of the People's Republic of China
- (5) Law of Wildlife Conservation of the People's Republic of China
- (6) Law of Cultural Relics Conservation of the People's Republic of China
- (7) Rules and Regulations of Cultural Relics Conservation of the People's Republic of China
- (8) Statutes of Nature Reserves of the People's Republic of China
- (9) Tentative Statutes of Management of Places of Cultural and Historical Interests of the People's Republic of China
- (10) Statutes of Management of Places of Cultural and Historical Interests of Sichuan Province
- (11) Statutes of Management of Dujiangyan Irrigation System
- (12) Action Plan of Biodiversity Conservation of the People's Republic of China
- (13) Management Plan of Protection of Giant Pandas and Their Habitats
- (14) Overall Plan of Conservation of the Longxi-Hongkou National Nature Reserve, March 2000
- (15) Overall Plan of Mt.Qingcheng - Dujiangyan Places of Cultural and Historical Interests, May 2000

1.3 Guideline of Planning and Principles (*omitted*)

1.4 Major Quantitative Indicators (*omitted*)

Chapter 2: Basic Data

2.1 Natural and Geographical Overview (*omitted*)

2.2 Biological Resources of the Nominated site (*omitted*)

2.3 Current Status of the Nominated site (*omitted*)

Chapter 3: General Layout

3.1 Nature and Scope (*omitted*)

3.2 Terms and Objectives of the Plan (*omitted*)

3.3 Division of Functional Zones (*omitted*)

3.3.1 Principles of Division (*omitted*)

3.3.2 Division of Functional Zones (*omitted*)

3.4 General Layout

3.4.1 General Layout of the Core Zone (*omitted*)

3.4.2 General Layout of the Buffer Zone

Chapter 4: Planning of Conservation Works

Taking into consideration of local actualities, this plan is formulated on the basis of the UNESCO Convention for Conservation of the World Cultural and Natural Heritages, the PRC Action Plan on Conservation of Biodiversity, and the Conservation and Management Plan of Giant Pandas and their Habitats. It will focus on conservation and protection of the Dujiangyan Weir Engineering, local biodiversity, as well as cultural and natural resources.

4.1 Conservation of Dujiangyan Irrigation System

The Dujiangyan Irrigation System is the primary component of the nominated site, particular three water conservancy projects of the Weir Engineering serving as a core for conservation work of this cultural heritage. The major conservation measures are set up as follows:

4.1.1 Security of the Water Conservancy Projects

Under the pressure of emergent and changeable river conditions as well as the sudden increases of water consumption, the Dujiangyan Irrigation System has to alter its operation status to accommodate unexpected water uses. Therefore, a monitoring system must be established at the upper Minjiang River, together with a flood warning network. Measures shall be formulated and taken against emergent conditions, including strengthening the routine monitoring duties and training of actual aids. The existing dredging system and capacity of material supplies shall be well utilized to ensure the absolute security of the ancient water conservancy works of the Yuzui Bypass Dyke, Feishayan Floodgate and Baopingkou Diversion Structure.

4.1.2 Conservation of the Site the Dujiangyan Water Conservancy Works

The Dujiangyan Irrigation System is composed of its three main engineering works: the Yuzui Bypass Dyke, Feishayan Floodgate and Baopingkou Diversion Structure. Other annexes such as Baizhang Dyke and Herringbone Dyke remain intact and operational. Still being adopted today are such century-old management methods as “digging deep for low dykes” and “cutting the angel at the bend and harnessing along the straight course.” From both scientific and cultural perspectives, the Dujiangyan Irrigation System could be regarded as the greatest ecology-conscious project and an outstanding cultural treasure in human civilization. Conservation of Dujiangyan Water Conservancy Works is indispensable duties and obligations of the people of Dujiangyan to mankind.

- (1) prepare the models and optic disc, take photos, update existing archives, follow up the methods of ancient builders as grounds and models for repair and maintenance works;
- (2) Timely discovery and repair shall be conducted on inevitable physical and chemical micro changes including weathering, striking and water erosion of the Dujiangyan water conservancy projects, and repair works shall be organized on the precondition of restoring the original looks. For the annexes, the system of annual maintenance shall continue to be carried out by using optimal building materials and building structures, to update these annexes and to ensure their best possible performances and permanent existences of original looks;
- (3) Construction of entertainment facilities shall be strictly prohibited in the area around the Weir Engineering, and true to unauthorized sand collection and quarrying shall be banned in the main watercourse. No construction of large-scale projects is permitted in the core zone of the Dujiangyan Irrigation System;
- (4) Academic exchanges and international cooperation shall be extensively carried out to instill

vitality and efficiency into conservation measures;

- (5) We shall fully employ the state-level protection status of the Dujiangyan Irrigation System, uphold the authoritative image of state laws and regulations, and strive for more supports from the general public in various ways.

4.2 Conservation of Mt. Qingcheng – Dujiangyan Cultural & Natural Sites

4.2.1 Conservation of Cultural Sites

Scientific measures for protection shall be taken at the sites of various cultural relics such as the cultural and historical town of Dujiangyan, Erwang Temple (Temple of Li Bing), Fulong Taoist Temple, Chenghuang Temple, Yulei Pass, and Taoist temples on Mt. Qingcheng. Protective works shall be organized in the respect of anti-moisture, fire-prevention and fighting, moth-fighting, as well as antiseptis, wind-proof, thunder-proof, anti-sloping, and foundation-consolidation works.

- (1) Ancient buildings shall be constantly watched out with due cautions against fire damages. Photos of original looks shall be well recorded and filed, natural wood and other processed materials which are fire-, moth- and erosion-resistant shall be used to gradually replace the bad and decayed components on the condition of maintaining the original looks. Under the guidance of experts, anti-moth pesticides which are effective and non-polluting shall be used at ancient architectures where regulatory and standard protective treatment shall be made in force.
- (2) A system shall be established that cultural sites receive visitors by turns, effective measures shall be adopted to control the number of visitors to maximum, and to reduce their impact on the sites to minimum.
- (3) All commercial activities that are likely to damage the buildings shall be prohibited inside the ancient architectures.
- (4) Fight-fighting facilities in all architectures shall be maintained in workable and efficient conditions in accordance with relevant regulations and standards, and subject to periodic inspections.
- (5) Fireworks are not allowed in the core zone, and special locations shall be set aside for incense burning and other fire-using religious activities. Special burning devices shall be provided at these locations to ensure safety of heritage resources.
- (6) Special locations shall be set aside as living quarters of religious and management personnel in the Taoist temples.

4.2.2 Conservation of Natural Landscapes

On Mt. Qingcheng, Longxi, Hongkou and the upper Weir Engineering area, there are many natural landscapes on hillsides or riversides. Conservation of their aesthetic values, as well as atmosphere, water quality and forest. They are the focus in conservation of these natural landscapes.

- (1) Strengthen the treatment of “three wastes” in the place of cultural and historical interests – Public education shall be offered to local inhabitants and tourists by setting up signs and posters to prohibit littering in these areas. Concentrated collection and disposal shall be well managed for food packaging and white wastes.
- (2) Sanitation management shall be strengthened among people living on riverbanks and shop assistants. No wastes shall be discharged into watercourse. The “Environment-Conscious Family (Shop) Contest” activity shall be organized among local families and shops, a regulatory examination system shall be set up to award those outstanding environment-conscious people with material benefits. This will help to formulate an extensive

fashion in the society for environment protection.

- (3) Permission shall not be given to large-scaled constructions in the nominated site, including quarrying, mining, logging and other large-scale constructions in order to keep intact the naturalness, integrity and permanence of landforms and water resources.
- (4) Conservation of atmosphere shall be strengthened in accordance with laws, and no gases damaging the atmosphere are allowed to be discharged in the nominated site.
- (5) People engaged in engineering and maintenance works in the nominated site shall receive professional training concerning environmental protection before being allowed to work at the construction site.

4.2.3 Conservation of Ancient Trees

In the nominated site and particularly in the Taoist temples and other ancient architectures, there are many century-old trees with huge trunks and beautiful shapes. These treasured heritages are of great historical and cultural significance as well as high ornamental values, and should be well conserved and protected.

- (1) Setting up tags or boards for public attention;
- (2) Prohibiting any form of fires in the surrounding areas;
- (3) For some trees with big tops but weak trunks and roots, reinforcement work shall be made to prevent their falling or wind disasters;
- (4) Antiseptic measures should be taken to trees with large tree tops but partially decayed trunk, to eliminate the spreading of fungii;
- (5) A protective belt shall be set aside within 5-10m of the ancient tree, while special personnel shall be assigned for periodical soil-loosing, irrigating and prohibiting trampling;
- (6) Regular diagnosis of pests shall be made, and immediate treatment shall be conducted in case of pests and disease;
- (7) Lightning rod shall be installed and anti-thunder measures taken for important ancient trees.

4.3 Conservation of Biodiversity

The nominated site is located on West Sichuan Alpine Valley of the North Hengduanshan Mountain Range – a key area of the world's biodiversity, with complicated topography, diversified climate and rich fauna and flora. It is a subtropical mountainous area with well-preserved subtropical species in the world. Conservation of its ecosystem and species biodiversity is the focus of conservation in this area.

4.3.1 Conservation programme of the Giant Panda

The conservation shall focus on the giant panda and its habitat in the wild. We should be well prepared for rescuing wild giant panda, breeding the bamboo species – the staple of the giant panda. We should ensure a stable food source for them and to prevent blossom of bamboo - a main threat to their survival.

The core zone is the major concern of this plan, where conservation stations shall be built as the bases. We shall procure necessary facilities, and formulate a protective network. A specialized rescue team shall be organized to take fast and precise actions for urgent cases. Furthermore, monitoring and patrolling shall be strengthened over the habitats of the giant panda and other wildlife species, and information of their status shall be well kept and updated for timely forecasting of disasters.

To avoid the serious threat of bamboo blossoms to the giant panda, special belts shall be set aside

to breed proper bamboo species as the staple for giant pandas.

4.3.2 Conservation of Forestry Ecosystem and fauna and flora

- (1) During the course of implementing the plan, a monitoring system aided by modern facilities shall be established for conservation and protection of eco-forestry, wildlife and plants. The monitoring work covers two areas. On one hand, monitoring shall address the ecosystem composition, structure and ecological process by means of sampling. Different monitoring measures shall vary for different sample areas, indicators, and intervals between monitoring activities, as well as nature of monitoring. On the other hand, remote sensing means, GIS and computer technology shall be called for monitoring different areas and distribution patterns of ecosystem. On this basis, monitoring targets shall be major eco-types, major biological communities and major locations, in order to serve the objectives of sustainable utilization of biodiversity and coupling of researches with related international practices. The network technology shall be combined with a standardized on-the-ground research, and it will eventually become the “dynamic network of biodiversity monitoring” in the protected area, providing basic data for conservation of China’s biodiversity and for setting up a model for sustainable utilization of biological resources;
- (2) Initiatives shall be taken for domestic and international cooperation in conservation of biodiversity, wildlife and plants;
- (3) All public media shall be called for to publicize the value and significance of the biodiversity, wildlife and plants of the nominated site of Mt. Qingcheng and Dujiangyan, and go all out concern and support from the public, and for participation of scientists, technicians and experts working in related fields.
- (4) A forest patrol system shall be established. Based on conservation stations, regular patrolling and monitoring shall be conducted at major locations, funds duly allocated and collected, and patrolling equipment procured. Repair and maintenance shall be organized on dangerous sections of roads (cliffs and torrents) that are likely to threaten the patrolling personnel.
- (5) For effective conservation of wildlife and their habitats, hunting shall be strictly prohibited in the nominated site as well as in the peripheral zone of the nominated site. Management personnel shall regularly make patrols in wildlife protection areas, and offer public education programme to nearby inhabitants. Liaison shall be built up with neighboring towns and townships as well as with Pengzhou, Wenchuan, Chongzhou as well as Wolong Nature Reserve, to build a coordinated management profile. Hunting of wildlife shall be strictly prohibited, and law enforcement shall be imposed on illegal hunting criminals. Corresponding spiritual and materials awards shall be offered to people with outstanding contributions in wildlife protection. Outstanding award shall be granted to people of merits in protecting and rescuing pandas. To ensure sufficient food sources for giant pandas, commercial activities such as collecting fresh bamboo shoots shall be strictly prohibited in the nominated site.

4.3.3 Forest Protection and Fire Fighting

Under the unified leadership of Dujiangyan Forestry Fire-fighting Headquarters, public awareness and prevention capacity have been strengthened in the nominated site and peripheral areas, and as a result there were no forest fires happened during the past decades. However, along with the development of eco-tourism, the number of visitors to the nominated site is increasing on a daily basis, resulting in greater possibility of potential forest fires. To build up a more effective comprehensive ability for fire prevention and fighting in the nominated site, the following measures shall be taken:

- (1) Strictly follow the Regulations of Forest Fire Prevention, and Sichuan Management Regulations of Fire Uses in the Wild, strictly follow the fire using system of “five no-burns” and “ten prohibitions”, strengthen the public education in fire prevention, and the fire-prevention awareness of local residents in the nominated site.
- (2) Establish a specialized forest fire-fighting organization for the nominated site; organize a

special fire-fighting team of 10-15 members each respectively for Longxi, Hongkou, Mt. Qingcheng, and Lianghe; voluntary fire-fighting teams shall be organized out of the people's militia. The staffs of the conservation stations are at the same time the full-time fire-prevention and fighting personnel. Training shall be offered among full-time and part-time fire-prevention and fighting personnel to upgrade their specialized knowledge, skills and job qualifications.

- (3) Strengthen control over fire prevention work and fire sources, strengthen patrolling in case to timely eliminate hidden fire dangers; distribute related public education materials and brochures. At the main entrance and exits, living quarters and eco-tourism areas, fire-prevention signs and watchwords shall be set up and placed in eye-striking spots. Buildings and architectures shall be constructed in the light of fire-prevention requirements and installed with fire-fighting facilities.
- (4) In the core zone, particularly at ancient architectures, fire-prevention signs shall be set up, and fire-prevention areas shall be set aside together with bulletins publicizing fire-prevention rules and regulations.
- (5) The Administration of Mt. Qingcheng and Dujiangyan (hereafter the "Administration") and conservation stations shall be equipped with convenient means of transportation, communication facilities and fire-fighting equipment. The Administration shall be equipped with patrolling vehicles, and the conservation stations with cable telephones, wireless radio devices and walkie-talkies. Offices of the Administration shall be installed with a 100w radio station connecting the superiors and grass-root stations. Fire-fighting equipment shall be installed at each conservation station and the Administration just in case of emergency.
- (6) Strengthen construction of fire-fighting infrastructure such as five forest fire-prevention observatories and four observatory towers (The observatory on Mt. Qingcheng is in the Laojun Temple), to be equipped with other observatory facilities including infrared monitoring equipment.
- (7) In afforestation, those of inflammable, mothproof and pest-proof trees shall be selected and planted, including *Schima superba*, *Cinnamomum camphora*, *Phoebe zhennan*, oaks, and *Cryptomeria fortunei*.
- (8) Initiative shall be taken to coordinate local fire-prevention organs, so as to improve the fire-prevention responsibility system.

4.3.4 Prevention and Treatment of Forest Pest and Disease

In the nominated site, the policy of "prevention first, supplemented by comprehensive treatment" should be carried out, meanwhile, well plan and implement the pest- and disease-forecasting and treatment as specified in the following:

- (1) Survey on major forest pest-insects, rodents and diseases, their extent of danger, and prepare the files of forest pests and disease of the nominated site;
- (2) Establish a GIS monitoring and forecasting system for regular monitoring at designated places and time duration, providing forecasting and comprehensive management data of studies on life history, habits and biological characteristics of those major pest-insects, rodents and diseases;
- (3) Introduce advanced domestic and foreign technologies, especially those biological control, in enhancing abilities of integrated control of forest pest-insects, rodents and diseases;
- (4) Offer professional staffing to full-time and part-time staff.

4.3.5 Restoration of Forest Ecosystem

- (1) Reusing the farmland for forestry purposes and restoring the native vegetation

Except those flat land cultivated and retained by farmers, the existing sloping fields in the buffer zone shall be gradually returned to forestry land. Currently, there are 2,667 hm² of sloping fields in the buffer zone, returning which to forestry ecosystem should be achieved in 5 years.

Primary native vegetation should be restored in the area with a slope of >25°, and trees for reforestation in the area with an elevation below 1600m shall be selected for forestation as *Phoebe zhennan*, *Lindera megaphylla*, *Cinnamomum wilsonii*, *Cinnamomum longepaniculatum*, and some species in genus *Quercus*. Trees shall be selected for forestation in areas above 1600 2000m, including *Davidia involucrata*, *Tetracentron sinense*, fragrant birch (*Betula insignis*), silus birch (*Betula luminifera*), *Pterostyrax psilophylla*, lacquer tree (*Toxicodendron*) and maples (*Acer*).

(2) Transformation of Reforestation

In the buffer zone below 1600m, primary vegetation has been destroyed in the 1960s. These areas have largely been planted with fir and cryptomeria trees, and the remaining area grows the secondary vegetation.

Biodiversity shall be gradually restored to replace uniformity of primary tree species in these locations.

4.4 Conservation of Water Resources

Great importance has been attached by governments in various periods in the nominated site which is the most crucial source of agricultural production and living consumer water. Currently, those manufacturing businesses that are detrimental to local water sources have been shut down, and the water quality of this area has been improved and reached the Class-I standard stipulated by the state.

4.4.1 Flood ditches or walls shall be built at the lower side of those slopes that have been recorded with landslides;

4.4.2 In maintaining forest and other forestation, tree planting shall be made in a conscious manner to purify the waste water, the planting shall be done with a mixture of oaks, Chinese ash, and birch trees;

4.4.3 Efforts shall be given to reduce the consumption of living water and water pollution;

4.4.4 According to natural purifying levels of the natural forces, we should formulate specific discharging standards, build up a model for the degree of pollution and its purification, adopt advanced measures for management and water distribution, and strive for benign balance and sustainable utilization;

4.4.5 To well monitor the water quality, we should make good use of coordinated monitoring ability of sanitation, environmental-protection, and hydraulic organs, strictly control the related water quality indicators such as oxygen solvent, suspended matter, PH value, and contents of organic matters, and promulgate the corresponding protection regulations and statutes.

4.4.6 In the course of developing eco-tourism in the buffer zone, we should strengthen environment education and management for conservation of water source according to the law.

4.4.7 Water management organs should strengthen and improve monitoring on the banks of ancient urban watercourses to prevent secondary pollution.

4.5 Environment Protection

4.5.1 It is vital to strengthen enforcement and implementation of the Environment Protection Law and relevant regulations, and take up award and punishment measures.

4.5.2 In the nominated site, priority shall be given to optimize the structures of fuels, and replace coal for household uses with electricity and natural gas.

4.5.3 It is also important to further well handle the matters concerning sewers and unified disposal of wastes in the nominated site or the wastes for non-toxic uses. Household wastes and manure shall be disposed in oxygenation and discharged according to the standards stipulated by the state.

4.5.4 In the nominated site, constructions shall not be allowed that are irrelevant to protection of resources and environment. The approved constructions shall not damage the tourist projects and facilities.

4.6 Construction of Conservation Stations and Points

The grass-root conservation stations are the fundamental guarantee to implement conservation measures concerned. One focus of this plan is on the core zone and living areas of giant pandas and other endangered wildlife as key areas in planning and rational division of functional zones.

The nominated site currently has six conservation stations led by their respective directors. The duties of conservation stations include protecting the conservation targets, routine patrolling, monitoring, timely recording and filing.

4.6.1 Dujiangyan Conservation Station

This station is located in the Lidui Park, governing the ancient Dujiangyan Weir Engineering, Erwang Temple, Fulong Taoist Temple, Yulei Pass, Chenghuang Temple, and other ancient architectures, historical relics, ancient trees, forest vegetation, cultural sites and forests within. The conservation station shall strengthen monitoring of water conservancy projects, prevent damages of natural disasters to the original looks of the water conservancy projects. Conservation works shall proceed in ancient architectures and cultural relics, such as fire-fighting, moth-proofing, and antiseptic works. Strictly control shall be administered over the number of visitors at the busy tourist seasons or holidays.

4.6.2 Mt. Qingcheng Conservation Station

The station is located near the mountain gate, covering the front slope and back slope of Mt. Qingcheng. The key protection targets are ancient Taoist temples, cliff stone carvings, ancient trees, precipices, caves, rocks, and evergreen broad-leaved forests, as well as other cultural and natural landscapes. The station shall focus its work on patrolling and monitoring, environment protection, fire prevention, observation, pest and disease prevention and treatment. Furthermore, the station shall strengthen public education among tourists and enhance their public awareness of conservation, strictly control the number of tourists to the front slope of Mt. Qingcheng during busy tourist seasons or holidays.

4.6.3 Conservation Station of Mt. Qingcheng Back Slope

This station is located in the Tai'an Temple on the back slope of Mt. Qingcheng, covering the whole area of the back slope of Mt. Qingcheng, with abundant cultural and natural resources ancient Baiyun Village, etc , natural landscapes, rare and endangered animal and plant species. Besides, this area neighbors the Wolong Giant Panda Nature Reserve, and is a major distributing area of giant pandas. Because of a late start of eco-tourism in this area, human interference has exerted detrimental affects on natural environment and ecosystem. Therefore, this conservation station shall focus its work on conservation of existing natural landscapes and cultural sites, particularly the protection of giant pandas and other endangered species. It should also strengthen patrolling and forest protection, fire prevention and observation, and strictly control the number and scope of tourists, in order to create fine conditions for reproduction of rare and endangered species.

4.6.4 Conservation Station of the Erlang Temple

Its management covers the Bajiao Temple in the south and primitive forests along the Baisha River in the north. It is the most important station of biodiversity conservation in the nominated site. The station is located in the Erlang Temple at the boundary of the Buffer Zone and the main entrance to the core zone. The station covers a large management area and stretches up to primitive forests

which are major distributing areas of giant pandas, *Pythathrix roxellana*, *Naemorhedus goral* and other rare and endangered wildlife. It is rated as the key area for biodiversity conservation in the nominated site. Therefore, in order to protect the habitat of those species from being destroyed, the station should take measures in strengthening the control and management, and supply sufficient equipment and personnel and facilities. The station should also formulate strict management rules and prohibit any individual or unit from entering the core zone without authorized permission.

4.6.5 Conservation Station of Shenxigou

The station is located at the entrance to Shenxigou Valley of Hongkou Township, neighboring the highway between Dujiangyan and Bajiao Temple. The station covers most of Hongkou Township at the upper Baisha River, Zonghua Village in the south, Bajiao Temple in the north, and Hongkou Township in east and west. This area is with large stretches of evergreen broad-leaved forests, and abundant plants and wildlife including Rhesus monkey, black bear as well as giant panda and Red panda (in January 2000, a giant panda in serious illness was discovered by villagers at an elevation of 1,100m of Shenxigou and sent for rescue). For a concentrated protection, the station should strengthen law enforcement, routine patrolling, management and public education to residents in the respect of environment, wildlife and plant protection, as well as forest fire prevention. Special attention should be given to residents living at the boundary of the mountainous areas, to enhance their awareness and consciousness in environment protection, in forest protection according to laws, and in preventing the forest edge line from retreating. It is the station's responsibility to monitor and manage the fish resources in the Baisha River, and offer service and assistance to tourists traveling in Shenxigou.

4.6.6 Longchi Conservation Station

Located in the Longchi Place of Scenic Importance, the station covers the area with the north bank of the Minjiang River in the south, Changhe Baliangzi in the north, and Wenchuan Mountain Edge in the west. This area has abundant wildlife and plant resources, particularly the diversity and abundance of rare and endangered species in Yeniu Flatland. It is one of the main habitats of rare and endangered species in the nominated site, including monkeys, pheasants, Giant panda, and Red panda. The station should focus its work on environment protection, strengthen environment education over residential units and traveling tourists, fully display the role of a Natural History Museum and make it into an important base for patriotic and biodiversity education. Furthermore, the station should strengthen its role of management, formulate corresponding regulations for fire prevention, observation, patrolling, forest fires prevention and fighting, providing guidance to local forestation and restoring the declined vegetation.

4.6.7 Construction of Conservation Points

In the key locations of the Buffer Zone (villages neighboring the forests) there are nine conservation points at Lianshanping, Yaopengzi, Luoja Mozi, Yanyan, Dengcaoping, Shiziping, Baiyun Village, Hongyan and Heping respectively. Local cadres and villagers shall be engaged for work of the conservation points, and payment shall be given to them on an annual basis. The major duties of the conservation points are to keep watch of the major passways, provide information and data, assist the routine patrolling, and play their role in formulating a complete protection network.

4.7 Organization of Law Enforcement Personnel

4.7.1 Strengthen the role of local police stations in the scenic spots, staff them with sufficient hands, and equip them with sound facilities and funds.

4.7.2 Strengthen their professional training and supervision of law enforcement, and enhance their job qualification.

4.8 Construction of Signs and Posters

4.8.1 Setting up Signs

At the major crossings in the nominated site, illustrative, instructive and prohibitive signs shall be set up in both Chinese and English languages, at the division lines of functional zones and entrances to tourist areas. The signs at the entrance shall be well coordinated and matched with the mountain gate that symbolize the nominated site.

4.8.2 Setting up Poles

The boundary and demarcation poles shall be a 15×15 cm format, the 160 cm long cement poles shall be buried with a depth of 30 50cm, and the number of poles shall be decided by different intervals.

Chapter 5: Planning of Research and Monitoring

The nominated site of Mt. Qingcheng and Dujiangyan is noted for its diverse and abundant cultural and natural resources, fine transportation, geological, information and infrastructure advantages, and complete monitoring facilities. The Institute of Botany and Institute of Zoology, CAS, Institute of Relics Conservation and other state-level research institutions are functioning as strong backups in scientific research. Therefore, it should be further strengthened to study and monitor the nominated site for permanent conservation of cultural and natural resources, for saving endangered species, and for conserving the ecosystem. Furthermore, it is also aiming at exploring the evolution of natural resources and ways for their rational utilization, and keeping benign circulation of natural ecosystem. These are major concerns of our studies and monitoring in the nominated site.

5.1 Planning of Scientific Research

5.1.1 Survey and Inventory of the Nominated site

Inventory is to provide scientific grounds for conservation, management, research and rational utilization of biological resources of the nominated site, so that our conservation and management shall be scientifically based. An overall scientific inventory of the nominated site should be started by applying for special funds, inviting scientists in various disciplines for an integrated survey on cultural relics, geology and land configuration, hydrology and climate, animal and plant resources, as well as social, economic and historical conditions. Research topics shall be assigned and completed in due time so as to provide guidance to conservation and management of the nominated site.

5.1.2 Major Research Projects of Cultural Relics

The research of the nominated site shall focus on the Dujiangyan Irrigation System, Mt. Qingcheng Taoist culture, and other related relics, in the hope of well protecting these cultural relics.

(1) Studies on the Dujiangyan Irrigation System - According to features of the irrigation system, the following research topics are proposed on:

- protection of ancient water conservancy works of Dujiangyan;
- water control experiences of Dujiangyan;
- impact to eco-environment along the upper Minjiang River Valley on the Dujiangyan Irrigation System;
- preventive measures of natural disasters;
- historical role of the Dujiangyan Water Conservancy Project;
- Dujiangyan water culture.

(2) Studies on Mt. Qingcheng Taoist Culture – Mt. Qingcheng is the originating place of Chinese Taoism, with high values of profound Taoist culture and learning. On the basis of its distinctive features, the following studies are proposed on:

- History of Mt. Qingcheng Taoism;
- Taoist music of Mt. Qingcheng;
- Taoist wushu (martial arts) of Mt. Qingcheng;
- Taoist regimen of Mt. Qingcheng;
- Taoist architectures of Mt. Qingcheng;
- Impact of Taoist thoughts on protection of nature.

(3) Studies on other cultural relics include those on conservation of ancient architectures, repair

and maintenance of ancient relics, conservation of ancient trees, and studies on Mangcheng Ruins and other cultural ruins.

5.1.3 Major Projects of Natural Heritages

These projects shall follow the spirit of the National Action Plan for Protection of Giant Panda and their habitats and the National Biodiversity Action Plan, and select those topics related to the projects assigned by the State Forestry Administration, Ministry of Science and Technology, Chinese Academy of Sciences, Sichuan Forestry Department and other environment protection sectors. The research shall focus on conservation of those endemic and endangered wildlife, and coordinate with the Institute of Botany and Institute of Zoology, CAS. Furthermore, it is essential to make the nominated site a conservation research base of biodiversity with special attention to those endemic and endangered species including the giant panda.

(1) Studies on Giant panda

The nominated site is a “natural corridor” for survival and regeneration of the Giant panda, where 1/20 of the wild population of the species occurs. Strengthening the overall studies on Giant panda has a strong national and international significance. As this area neighbors the China Giant Panda Research Center of Wolong Giant Panda Nature Reserve, it ought to start close cooperation with Wolong China Giant Panda Research Center, sharing views and findings and conducting joint research projects. Furthermore, the following research orientation shall be emphasized:

- Studies on ecological communities of Giant panda, including monitoring of giant panda communities, eco-biology of Giant panda, and population of Giant panda in the wild, habits and behaviour of Giant panda, environment quality on giant panda habitats, environmental impact on their habitats, etc.;
- Studies on the staple bamboo of Giant panda. It is proposed to build a bamboo breeding garden in Changheba at the upper Longxi River, collecting and planting appropriate bamboo species. The research projects will include those on selecting quality bamboo species, nutrition of bamboo and laws governing bamboo growth, pest and disease prevention and treatment of bamboo species, and impact of environment quality and natural conditions on bamboo growth.

(2) Studies on breeding rare/endangered animal and plant species

- Studies on breeding of rare and endangered plant species. All the remaining rare and endangered species collected in the nominated site are for research purposes and serve as species resources at research and teaching bases. These species to be planted in the nominated site include *Davidia involucreata*, *Ginkgo biloba*, *Cercidiphyllum japonicum*, Qingcheng elm, Qingcheng oak, *Tetracentron sinense*, *Cephalotaxus oliveri*, *Taxus chinensis*, *Euptela pleiospermum*, *Acer catalpifolium*, *Tapiscia sinensis*, *Dysosma*, and *Trililum tschonokii*. The major research concerns shall be on *ex-situ* conservation, domestication and breeding, biological and ecological studies as well as rational utilization of endemic and endangered plant species..
- Rhododendra Garden. Strengthening studies on Rhododendra communities. The nominated site is noted for its great variety and abundance of azaleas. In 1992, the Chinese Academy of Sciences established the West China Sub-Alpine Botanical Garden, and some Rhododendra species were introduced. At present, there are 250 Rhododendra species in the garden - the largest number of any such garden in China. The garden will continue its cooperation with other research institutions and try its best to expand the scope of the garden and number of species, while conducting biological and ecological studies on azaleas, and their domestication and introduction.
- Studies on bryophytes. According to the features and rarity of bryophytes in the nominated site, it is planned to build a bryophyte garden for studies on their biology and ecology, on their role in environment and soil conservation, and on their comprehensive utilization.

5.1.4 Other Research Projects

- (1) Studies on modern management of the nominated site;
- (2) Studies on sustainable development of the nominated site;
- (3) Studies on conservation and utilization of wild plant resources.

5.1.5 Organization of Research Personnel

- (1) Build up the staff number – In three to five years, the number of full-time research staff will increase to a total number occupying 1/6 of the total staff;
- (2) Build up quality – It is planned to train a group of experts engaging in the related fields, who are able to conduct research projects skillfully.

5.1.6 Organization Management

- (1) Forms of conventional organization management;
- (2) Forms of organization management of research projects.

5.1.7 Management of Research Files

- (1) Details of research files;
- (2) Keeping of research files.

5.2 Planning of Supervision and Monitoring

The nominated site has a long-standing history and culture, where the protective measures and technologies are improving. In order for better and more effective protection of the nominated site, we should further strengthen monitoring of natural landscapes, hydrology, geology, species diversity, cultural relics and eco-environment.

5.2.1 Major Types of Monitoring

- (1) Conventional monitoring - the regular monitoring of surface water quality, atmosphere quality, and pollution, and providing grounds for scientific management.
- (2) Monitoring of wildlife – to formulate detailed monitoring plans, establish a monitoring system and monitoring locations, and file the wildlife records.
- (3) Monitoring of forest ecosystem – to establish in the nominated site permanent observation stations of forest ecosystem, for regular monitoring and recording of vegetation, plant zonation as well as changes of existing environments and vegetation variations. The major monitoring targets include changes of major species communities, changes of vegetation types (natural and man-made) and eco-environment, monitoring restoration of natural status of some secondary communities.
- (4) Monitoring of tourists and reception capacity - to organize assessment and statistics on the tourist environment of the nominated site, conduct analysis on the visitor sources and dynamic conditions of tourist markets, strengthen the monitoring of existing tourist facilities and the impact of tourist activities on biological diversity, strengthen monitoring over harmful influences on cultural sites, well coordinate the relation between heritages and tourism.
- (5) Monitoring of patrols – to actively organize patrols in the nominated site, for prevention, discovery and elimination of potentials of fires, pests, diseases and human interference.
- (6) Monitoring of social status - including social and economic conditions, impact of social developments on heritage resources.
- (7) Monitoring of prototypes – to focus on monitoring of the Weir Engineering of the Dujiangyan

Irrigation System. On one hand, the sectional monitoring shall be conducted, that is, monitoring of silt changes of riverbeds. On the other hand, we should monitor the water level concerning the ratio data of water flows at different sections of riverbeds and flows, mainly monitoring of the sand structure of the riverbed. Monitoring shall also be conducted on sediment loads of cobblestones, suspended matters, water level and water flows.

- (8) Monitoring of ancient architectures and cultural ruins - Regular examination shall be conducted on ancient architectures and cultural ruins, as well as their changes. Monitoring shall focus on impact of peripheral conditions (natural and man-made factors) on ancient architectures and cultural ruins, observing their status and changes.

5.2.2 Monitoring Responsibility System

- (1) Sichuan Provincial Construction Commission shall take responsibility on overall monitoring of the nominated site.
- (2) The Administrations of Nature Reserve and the Dujiangyan Forest Bureau shall take responsibility of monitoring biodiversity and forest fire prevention in the nominated site.
- (3) Dujiangyan Administration shall take responsibility of monitoring the Weir Engineering.
- (4) Dujiangyan Environment Protection Bureau shall take responsibility of monitoring the environment.
- (5) Dujiangyan Bureau of Cultural Relics shall take responsibility of monitoring cultural relics and ruins.
- (6) Hydraulic monitoring projects already completed include monitoring systems and flood forecasting systems. Zipingpu, Erwangmiao and Baopingkou observation stations and prototype observation teams are monitoring, on a daily basis, the changes of water conditions, suspended matters, and sediment loads.
- (7) The management organs of the nominated site are responsible for supervision and examination of monitoring work of the executive organs.

5.2.3 Ways of Monitoring

The responsible organs take the responsibility of routine monitoring. Research institutes and universities are engaged for coordinated and joint monitoring of high technical contents and large projects as well as ancient architectures and cultural ruins

5.3 Construction of Research and Monitoring Facilities

Construction of research and monitoring facilities is one of the key works of the overall construction of the nominated site, and is the material foundation to achieve the planned research objectives. On the basis of related research and monitoring works, the following buildup of facilities is planned:

5.3.1 Construction of research institution

A research institution and its office building are planned to be built in Longxi-Hongkou Biodiversity Protection Area, to be equipped with facilities for the needs of related research activities.

5.3.2 First-Aid Station of Rare and Endangered Species

A first-aid station of rare and endangered species is planned to be built at Longxi-Hongkou Biodiversity Protection Area, to be equipped with veterinary houses, clinics, activity ground, medical instruments, research equipment and rescue vehicles.

5.3.3 Observation Station of Ecosystem Locating

A permanent observation station of forest ecosystem is planned to be built in the core zone along the upper Baisha River, at sample plots of 2–4 hm² of the forest land. This station will monitor the composition of forest system, structures, principal species, ecological process of threatened species, and conduct researches jointly with related institutes and universities. Its chief duties are as follows:

- (1) Provide long-range data concerning dynamic features of growth, death, and renewal of trees;
- (2) Provide information concerning biodiversity studies and public education to serve the official decision making;
- (3) Understand the functions of ecosystem, its structure, and sustenance mechanism, to study restoration and reconstruction of degradation systems, and to research on relation between forests and human activities.

Chapter 6: Planning of Public Education & Training

It is crucial to strengthen public education about resources of the nominated site and awareness of protection, so as to promote the public involvement in conservation activities in the nominated site.

6.1 Planning of Public Education

6.1.1 Objectives of Public Education

- (1) Utilize all possible means for public education, enhance the conservation awareness among people in all walks of life, particularly the awareness of people in peripheral areas; enhance their understanding of values and significance of the nominated site; correctly handle the relations between conservation and development; develop the conservation projects in a healthy manner, and promote conservation in the course of development.
- (2) Extensively publicize the conservation knowledge so that the general public are able to learn more about science and history as well as legal regulations. Their awareness shall be initiated in protecting the heritages, to regulate their acts and consciously participate in conservation.

6.1.2 Details of Public Education

- (1) Compile the book "Nominated Site of Mt. Qingcheng and Dujiangyan", introduce the residents and tourists about the long history and special roles of the Dujiangyan Irrigation System, as well as about Mt. Qingcheng Taoist culture, ancient architectures and relics, natural and geographical features, abundant natural resources, natural beauties, and endemic and endangered species. Efforts should also be given to public understanding of significance of the nominated site in the national development, human existence and social progresses.
- (2) Enhance the conservation awareness of government officials - By means of organized visits and meetings, we should introduce them the basic concepts of resource management and importance of the nominated site, and enhance their consciousness concerning the conservation of natural resources, cultural relics, their functions, and management.
- (3) Public education about conservation laws and regulations of the world heritages – Compile books such as the Collection of Laws and Regulations for Conservation of World Heritages and the Collection of Conservation Cases of World Heritages. Distribute these materials and educate the general public and people in peripheral areas about importance of world heritages. The management organs of the nominated site shall send its staff to assist public education and publicize the conservation policies and regulations.
- (4) Strengthen the public education about patrols and fire prevention, print and distribute education sheets and brochures of fire prevention, set up the withholding offices for kindling materials at the major entrances, use the cable broadcasting in the observation stations for public education to enhance the public awareness for forest fire prevention
- (5) Set up information stations in the nominated site, offer public education to tourists to enhance their protection awareness.

6.1.3 Basic Forms of Public Education

- (1) Make use of such means for routine public education as radio broadcasting, TV, video, Internet, pictorials, wall papers, slogans, warning boards, and printed matters;
- (2) Education on protecting heritages shall address to the young people. Lectures and courses of the "Basic Knowledge of Heritage Conservation" shall be offered in elementary and middle schools and colleges in the nominated site and in the peripheral zone, and such education

programs will influence their family members.

- (3) Eye-striking signs, posts, warnings and watchwords shall be set up at major entrances of the nominated site, on main streets and highways of Dujiangyan City, living quarters of the Buffer Zone and eco-tourism areas.
- (4) In combination of eco-tourist activities, the original Zoological Specimen Building will be transferred into the Natural Museum of the Nominated site, collecting and exhibiting animal, plant and mineral specimens of the nominated site, with the assistance of modern high technology to display the natural beauties. The museum will serve as a comprehensive museum for popular sciences, public education and publicity, appreciation, and exhibition, and the museum will expand to display a greater role for social effects.
- (5) The Museum of Ancient Water Conservancy will be built in downtown Dujiangyan, collecting and exhibiting photos, graphics, and models of the Dujiangyan Irrigation System, and informing domestic and foreign visitors of history, role and significance of this great water conservancy project.
- (6) The Water Culture Plaza will be build in downtown Dujiangyan City, as a principal place for publicizing the brilliant water culture and history of Dujiangyan Irrigation System.
- (7) The Exhibition House of Chinese Taoist Culture will be built just outside the mountain gate of Mt. Qingcheng, demonstrating the Taoist history and culture.

6.2 Planning of Training

The training of staff employed in the nominated site includes the training of management personnel for conservation work and training of tourist management personnel.

6.2.1 Training of Protective Skills

A training center of the nominated site is planned to be built in the nominated site. Organized and well-planned training activities shall be offered in order to enhance the management level and conservation capacity. The training will cover the protective technology for fire prevention, conservation technology of rescuing Giant panda and other wildlife, skills of forest patrols, diversified agricultural production technologies, and knowledge of eco-agriculture and eco-tourism.

6.2.2 Training of Tourist Managers

- (1) We should select outstanding personnel for vocational training or further studies in the provincial tourism schools and colleges, or for high-level management studies. These graduates will form the “pyramid” of personnel in business operation, service sector and tourism.
- (2) Experts shall be invited to Dujiangyan on a regular basis to offer seminars and lectures for tourist managers. Training of tourist managers will also include field visits, simulated classes, short-term courses, off-job courses and courses by turns.

Chapter 7: Planning of Tourism

7.1 Overview of Tourist Resources in the Scenic Areas (*omitted*)

7.2 Divisions of Scenic Areas (*omitted*)

7.3 Estimation of Environment Capacity

It is estimated that the nominated site has an annual tourist capacity of 600,000, and a daily reception capacity is controlled at 8,000 at the busy tourist seasons.

7.4 Measures to Control the Number of Tourists in Busy Seasons

7.4.1 Reduce the number of booking offices and staff at the major scenic areas, and control the number of incoming tourists and the reception capacity.

7.4.2 Reserved tours by groups shall be organized to avoid the peak-time tours.

7.4.3 Raise the price of entrance tickets as an economic measure to control the number of tourists in the busy tourist seasons.

7.4.4 Organized group tours shall be offered at major relics spots, halls and bridges.

7.4.5 Enhance the reception capacity of the Buffer Zone, develop the farm house eco-tourism to distract the tourists and to control the reception capacity.

7.5 Measures to Control Construction of Tourist Developments

7.5.1 Control of Transport Routes

Strictly control the density of tourist routes. Construction of tourist routes shall follow the natural landform, protect the vegetation and environment. And prohibition shall be imposed on large-scaled soil digging, land filling and earthwork in this area.

7.5.2 Controlled Construction of Reception Facilities

(1) Prohibition shall be imposed on new constructions for service purposes like housing, food and beverage facilities and teahouses. The service facilities near the core zone shall be built in favor of conservation of the core zone, while their construction scope shall be strictly controlled and limited.

(2) We should make full use of existing farmhouses and their reception facilities, support special tourism like "farmhouse tour" and "(summer) holiday tours" to expand the overall reception capacity and distract the number of tourists from major scenic areas.

(3) Strict control shall be imposed on the number of Inhabitants in the Buffer Zone, and government supports shall be initiated for farmers to live away from these areas.

(4) No individual or unit is allowed to transgress the resources and land of the nominated site, nor transfer or lease in any nominal ways. No such resources or land shall be listed at any stock exchanges.

Chapter 8: Management Organs & Staffing

8.1 Leading Body

8.1.1 Leading Body: Administration of Mt. Qingcheng - Dujiangyan Scenic Areas.

The Administration of Mt. Qingcheng – Dujiangyan Irrigation System is the leading management body of the nominated site, with a number of organs under its administration: division of planning, division of conservation, division of management of scenic spots, division of financial and division of public security.

8.1.2 Duties of the Administration

The Administration of Mt. Qingcheng – Dujiangyan Irrigation System is an authorized organ to execute government duties, and is responsible for unified leadership, unified conservation, unified planning and unified management of the nominated site. Its duties are:

- (1) implement and carry out government laws and regulations concerning conservation of places of scenic and historical importance, ethnic, religious and cultural relics, forests, state land and natural environments;
- (2) strictly control the resources of places of scenic and natural interests, historical and cultural relics, eco-environment, for rational and sustainable utilization;
- (3) compile the Overall Plan and detailed plans for the nominated site, organize implementation of these plans, and conduct other duties in research, general investigation, conservation, supervision and management;
- (4) on the basis of the Overall Plan, authorize approval and conduct supervision of examination over new constructions, expansion and renovation projects in the nominated site;
- (5) responsible for publicity, training and management of local business people;
- (6) other duties authorized by Dujiangyan and governments at higher levels.

8.1.3 Scope of Management

The Administration of Mt. Qingcheng and Dujiangyan covers an area of 54,749.5 hectares, among which are 17,891.5 hectares of the core zone (1,522 hectares of Mt. Qingcheng, 231.5 hectares of Dujiangyan Scenic area, 16,138 hectares of Longxi-Hongkou Nature Reserve), 36,858 hectares of the Buffer Zone. The Core Zone and Buffer Zone neighbor each other, forming the main body of the nominated site, where local residents are under routine administration of their respective village committees but under unified management of the Administration for affairs of conservation.

8.1.4 Management Mechanism of the Nominated site.

On the basis of China's existing management mechanism, the management of natural and cultural heritages is under the leadership of the Ministry of Construction, as well as provincial and municipal construction commissions. Dujiangyan People's Government sets up the Administration of Mt. Qingcheng and Dujiangyan Irrigation System to serve as the executive organ for unified planning, management, conservation and implementation of the nominated site. The Administration governs subsidiary administrative bureaus like that of Mt. Qingcheng, that of Dujiangyan Irrigation System and that of Longchi Nature Reserve. The supervising organs are the National Bureau of Cultural Relics, provincial and municipal department of culture. The management organs of water conservancy organs are the Ministry of Water Conservancy, provincial and municipal department of hydropower. Dujiangyan Bureau of Cultural Relics and

Dujiangyan Bureau of Forestry execute, on the behalf of the local government, authorities on supervision of the nominated site.

8.2 Executive Organs

The Administration governs three administrative bureaus, namely

8.2.1 Organization of Executive Organs

- (1) Administrative Bureau of Dujiangyan Scenic Area governs the law-enforcement teams, section of environment sanitation, section of tourist markets, section of hydraulic resource monitoring, section of relics protection, and section of public security.
- (2) Administrative Bureau of Mt. Qingcheng Scenic Area governs the law-enforcement teams, section of environment sanitation, section of tourist markets, section of hydro- resource monitoring, section of relics protection, and section of public security.
- (3) Administrative Bureau of Longxi-Hongkou Nature Reserve governs law-enforcement teams, section of environment sanitation, section of tourist markets, section of hydraulic resource monitoring, section of ecological protection, West-China Institute of Sub-Alpine Plants, and section of public security.

8.2.2 Duties of the Administrative Bureau of Places of Scenic and Historical Interests

Under the unified leadership of the Administration of the Nominated site, these administrative bureaus are subject to guidance and supervision by superior hydraulic, forestry, cultural relics and environment protection organs. They are responsible for conservation, development, utilization and management of natural resources, eco-environment, cultural sites and historical relics. Their duties are as follows:

- (1) Responsible for law-enforcement work, handling criminal acts and violations of regulations;
- (2) Construct, maintain and manage the infrastructure and public utilities in their respective scenic areas and spots;
- (3) Formulate management regulations for respective scenic areas, responsible for management of tourist markets, environment sanitation, and commercial and service activities;
- (4) Responsible for public security, transportation, forest protection, and fire prevention in their respective scenic areas.

8.3 Expert Panel

Experts in related fields are engaged as senior advisors of the municipal government in order to strengthen research and conservation of cultural relics, Taoist culture, water culture and biodiversity. Composed of these experts, the Expert Panel organizes activities in consultation, research, and conservation. Under the Expert Panel are the Team of Natural Landscapes, Team of Relics Protection, Team of Environment Protection, Team of Biodiversity Studies, Team of Water Resource Culture, and Team of Taoist Culture.

Chapter 9: Estimated Costs and Source of Fund

9.1 Overview of Completed Investments

9.1.1 Investments Completed

The Chinese government in history has attached great importance to conservation and management of the nominated site. Since 1949, central and local governments allocated special funds for annual repair and maintenance of the Dujiangyan Irrigation System. And investment of finance and manpower were for conservation and management of ancient architectures, cultural relics, and biological resources in the nominated site. In 20 years from 1979 to 1998, the government has invested RMB 436 million for conservation and management, and in 1999 alone the investment amounted to RMB 206 million for both renovation of the Weir Engineering and environment improvement of Mt. Qingcheng.

Table 9-1 is about the investment funds for conservation and management of Mt. Qingcheng and Dujiangyan Irrigation System.

Table 9-1: Table of Investments in Nominated site Unit: RMB 10,000

Areas	Time	Sum	Source of Fund		
			State finance	Prov. & city finance	Self collection
Mt. Qingcheng – Dujiangyan	1979-1998	43600	8500	11800	23300
	1999	20600	/	2000	18600
Longxi – Hongkou Nature Reserve	1998-1999	140	140	/	/
Total	1979-1999	64340	8640	13800	41900

9.1.2 Investment Orientation

- (1) Conservation and maintenance of Dujiangyan Irrigation System;
- (2) Conservation and maintenance of ancient architectures;
- (3) Conservation and maintenance of cultural relics;
- (4) Conservation of ecological environment in scenic areas;
- (5) Construction and maintenance of infrastructure in scenic areas;
- (6) Expenditures for public education and research;
- (7) Further studies and training of science personnel and staff.

9.2 Estimated Investment of Major Constructions

9.2.1 Grounds of Estimation

The construction scope is proposed on the basis of the Standard of Engineering Constructions, and the 1995 Engineering Cost Estimation of Sichuan, while combining the extent and difficulty of constructions in the nominated site and taking into full consideration of domestic experiences of other world heritage properties in China.

9.2.2 Specifications of Estimation

- (1) The investment estimation of the nominated site is determined on the basis of major construction projects in the nominated site, while taking into consideration of key research projects and past capital uses and investment scope.
- (2) That for the Buffer Zone is not listed in this Overall Plan (Table 9-2).
- (3) Funds for research projects shall be collected from related official sources, which are not listed in this Overall Plan.

9.2.3 Estimated Investment

It is estimated that major constructions for conservation and management of the nominated site is RMB 315.16 million between 2001 and 2010.

Among this sum, there are RMB 211.5 million for conservation programmes works, making up 67.1% of the total investment; that for research and monitoring engineering is RMB 24.86 million, making up 7.9%; that for public education and training is RMB 14.5 million, making up 4.6%, and that for infrastructure construction is RMB 64.30 million, making up 20.4%. The details are seen in Table 9-2.

9.3 Source of Fund

9.3.1 State Finance

Dujiangyan city finance allocates funds for administrative funds of the Administration.

9.3.2 Special funds

- (1) On the project-by-project basis, the expenditures of Dujiangyan Irrigation System are allocated by the Ministry of Water Conservancy and Sichuan Department of Water Conservancy;
- (2) The conservation and construction funds of natural resources are allocated by the State Forestry Administration and Sichuan Department of Forestry;
- (3) Funds for ecological construction are allocated from the special fund for reusing farmland for forest purposes;
- (4) Funds for maintenance of ancient architectures, environment monitoring, research and public education, and construction of scenic spots are allocated on the project-by-project basis by the Ministry of Construction, Sichuan Construction Commission, Sichuan Department of Cultural Affairs, Chengdu Construction Commission, and Chengdu Department of Cultural Affairs.

9.3.3 Foundations

- (1) Certain portion of ticket charges at the scenic areas are retained to set up the Natural and Cultural Heritage Conservation Foundation as conservation subsidies, as well as for research and monitoring, public education and training.
- (2) Certain portion of water charges of the Dujiangyan Weir Engineering Works are collected as part of the special fund for conservation of the Weir Engineering.

Table 9-2: Cost Estimation of Major Constructions

Unit: RMB 10,000

No	Investment Projects	Sum	Investment Sources			Remarks
			State finance	Local finance	Self collection	
	total	31516				
1	Protection engineering	21150				
1.1	Protection of Weir Engineering	10000				
1.2	Protection of ancient architectures	2000				
1.3	Protection of cultural relics	1000				
1.4	Breeding & planting of bamboo	530	430	100		
1.5	Environment protection	3500				
1.6	Ecological construction	2500	2500			
1.7	Construction of protective structures	1020	670	200	150	
1.8	Equipment procurement	600	450	150		
2	Research and monitoring	2486				
2.1	Construction of facilities	2186	1186	800	200	reusing farmland for forest purposes
2.2	Equipment procurement	300	250	50		Conservation stations, fire observatory, signs & poles
3	Public education and training	1450				fire fighting equipment, vehicles
3.1	training center	300	300			

3.2	Expansion of museums	150	150			research buildings, monitoring stations, Rhododendra garden
3.3	hydraulic museum	500	200	300		
3.4	Exhibition of Taoist culture	200		200		
3.5	Equipment procurement	300	200	100		
4	Construction of infrastructure	6430				
4.1	Maintenance of infrastructure	2500		2000	500	
4.2	Construction of offices	3580	1580	1500	500	
4.3	Equipment procurement	350	150	150	50	

Chapter 10: Guarantee Measures for Implementing the Overall Plan

10.1 Legal and Policy Guarantees

10.1.1 Legal Status

According to Article 9, 23 and Item Two of the Constitution of the People's Republic of China as well as Article 4 and 2 of the Law of Cultural Relics Conservation of the People's Republic of China, the nominated site Mt. Qingcheng and Dujiangyan Irrigation System belong to the state property and are state-owned.

10.1.2 Policy Guarantee

We should earnestly carry out the PRC Law of Wildlife Protection, the PRC Law of Cultural Relics Conservation, the PRC Law of Environment Conservation, the PRC Law of Urban Planning, the PRC Law of Water Resources, the PRC Law of Water and Soil Conservation, the PRC Law of Forests, the PRC Law of Nature Reserves, the PRC Law of River Management, the PRC Regulations on Cultural Relics Protection, the PRC State Council Regulations on Management of Scenic Areas, the Sichuan Management Regulations on Place of Scenic and Historical Interests, the Sichuan Management Regulations on Dujiangyan Irrigation System, and other relevant laws and statutes. Promulgated by the provincial and municipal peoples congresses, the Management Regulations of Mt. Qingcheng and Dujiangyan Irrigation System outline the definitions of the scope of the nominated site, the key conservation and protection targets, conservation management organs, management methods. We shall strictly abide by these laws and regulations to bring the management of the nominated site under proper track of legal and lawful management.

10.2 Organization Guarantee

10.2.1 Strengthen organization, establish flexible and efficient management institutions, improve authorities of management, and realize effective operations of management organs.

10.2.2 One important measure for better management of the nominated site is to strengthen the leadership of the leading body, enhance the cadres' professional accomplishments, and improve their management competence.

10.2.3 Strengthen institutionalization, formulate the Staff Management Regulations of the Nominated site, improve various bylaws concerning their employment, management, examination, award and punishment, and establish the initiative mechanism, and regulations concerning staffing, posting and job duties.

10.2.4 To enhance the moral accomplishment and professional qualification and competence of the staff is essential in realizing scientific conservation, management and sustainable development.

- (1) Strengthen the education of the staff, enhance their coherence, unity and courage to overcome difficulties, and cooperation for all work in the nominated site; educate the staff to devote themselves to their work and profession, and to make contribution to conservation and management of the nominated site.
- (2) Formulate systematic and rational training plans, strengthen examination of professional skills and legal knowledge of the staff, and enhance their comprehensive accomplishment in the demands of market economy.

10.3 Guarantee Measures for Conservation of Heritage Resources

10.3.1 Strengthen the construction of conservation stations – Favorable working and living conditions shall be offered to them, and directors of the stations shall be selected from young and well-experienced professionals with fine qualification, devotion, strong sense of responsibility.

10.3.2 Establish rules and regulation for conservation of natural resources, by which people could abide and regulate their acts. The main areas in this respect will include:

- (1) regulations on research and collection of specimens in the nominated site;
- (2) management methods of commercial photography in the nominated site;
- (3) management methods of eco-tourism;
- (4) management methods of introduction and domestication of animals and plants;
- (5) management methods of collecting herbal medicines;
- (6) management methods of saving and rescuing Giant panda and other rare and endangered animals.

10.3.3 Strengthen ecological restoration and conservation

To conserve the forest eco-environment, the existing natural forest and to increase the forest coverage are the strategic options for biodiversity conservation of the nominated site. Restoring the forest vegetation is one of the primary missions of expanding the habitats of Giant panda, as well as a technical measure for scientific conservation. Government organs and people residing in the nominated site should seize the opportunity of national strategies of western development and construction of eco-environment at lower and mid Yangtze River valleys, actively participate in the engineering of conserving natural forests and reusing farmland for forestry purposes, arouse initiative of farmers for forestation, and achieve the goal of “elementary effects in five years and considerable effects in ten years.”

10.3.4 Strictly control on experiments of species introduction

Strict control shall be imposed on introduction of outside species in order to prevent damages of biodiversity in the nominated site, and to maintain the original looks of primary ecosystem. The non-indigenous species already introduced shall be strictly controlled and managed to prevent expansion and to gradually eliminate these species with adverse effects on primary ecosystems. Those well-bred species with high effects for local economic development should pass through scientific examination and verification, and be controlled in certain designated areas where follow-up monitoring shall be administered.

10.3.5 Establish the forest conservation system of individual towns and townships, fully display the role of conservation points in management, liaison and information. Corresponding compensations shall be in place, and regular examination systems shall be established including periodic inspection and assessment.

10.3.6 Strengthen liaisons with peripheral areas, establish organs for joint prevention and conservation, enhance the conservation level of the Minshan and Qionglai Mountain Range, conduct joint monitoring of forest fires, and take joint actions against illegal hunting and logging.

10.4 Guarantee Measures for Strengthening Research and Monitoring

Management of research and monitoring activities are the fundamental guarantee in implementing the research and monitoring projects. Therefore, we should base our work on actualities, establish

matching management systems, organize rational research projects, attract domestic and foreign scholars to be engaged in major research and monitoring projects of the nominated site.

10.4.1 Formulate Post Duties for Technical Professionals

According to our objectives, nature and features of research and monitoring work, we should formulate the post responsibility system among senior, intermediate and elementary professionals, outline requirements for their posts and duties as well as details of their work and targets. We should strictly carry out the annual examination system.

10.4.2 Strengthen Buildup of Technical Personnel

- (1) increase the ratio of professionals in the staff, and build up our the research force;
- (2) provide opportunities for refreshment studies for technical personnel;
- (3) create fine research and living conditions for scientific and research personnel and help to eliminate their worries at home, and offer them favorable benefits and compensations;
- (4) train some research leaders who are capable of independent designs and researches in organizing and undertaking large research projects.

10.4.3 Establish the Monitoring Management Team of the Nominated site, responsible for monitoring and examination of monitoring stations.

10.5 Guarantee Measures of Fund Management of the Nominated site

Measures shall be taken to timely collect long-term management funds for the nominated site. We should also establish sound capital management systems such as of auditing and supervision mechanism to ensure rational, scientific and efficient uses of these funds.

A Comparative Study of Biodiversity between Dujiangyan and Other Regions at Similar Latitude around the World

By Chen Changdu

To have an idea of the position of Dujiangyan's biodiversity in China and in the world, we should, first of all, make a comparison with other representative mountains on similar latitude in and out of China

1. In China

1.1. A Comparison with Mt. Wuyi, Fujian Province

- (i) Mt. Guangguan of Dujiangyan (4,583m) has a complex and complete vertical zonation. In an ascending order of heights are 7 vegetation belts, namely, evergreen broad-leaved forest, alpine evergreen deciduous broad-leaved mixed forest, alpine coniferous broad-leaved mixed forest, sub-alpine coniferous forest, sub-alpine evergreen coriaceous shrub land, alpine meadow and alpine rock-stream belt with sparse vegetation. In contrast, the highest peak of Mt. Wuyi is only 2,158m, with 5 vegetation belts, i.e. evergreen broad-leaved forest, coniferous broad-leaved mixed forest, coniferous forest, alpine dwarf forest and alpine meadow.
- (ii) The dominant tree species in evergreen broad-leaved forest of Mt. Wuyi are *Fagaceae* and *Theaceae*, while dominant in Dujiangyan is *Lauraceae* which is more adaptable to dark and humid environment.
- (iii) In regards to plant species, Mt. Wuyi outnumbers that of Dujiangyan. In terms of higher plant species, there are 3,012 in Dujiangyan while Mt. Wuyi has only 2,615. It is identified that the number of animals in Mt. Wuyi is 5,249 species, mostly amphibians, reptiles and insects (35 amphibians, 73 reptiles, and 4,557 insects of estimated over 10,000 species). This number is larger than that of Dujiangyan (23 amphibians, 22 reptiles, 1,187 verified insects of estimated over 10,000 species).
- (iv) In Dujiangyan, there are some ancient and primary animals and plants such as *Ailuropoda malanoleuca*, *Pygathrix roxellanae*, *Budorcas taxicolor*, *Ailurus fulgens*, *Davidia involocrata* and *Euptelea leiosperrum*. Yet these species are not seen in Mt. Wuyi. Growing in Mt. Wuyi but not in Dujiangyan are *Pseudolarix kaempfer*, *Clyptostrobos pensilis*, *Tsuga chinensis*, *Tsoongiodendron odorum*, *Parakmeria lotungensis*, etc.
- (v) Located in the transitional zone from Sichuan Basin to the 4,000m Qing-Zang Plateau, Dujiangyan has many sub-alpine and alpine plants and animals. Though Mt. Wuyi has some sub-alpine species, it does not have alpine species, and the number of its sub-alpine species is much less than that of Dujiangyan.

1.2 Compared to Mt. Emei

- (i) The highest peak of Mt. Emei is 3,099m, 1,483m lower than Mt. Guangguan, and its vertical zonation is much simpler than that of the latter. In an ascending order of heights, are only 5 vegetation belts, i.e. subtropical evergreen broad-leaved forest, evergreen and deciduous broad-leaved mixed forest, coniferous broad-leaved mixed forest, sub-alpine coniferous forest, and sub-alpine shrub land. It does not have alpine meadow and alpine rock-stream belt with sparse vegetation.
- (ii) The number of plant and animal species in Mt. Emei is about the same as or a little more than that in Dujiangyan. Verified high plants in Mt. Emei are 3,200 species, while Dujiangyan has 3,012; verified high animals in Mt. Emei are 2,300 species, 586 more than Dujiangyan. Nevertheless, since the turn of last century, Mt. Emei has been surveyed as a research center by domestic and foreign biologists for a better and fuller understanding of it. In contrast, forests of the Property are largely primitive and uninhabited, and studies on

biosphere of Dujiangyan are far from being sufficient with a small number of known species. As further investigations are carried out, this number will certainly increase.

- (iii) Dujiangyan is noted for those species like *Ailuropoda melanoleuca*, *Pygathrix roxellanae* and *Budorcas taxicolor*; none of them are seen in Mt. Emei.
- (iv) Dujiangyan is one of the regions in China that has the richest sub-alpine and alpine plant and animal species. For instance, there are 102 families of *Rhododendron* in Dujiangyan, while there are only 29 in Mt. Emei.

2. In foreign Countries

Foreign mountains with similar latitudes as Dujiangyan are Longs of Rocky Mountains (4,345m), Elbert (4,399m) and Blanca (4,365m) in the United States. They are lower than Mt. Guangguang, and located in temperate zones. So their base bands do not have subtropical evergreen broad-leaved forest, and their vertical vegetation zonations are simple. Though Mt. Esenada (3,078m) in north Mexico and Penyanevada (4,054m) (the highest mountain in Mexico) have subtropical evergreen broad-leaved forests, they do not have sub-alpine and alpine belts as Mt. Guangguang because they are much lower than the latter.

At similar latitude in Africa, Toubkal (4,165m) in Morocco is the highest. Its vertical vegetation zonation cannot be incomparable to that of Mt. Guangguang. Although Mt. Blanc (4,807m) of Alps, the highest peak in Europe, is higher than Mt. Guangguang, its base band is not evergreen broad-leaved forest, and the vertical vegetation zonation is incomparable to that of Dujiangyan.

In a word, the biodiversity of Dujiangyan in terms of species or biosystem gradations is outstanding and unrivaled, in comparison with other mountains at similar latitude in the world.

Qingcheng/Dujiangyan (China)

No 1001

Identification

<i>Nomination</i>	Mount Qingcheng and the Dujiangyan Irrigation System
<i>Location</i>	Dujiangyan City, Sichuan Province
<i>State Party</i>	People's Republic of China
<i>Date</i>	20 July 1999

Justification by State Party

The centuries-old Dujiangyan irrigation system is unique. Noteworthy for its system operating without the use of dams, it is a masterpiece of Chinese water-conservation engineering. It exploits the geomorphology of the region, in which the land slopes down from the north-west to the south-east, to the full, along with the local topography, the water table, and the potential of the river. Its constructors developed the technology of water diversion without dams and automatic irrigation. The system of integrated embankment, diversion, flood discharge, scouring, and flood control plays an effective role in flood prevention, agricultural irrigation, water transport, and water consumption. It has played this role for 2250 years and continues to do so today. The Dujiangyan irrigation system is based on the principle of not damaging the natural resources but making full use of them in the service of humankind. It is one of the greatest applications of ecological engineering in the world.

Located to the south of the Dujiangyan system, Mount Qingcheng is of great historical as well as scenic importance. At its foot to the east are the Mangcheng ruins, rare remains of the Neolithic in China, dating back 4500 years and providing important evidence about the Shu Kingdom. As early as the Qin Dynasty (221-206 BCE) Mount Qingcheng was recognized as one of the eighteen sacred mountains and rivers used for sacrificial purposes, and it witnessed the birth of Chinese Taoism.

Cultural criteria ii, iii, and iv

[**Note** This property is nominated as a mixed site, under the natural and cultural criteria. The present evaluation will concentrate on the cultural aspects; IUCN will provide a complementary evaluation of the natural qualities.]

Category of property

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

History and Description

History

- The Dujiangyan irrigation system

In 256 BCE Li Bing, Shu Kingdom magistrate of the Qin Dynasty, selected the mountain outlet of the Minjiang river, with its abundant water flow, as the site for an irrigation system. This involved cutting the Lidui platform, digging canals to avoid the risk of flooding, and opening up a navigation route; at the same time the neighbouring farmland would be irrigated, creating an "Land of Abundance." These works were extended in 141 BCE by the magistrate Wen Weng.

During the Tang Dynasty (618-907) large-scale water-conservancy and irrigation projects were carried out, including the Baizhang, Mizao, and Tongji embankments and the Wansui pool, providing the Chengdu plain with a network of weirs and canals.

The system was rationalized during the Song Dynasty (960-1279) into three main water-courses, three canals, and fourteen branches, with a coordinated programme of maintenance and water control. The system was extended and additional works were carried out (the Sili and Shabo embankments), providing irrigation to twelve counties.

Important experimental work took place during the Yuan Dynasty (1206-1368): in particular the embankments were reinforced with iron bars. Additional construction projects were also carried out, and this process continued throughout the Ming Dynasty (1368-1644), together with the introduction of a new control regime.

Incessant warfare at the end of the Ming Dynasty and the early years of the Qing Dynasty (1644-1913) resulted in the system falling into disrepair, but this was eventually set to rights. The local people were involved in major rehabilitation and repair projects and the irrigated area was extended to cover some 180,000ha. Since that time the system has been carefully maintained and progressively extended, so that it now covers 668,700ha in 34 counties. The original system has been preserved, but modern building materials and technology have been utilized to enable this ancient system to conform with the requirements of the present day.

- Mount Qingcheng

In 142 CE the philosopher Zhang Ling founded the doctrine of Taoism on Mount Qingcheng, and in the following year he took up permanent residence in what became known as the Celestial Cave of the Tianshi (the name given to the spiritual head of the Taoist religion). During the Jin Dynasty (265-420) a number of Taoist temples were built on the mountain, and it became the centre from which the teachings of Taoism were disseminated widely throughout China. During the Tang Dynasty the works of Du Guangting, one of the most important figures in Chinese thought and science, were collected together there as what came to be known as the "Taoist Scriptures."

The troubled period at the end of the Ming Dynasty and the beginning of the Qing Dynasty, in the 17th century, saw Taoist scholars and disciples converging on Qingcheng from all over China. Thereafter the sacred mountain resumed its role as the intellectual and spiritual centre of Taoism, which it has retained to the present day.

Description

The nominated property is situated on the western edge of the Chengdu plains, at the junction between the Sichuan basin and the Qinghai-Tibet plateau.

- The Dujiangyan irrigation system

The irrigation system consists of two principal components, the Weir Works and the irrigated area.

The Weir Works, located at an altitude of 726m, the highest point of the Chengdu plain, 1km from Dujiangyan City, form the heart of the system. It receives water from the upper valley of the Minjiang river. There are three main elements: the Yuzui Bypass Dike, the Feishayan Floodgate, and the Baopingkou Diversion Passage.

The *Yuzui Bypass Dike* is located at the outfall of the Minjiang river. Water from the upper valley is diverted into the Outer and Inner Canals: the former follows the course of the Minjiang river and the latter flows to the Chengdu plain through the Baopingkou Diversion Passage. It is 1070m from the Diversion Passage, 880m from the embankment of the Outer Canal, and 710m from that of the Inner Canal.

The Dike is 5-8m higher than the river bed, 30m wide at the top and 140m at the base. It serves the essential function of bypassing the considerable amount of silt brought down by the river. It makes full use of the bend, directing surface water with low concentrations of silt into the Inner Canal and the heavily silted deeper water into the Outer Canal.

The *Feiyashan Floodgate*, 240m long and 2m high, is situated between the lower end of the Yuzui Bypass Dike and the V-Shaped Dike. Its upper end is 710m from the Bypass Dike and 120m from the Baopingkou Diversion Passage.

The principal function of the Floodgate is to transfer overflow, together with silt and pebbles, from the Inner to the Outer Canal. In periods of heavy flooding the flow of water at the Floodgate is three times that of the Diversion Passage. When water flow in the Inner Canal is low, the Floodgate ceases its draining function and transfers water into the Weir Works to ensure the supply of irrigation water to the Chengdu Plains.

The *Baopingkou Diversion Passage* lies between the Lidui Platform south of Dujiangyan City and the cliff facing it, an enormous engineering project that dates back to the beginning of the Irrigation System in the 3rd century BCE. The Passage, the name of which means "Treasure Bottle Neck," derived from its shape, is 36m long, 28.9m wide, and 18.8m deep. It is able to control and maintain the water flow to the Chengdu irrigated plains automatically, even in periods of drought or flooding.

There is a number of ancillary works worthy of mention. The *Baizhang Dike* lies upstream of Yuzui and to one side of the Inner Canal. The original construction of bamboo gabions filled with stones was damaged during heavy floods in 1964 and so the Dike was rebuilt in stone and concrete. Its function is to straighten out the natural watercourse and protect the embankment on that side.

The *Erwang Temple Watercourse* has a similar straightening dike. Its original structure, identical with that

of Baizhang, was also severely damaged in 1964 and replaced in stone and concrete. The Dike was built to straighten the watercourse and reduce potential damage to the Feishayan Embankment.

The *V-Shaped Dike* was originally built using bamboo gabions and stones in 1933, but it has subsequently been reconstructed in modern materials. Its principal function is in flood discharging.

- Mount Qingcheng

The mountain dominates the Chengdu plains and rises to a height of 2434m. It is a landscape of tranquil beauty, which has been long known throughout China for its "Secluded Elegance."

There are eleven temples on Mount Qingcheng of special significance in the field of Taoist architecture; unlike the Taoist temples of Mount Wudang, they do not reproduce the features of Imperial courts, but rather that of the traditional architecture of western Sichuan. Among them are those listed below.

The *Erwang Temple* lies to the west of Dujiangyan City. Originally known as the Wangdi Temple, it was moved in 494-98 by Liu Ji, Governor of Yizhou County, to Pixian County and renamed Congde Temple. It was considerably enlarged during the Song Dynasty (960-1279) and substantially reconstructed in the 17th century. It is constructed of wood and is located on a commanding point of the mountain, overlooking the river. The carvings inside the temple record the history and achievements of water control.

The *Fulong Temple* was built in the 8th century on the Lidui platform. It is composed of three halls and contains important art treasures.

The *Changdao Temple* (also known as the *Tianshi Celestial Cave*) was built in 730, but substantially reconstructed in the 16th century and again in 1920. The importance of this temple is that it is the place where Zhang Ling, the founder of Taoism, preached his doctrines during the late Eastern Han Dynasty (206 BCE- 220 CE).

Another very important Taoist monument is the *Jianfu Palace* (known until the *Zhangren Temple* until the Song Dynasty). The original building was erected in 730, but the present structure is a reconstruction of 1888.

In addition to the Taoist remains, there is an important Neolithic settlement site at *Mangcheng*, a village in Qingcheng Township. Excavations have revealed a major site surrounded by clay ramparts and covering some 120,000m². It is dated to the 3rd millennium BCE.

The area is rich in statuary, relief sculptures, and inscriptions of all kinds, from the 2nd century CE to the 19th century.

Management and Protection

Legal status

Article 22 of the Constitution of the People's Republic of China (PRC) lays down that "The state protects sites of scenic and historic interest, valuable cultural monuments and relics and other significant items of China's historical and cultural heritage." Under the provisions of the Law on Protection of Cultural Relics, the Dujiangyan Irrigation

System was listed as a key relic under state protection by the State Council of the PRC in 1982. A number of the historic buildings on Mount Qingcheng are also protected individually.

In addition, the properties are protected by a series of other statutes, stemming from the Constitution of the PRC and including the Environmental Protection Law, the Urban Planning Law, the Water Law, the Water and Soil Conservation Law, the Forestry Law, and the Penal Law. The Cultural Relics Protection Law operates through a number of sets of regulations at national level, reinforced by and interpreted through regulations issued by the Province of Sichuan and Dujiangyan City.

- *Management*

The entire nominated area is owned by the People's Republic of China.

The Overall Plan of the Property covers three components: the Dujiangyan Irrigation System (231.5ha), Mount Qingcheng (1522ha), and the Longxi Nature Reserve (16,138ha).

The following integrated and complementary management and other plans are currently in force:

- The Ninth Five-Year Development Plan of Relics and Museums and the Outline of the 2010 Long-Range Targets [national level];
- The Dujiangyan Overall Plan (1990-2030);
- The Overall Plan of Mount Qingcheng and the Dujiangyan Irrigation System;
- Proposal for Further Strengthening of Relics Protection in Dujiangyan City;
- Overall Plan of Dujiangyan Urban Planning;
- Provisional Measures on the Management of Scenic and Historic Interest Areas Promulgated by Dujiangyan Municipal Government.

The objectives of these plans, and of the regulations resulting from them, are to maintain the historic design and layout of the remains and to prevent natural damage to the architecture; to collect and preserve relics such as tablets, inscriptions, and carvings; and to protect the natural vegetation, rivers and streams, and animal and plant resources. There are regular monitoring programmes relating to cultural and natural heritage within the nominated area, operated by the Sichuan Provincial Construction Commission and the Dujiangyan Forestry Bureau respectively. The Sichuan Dujiangyan Irrigation System Administration takes responsibility for the Weir Works, which still operates as a major public utility. Protected monuments and other relics are monitored by the Municipal Administration of Cultural Heritage.

Specific activities within these objectives include scientific studies to develop and apply conservation techniques at the historic temples and other buildings, establish the Dujiangyan Irrigation System Museum, improve training for researchers and managers, develop programmes for promotion and presentation, and better manage tourism (the number of visitors in 1998 was over 600,000). An important aspect of the work has been to involve to the greatest extent

possible those farmers whose families have worked the land within the area for many generations.

Conservation and Authenticity

Conservation history

Since it has been providing an essential public service for many centuries, the Dujiangyan Irrigation System has been subject to continuous conservation, restoration, and reconstruction. During some periods of warfare and civil disruption the installations have fallen into disrepair, most recently in 1950, but they have quickly been brought back into full service, for the benefit of the farmers of the Chengdu plains.

Having been in constant use since they were built, the temples of Mount Qingcheng have been regularly maintained and conserved. As protected monuments they are now subject to systematic monitoring and conservation by the responsible agencies.

Authenticity

The essential authenticity of the Dujiangyan Irrigation System lies in its conception and design. In the 3rd century BCE a brilliant engineering solution was discovered to deal with the problems of water management in the fertile Chengdu plains. Food production could be ruined by natural events such as drought or excessive rainfall. The Dujiangyan installations, consisting essentially of dikes and bypass channels linked to the river, without the need to construct large dams, resolved these problems admirably and ensured a regular supply of water to irrigate the Chengdu fields. The installations have been extended since that time, so as to increase the area of irrigation, now nearly 1 million hectares.

The Mount Qingcheng temples have preserved a substantial degree of authenticity because they have been in continuous religious use.

Evaluation

Action by ICOMOS

An IUCN mission visited the nominated property in March 2000 on behalf of both Advisory Bodies. An ICOMOS expert subsequently visited the Dujiangyan Irrigation System and the Mount Qingcheng temples in August 2000.

Qualities

The Dujiangyan Irrigation System is an exceptional and outstanding example of ancient water management that has survived intact and functioning perfectly up to the present day, after more than two millennia. The temples on Mount Qingcheng are of great associative importance because of their connections with the founder of Taoism.

Comparative analysis

Sophisticated water-management systems are known to have been developed in antiquity. Irrigation is as old as agriculture, and the systems employed became more elaborate as societies became more complex. The Babylonians developed an extensive network of canals to irrigate the dry lands of Mesopotamia with the waters of the Euphrates in the 2nd millennium BCE, whilst Roman

engineers created vast systems to irrigate Rome's North African provinces.

However, none of these ancient systems has survived to the present day. Nor does there appear to be evidence that they made such subtle use of topography and the properties of water as the Chinese engineers of the 3rd century BCE.

The Taoist temples on Mount Qingcheng might be compared with those on Mount Wudang (inscribed on the World Heritage List in 1994). However, these are later (15th century) and were founded by reigning Ming Emperors, so their design was more lavish, in full Imperial style. The Qingcheng temples, by contrast, were established and endowed by humbler believers and so their style is much simpler, echoing the vernacular architecture of this region of Sichuan.

Brief description

Construction of the Dujiangyan Irrigation system began in the 3rd century BCE, and it continues to control the waters of the Minjiang river and distribute it to the fertile farmland of the Chengdu plains. Mount Qingcheng was the birthplace of Taoism, which is celebrated in a series of ancient temples.

Recommendation

That this property be inscribed on the World Heritage List on the basis of *cultural criteria ii, iv, and vi*:

Criterion ii The Dujiangyan Irrigation System, begun in the 2nd century BCE, is a major landmark in the development of water management and technology, and is still discharging its functions perfectly.

Criterion iv The immense advances in science and technology achieved in ancient China are graphically illustrated by the Dujiangyan Irrigation System.

Criterion vi The temples of Mount Qingcheng are closely associated with the foundation of Taoism, one of the most influential religions of East Asia over a long period of history.

ICOMOS, September 2000

Qingcheng/Dujiangyan (Chine)

No 1001

Identification

<i>Bien proposé</i>	Mont Qingcheng et système d'irrigation de Dujiangyan
<i>Lieu</i>	Dujiangyan, province du Sichuan
<i>État partie</i>	République populaire de Chine
<i>Date</i>	20 juillet 1999

Justification émanant de l'État partie

Le système d'irrigation de Dujiangyan, vieux de plusieurs siècles, est unique. Remarquable pour son système sans barrages-réservoirs, c'est un chef d'œuvre de l'ingénierie chinoise de conservation de l'eau. Il tire plein parti de la géomorphologie de la région, dans laquelle le terrain suit une pente du nord-ouest au sud-est, ainsi que de la topographie locale, de la nappe et du potentiel de la rivière. Ses constructeurs développèrent la technologie de la dérivation de l'eau sans barrages-réservoirs ni irrigation automatique. Le système d'endiguement intégré, de dérivation, de débit de crue, de chasse et de lutte contre les inondations joue un grand rôle dans la prévention des inondations, l'irrigation agricole, le transport de l'eau et la consommation de cette dernière. Un rôle qu'il tient depuis 2250 ans et qu'il continue de tenir à ce jour. Le système d'irrigation de Dujiangyan repose sur un principe : ne pas endommager les ressources naturelles, mais en tirer le meilleur profit possible au service de l'humanité. C'est l'une des plus grandes applications d'ingénierie écologique au monde.

Situé au sud du système de Dujiangyan, le mont Qingcheng est d'une grande importance historique tout autant que paysagère. À ses pieds, à l'est, on trouve les ruines de Mangcheng, parmi les rares vestiges du Néolithique en Chine, remontant à 4500 ans et fournissant des témoignages importants du royaume de Chu. Dès la dynastie Qin (221-206 avant notre ère), le mont Qingcheng faisait partie des dix-huit montagnes et rivières sacrées servant aux sacrifices, et il fut témoin de la naissance du taoïsme chinois.

Critères culturels ii, iii et iv

[**Note** Ce bien est proposé pour inscription en tant que site mixte, en vertu de critères naturels et culturels. Cette évaluation se concentre sur les aspects culturels ; l'UICN fournira une évaluation complémentaire quant aux qualités naturelles.]

Catégorie de bien

En termes de catégories de biens culturels, telles qu'elles sont définies à l'article premier de la Convention du Patrimoine mondial de 1972, il s'agit d'un *site*.

Histoire et description

Histoire

- Le système d'irrigation de Dujiangyan

En 256 avant notre ère, Li Bing, magistrat du royaume de Chu sous la dynastie Qin, choisit l'embouchure montagneuse de la rivière Minjiang, aux flots abondants, comme site d'un système d'irrigation. Il fallut pour cela couper la plate-forme Lidui, creuser des canaux pour éviter les risques d'inondation, et ouvrir une voie de navigation, ce qui permettrait également d'irriguer les terres avoisinantes, créant une « terre d'abondance ». Ces travaux furent agrandis en 141 avant J.-C. par le magistrat Wen Weng.

Sous la dynastie Tang (618-907), des projets de conservation de l'eau et d'irrigation à grande échelle furent réalisés, dont les endiguements de Baizhang, de Mizao et de Tongji, et le bassin de Wansui, qui fournit à la plaine de Chengdu un réseau de déversoirs et de canaux.

Le système fut rationalisé sous la dynastie Song (960-1279) en trois principaux cours d'eau, trois canaux et quatorze branches, avec un programme coordonné de maintenance et de contrôle de l'eau. Le système fut encore étendu et des travaux supplémentaires réalisés (les endiguements de Sili et de Shabo), irriguant douze comtés.

D'importants travaux expérimentaux eurent ensuite lieu sous la dynastie Yuan (1206-1368) : en particulier, des barres de fer vinrent renforcer les endiguements. Des projets de construction supplémentaires furent aussi réalisés et ce processus suivit son cours pendant toute la dynastie Ming (1368-1644), parallèlement à l'introduction d'un nouveau régime de contrôle.

Les guerres incessantes à la fin de la dynastie Ming et dans les premières années de la dynastie Qing (1644-1913) entraînèrent la dégradation du système, mais il fut finalement réparé. En effet, les habitants locaux s'impliquèrent dans de vastes projets de réhabilitation et de réparation, et la zone irriguée fut élargie à quelques 180 000 hectares. Depuis cette époque, le système a été soigneusement entretenu et progressivement agrandi : il couvre aujourd'hui 668 700 hectares, répartis sur 34 comtés. Le système d'origine a été préservé, mais des matériaux et des technologies de construction modernes ont été utilisés pour rendre ce système ancien conforme aux exigences contemporaines.

- Mont Qingcheng

En l'an 142 de notre ère, le philosophe Zhang Ling fonda le taoïsme sur le mont Qingcheng et, l'année suivante, élisait définitivement résidence sur ce qui devait devenir la Grotte Céleste du Tianshi (nom donné au chef spirituel de la religion taoïste). Sous la dynastie Jin (265-420), plusieurs temples taoïstes furent construits sur la montagne, qui devint

un centre de diffusion des enseignements taoïstes aux quatre coins de la Chine. Sous la dynastie Tang, les œuvres de Du Guangting, l'une des figures majeures de la pensée et de la science chinoise, y furent rassemblées sous le nom d'*Écritures taoïstes*.

La période trouble que connurent la fin de la dynastie Ming et l'avènement de la dynastie Qing, au XVII^e siècle, vit les érudits et les disciples du taoïsme venir de toute la Chine pour converger vers Qingcheng. Par la suite, la montagne sacrée reprit son rôle de centre intellectuel et spirituel du taoïsme, qu'elle conserve encore à ce jour.

Description

Le bien proposé pour inscription est situé à l'entrée occidentale des plaines de Chengdu, à la jonction entre le bassin du Sichuan et le plateau du Qinghai-Tibet.

- Le système d'irrigation de Dujiangyan

Le système d'irrigation compte deux composants principaux, les déversoirs et la zone irriguée.

Les déversoirs, situés à une altitude de 726 m, point culminant de la plaine de Chengdu, à 1 km de Dujiangyan, forment le cœur du système. Ils reçoivent l'eau de la haute vallée de la rivière Minjiang. On compte trois éléments principaux : l'endiguement de Yuzui, l'écluse de Feishayan et le canal de diversion de Baopingkou.

L'endiguement de Yuzui est situé au point de déversement du Minjiang. L'eau en provenance de la haute vallée est détournée sur les canaux extérieur et intérieur : ce dernier suit le cours du Minjiang, tandis que le premier s'écoule vers la plaine de Chengdu, via le canal de diversion de Baopingkou. Il se trouve à 1070 m du canal de diversion, à 880 m de l'endiguement du canal extérieur et à 710 mètres du canal intérieur.

Le barrage surplombe de 5-8 m le lit de la rivière ; il fait 30 mètres de large au sommet et 140 à la base. Il remplit une fonction essentielle, faisant dériver la quantité considérable de limon charriée par la rivière. Il tire le plus grand profit possible du tournant, en dirigeant les eaux de surface aux faibles concentrations de limon vers le canal intérieur, et les eaux plus profondes et donc plus riches en limon vers le canal extérieur.

L'écluse de Feishayan, 240 mètres de long pour 2 mètres de haut, se situe entre l'extrémité inférieure de l'endiguement de Yuzui et le barrage en forme de V. Son extrémité supérieure se trouve à 710 mètres de l'endiguement et à 120 mètres du canal de diversion de Baopingkou.

La principale fonction de l'écluse est de transférer le trop-plein, avec le limon et les graviers, du canal intérieur à celui de l'extérieur. Dans les périodes de forte crue, le courant à l'écluse est trois fois supérieur à celui au canal de diversion. Quand le niveau de l'eau dans le canal intérieur est bas, l'écluse cesse de drainer, et transfère de l'eau vers les déversoirs, pour assurer l'approvisionnement des plaines de Chengdu en eau d'irrigation.

Le canal de diversion de Baopingkou se trouve entre la plate-forme de Lidui, au sud de Dujiangyan, et la falaise qui lui fait face, énorme projet d'ingénierie remontant aux premiers temps du système d'irrigation, au III^e siècle avant notre ère. Le canal, dont le nom signifie « Goulot de la Bouteille précieuse », à cause de sa forme, fait 36 mètres de long, 28,9 mètres de large et 18,8 mètres de profondeur. Il est capable de contrôler et de maintenir automatiquement le courant dans les plaines irriguées de Chengdu, même en période de sécheresse ou de crue.

Plusieurs ouvrages annexes méritent d'être mentionnés. Le barrage de Baizhang se trouve en amont de Yuzui, d'un côté du canal intérieur. La construction originale, gabions de bambou remplis de pierres, fut endommagée pendant les fortes crues de 1964, et le barrage fut donc reconstruit en pierre et en béton. Il a pour fonction de redresser le cours naturel de l'eau et de protéger l'endiguement de ce côté.

Le cours d'eau du temple d'Erwang possède un barrage de redressement similaire. Sa structure d'origine, identique à celle de Baizhang, fut elle aussi gravement endommagée en 1964, et remplacée par de la pierre et du béton. Le barrage fut construit pour redresser le cours d'eau et réduire les dégâts potentiels à l'endiguement de Feishayan.

Le barrage en V fut à l'origine construit à l'aide de gabions de bambou et de pierres en 1933, mais a été ultérieurement reconstruit dans des matériaux modernes. Il a pour fonction principale le contrôle du débit de crue.

- Mont Qingcheng

La montagne domine les plaines de Chengdu et culmine à 2434 mètres. C'est un paysage d'une beauté tranquille, connue depuis longtemps dans toute la Chine pour son « *Élégance Solitaire* ».

Sur le mont Qingcheng se dressent onze temples d'une importance notable en matière d'architecture taoïste ; à l'encontre de ceux du mont Wudang, ils ne reproduisent pas les traits propres aux cours impériaux, mais plutôt ceux de l'architecture traditionnelle de la partie occidentale du Sichuan. Parmi eux figurent les temples suivants.

Le Temple d'Erwang s'élève à l'ouest de Dujiangyan. Connu à l'origine sous le nom de Temple de Wangdi, il fut déplacé en 494-498 par Liu Ji, gouverneur du comté de Yizhou, dans le comté de Pixian, et rebaptisé Temple de Congde. Il fut considérablement agrandi sous la dynastie Song (960-1279), et substantiellement reconstruit au XVII^e siècle. Il est fait de bois et situé sur une hauteur de la montagne, en surplomb de la rivière. Les sculptures qu'il abrite racontent l'histoire et les dates importantes du contrôle de l'eau.

Le Temple de Fulong fut construit au VIII^e siècle, sur la plate-forme de Lidui. Il se compose de trois salles et contient d'importants trésors artistiques.

Le Temple de Changdao (également connu sous le nom de Grotte Céleste de Tianshi) fut construit en 730, mais substantiellement reconstruit au XVI^e siècle, puis une fois encore en 1920. Il est important car c'est là que Zhang Ling, fondateur du taoïsme, prêcha ses doctrines aux alentours de la fin de la dynastie des Han de l'Est (206 avant J.-C.-220 après J.-C.).

Autre monument taoïste essentiel, le palais de Jianfu (connu sous le nom de temple de Zhangren jusqu'à la dynastie Song). Le bâtiment original fut construit en 730, mais la structure actuelle est une reconstruction datant de 1888.

En sus des vestiges taoïstes, Mangcheng, village de la commune de Qingcheng, abrite un important site de peuplement Néolithique. Les fouilles ont révélé un vaste site, encerclé de remparts d'argile et couvrant quelques 120 000 m². Il a été daté au III^e millénaire avant notre ère.

La zone est riche en statues, en bas-relief et en inscriptions de toutes sortes, allant du II^e au XIX^e siècle de notre ère.

Gestion et protection

Statut juridique

L'article 22 de la constitution de la République populaire de Chine (RPC) stipule que « l'État protège les sites d'un intérêt paysager et historique, les monuments et reliques culturelles de valeur et autres éléments importants du patrimoine historique et culturel chinois ». Aux termes des dispositions de la loi sur la protection des reliques culturelles, le système d'irrigation de Dujiangyan a été classé comme relique importante, sous protection d'État, par le conseil d'État de la RPC en 1982. Plusieurs bâtiments historiques sur le mont Qingcheng font également l'objet d'une protection individuelle.

En outre, les biens sont protégés par une série d'autres textes législatifs, de la constitution de la RPC à la loi sur la protection de l'environnement, la loi d'urbanisme, la loi sur les eaux, la loi sur la conservation des eaux et du sol, la loi forestière et la loi pénale. La loi sur la protection des reliques culturelles s'applique via plusieurs réglementations nationales, renforcées et interprétées par les réglementations publiées par la province du Sichuan et la ville de Dujiangyan.

Gestion

Toute la zone proposée pour inscription est la propriété de la République populaire de Chine.

Le plan global du bien couvre trois composants : le système d'irrigation de Dujiangyan (231,5 hectares), le mont Qingcheng (1522 hectares) et la réserve naturelle de Longxi (16 138 hectares).

Des plans de gestion intégrée complémentaires, et autres plans, sont actuellement en vigueur :

- Le neuvième plan de développement quinquennal des reliques et des musées et la définition des objectifs 2010 à long terme [échelle nationale]
- Le plan général de Dujiangyan (1990-2030)
- Le plan général du mont Qingcheng et le système d'irrigation de Dujiangyan
- La proposition de renforcement de la protection des reliques à Dujiangyan
- Le plan général d'urbanisme de Dujiangyan

- Les mesures provisoires sur la gestion des zones d'intérêt paysager et historique promulguées par le gouvernement municipal de Dujiangyan.

Ces plans, ainsi que les réglementations en résultant, ont pour objectif de maintenir le tracé et le schéma historique des vestiges, et d'empêcher l'érosion naturelle de l'architecture, de recueillir et de préserver les reliques telles que les tablettes, les inscriptions et les sculptures, et de protéger la végétation naturelle, les rivières et les cours d'eau, ainsi que la faune et la flore. La commission provinciale de la construction du Sichuan et l'office des Forêts de Dujiangyan, respectivement, mettent régulièrement en œuvre des programmes de suivi liés au patrimoine culturel et naturel dans la zone proposée pour inscription. L'administration du système d'irrigation de Dujiangyan du Sichuan assume la responsabilité des déversoirs, qui fonctionnent toujours et constituent un service public capital. Les monuments protégés et autres reliques sont sous la surveillance de l'administration municipale du patrimoine culturel.

Dans le cadre de ces objectifs, les activités comprennent des études scientifiques pour développer des techniques de conservation et les appliquer aux temples historiques et autres édifices, établir un musée du système d'irrigation de Dujiangyan, améliorer la formation des chercheurs et des responsables, élaborer des programmes de promotion et de présentation et mieux gérer le tourisme (en 1998, le nombre de visiteurs a dépassé les 600 000). L'un des aspects importants du travail a consisté à impliquer, dans la plus grande mesure possible, les agriculteurs dont les familles travaillent la terre dans la région depuis plusieurs générations.

Conservation et authenticité

Historique de la conservation

Fournissant un service public essentiel depuis de nombreux siècles, le système d'irrigation de Dujiangyan a fait l'objet de travaux incessants de conservation, de restauration et de reconstruction. Durant certaines périodes de guerre et d'agitation civile, les installations ont été endommagées, en 1950 pour la dernière fois, mais ont rapidement été remises en service, au profit des agriculteurs des plaines de Chengdu.

Les temples du Mont Qingcheng, ayant toujours été en fonction depuis leur construction, ont été régulièrement entretenus et conservés. Protégés en tant que monuments, ils sont à l'heure actuelle soumis à un suivi et à une politique de conservation systématiques par les institutions compétentes.

Authenticité

L'authenticité fondamentale du système d'irrigation de Dujiangyan réside dans sa conception et son tracé. Au III^e siècle avant notre ère, une brillante solution d'ingénierie fut mise au point pour gérer les problèmes de gestion de l'eau dans les fertiles plaines de Chengdu. La production agricole pouvait en effet être ruinée par des événements naturels, tels que la sécheresse ou des pluies diluviennes. Les installations de Dujiangyan, consistant principalement en barrages et canaux de dérivation reliés à la rivière, sans besoin de grands ouvrages, ont admirablement résolu ces problèmes, et assuré l'approvisionnement régulier en eau des

champs de Chengdu. Les installations se sont agrandies depuis cette époque, de façon à augmenter la surface irriguée, qui frôle aujourd'hui le million d'hectares.

Les temples du Mont Qingcheng ont préservé un degré d'authenticité élevé du fait de leur utilisation continue en tant que lieux de culte.

Évaluation

Action de l'ICOMOS

Une mission de l'UICN a visité le bien proposé en mars 2000 au nom des deux organes consultatifs. Par la suite, une mission d'expertise de l'ICOMOS a visité le système d'irrigation de Dujiangyan et les temples du Mont Qingcheng en août 2000.

Caractéristiques

Le système d'irrigation de Dujiangyan est un exemple exceptionnel et remarquable de dispositif ancien de gestion de l'eau demeuré intact et en parfait état de marche jusqu'à ce jour, après plus de deux millénaires. Les temples du Mont Qingcheng sont d'une grande importance associative en raison de leurs liens avec le fondateur du taoïsme.

Analyse comparative

On sait que des systèmes complexes de gestion de l'eau avaient déjà été mis au point dès l'Antiquité. L'irrigation est aussi vieille que l'agriculture, et les systèmes employés se sont faits de plus en plus élaborés au fur et à mesure que les sociétés gagnaient en complexité. Les Babyloniens ont ainsi mis au point un vaste réseau de canaux pour irriguer les terres arides de Mésopotamie avec les eaux de l'Euphrate, au II^e millénaire avant notre ère, tandis que les ingénieurs romains ont créé d'immenses systèmes pour irriguer les provinces romaines d'Afrique du Nord.

Cependant, aucun d'eux ne subsiste à ce jour. Jamais non plus on n'a pu retrouver de preuves d'une telle subtilité dans l'usage de la topographie et des caractéristiques de l'eau que celle dont ont fait preuve les ingénieurs chinois du III^e siècle avant J.-C.

Les temples taoïstes du mont Qingcheng peuvent être comparés à ceux du mont Wudang (inscrit sur la Liste du patrimoine mondial en 1994). Toutefois, ces derniers sont postérieurs (XV^e siècle) et ont été fondés par les empereurs Ming régnants : leur conception est donc plus somptueuse, dans le plus pur style impérial. Par opposition, les temples Qingcheng ont été fondés et financés par d'humbles croyants. Leur style est donc beaucoup plus simple, reflet de l'architecture vernaculaire de cette région du Sichuan.

Brève description

La construction du système d'irrigation de Dujiangyan a commencé au III^e siècle avant J.-C., et il continue à réguler les eaux de la rivière Minjiang et de les distribuer sur les terres fertiles des plaines de Chengdu. Le Mont Qingcheng est le berceau du taoïsme, qui est célébré dans une série de temples anciens.

Recommandation

Que ce bien soit inscrit sur la Liste du patrimoine mondial sur la base des *critères culturels ii, iv et vi* :

Critère ii Le système d'irrigation de Dujiangyan, commencé au II^e siècle avant notre ère, marque une date majeure dans le développement de la gestion et de la technologie de l'eau.

Critère iv Les immenses progrès scientifiques et technologiques réalisés dans l'ancienne Chine sont concrètement illustrés par le système d'irrigation de Dujiangyan.

Critère vi Les temples du Mont Qingcheng sont étroitement associés à la fondation du Taoïsme, une des religions les plus influentes de l'Asie de l'Est sur une longue période de l'histoire.

ICOMOS, septembre 2000