

## **Chapter 4 Resettlement Action Plan**

### **4.1 ZPSPP Mitigation and Recovery Measures**

#### **4.1.1 Planning Methodology**

##### **4.1.1.1 Methodology for Environmental Carrying Capacity Analysis**

Chinese law mandates that as many of those affected by reservoir inundation as possible be relocated close by, within their own village boundaries. To implement this strategy, ZPSPP has taken into consideration the existing conditions of land and water utilization and the development potential of the land and water resources of the village after inundation, to determine the number of people who can be moved nearby. This has required a comprehensive analysis and calculation of many factors to determinate the land and water resources. This includes the total area and per capita farmland, grain production capacity, and per capita grain quantity of the village, before and after inundation. Through weighing these and other natural resource factors, the ZPSPP resettlement planning has determined how many villagers could be resettled nearby the ZPSPP Reservoir.

After determining the numbers of affected villagers that could be moved in the vicinity of the ZPSPP reservoir itself, the resettlement planning carried out a comprehensive land and resources analysis to determine suitable resettlement locations within Jingxing County itself. In the resettlement planning, analysis was made of the natural resources, mainly land and water conservancy potential, of all the townships within the county. Areas with better natural resources, infrastructure facilities and suitable social environment were selected as resettlement. Part of the process of selecting resettlement sites was the creation of various indices predicting per capita farmland, grain output, dietary levels, net income and living floor space before and after relocation. Public and infrastructure facilities were also planned to realize the goals of quick recovery and the development and promotion of production and living conditions after relocation.

With this analytical foundation for identifying the surplus land, water, and other physical and social environmental carrying capacity of potential resettlement sites, the amounts of land to be acquired to meet the requirements of the resettlers is carefully classified for each of the potential host villages. Such classification also takes into account minimizing the impacts on each of the host villages and spreading the burden as much as possible between a large numbers of host villages.

##### **4.1.1.2 Planning Methodology for the Recovery of Agriculture Production**

The first goal in planning for the recovery of the ZPSPP resettlers' agricultural production was to define a reasonable standard. The per capita farmland holding was largely determined by what was required to meet and to exceed the prior to resettlement per capita grain production. The standard was more sharply defined through a comparative analysis of the per capita farmland and irrigated field holdings of the ZPSPP inundated region, the chosen resettlement area, and Jingxing County as a whole.

The next stage required extensive discussion with village officials and the villagers themselves carrying out site investigations to determine village land resources as well as land and water resources development potential. Based on this information, the area of farmland

requiring upgrading or reclamation was determined, as well as the area of dry land to be transformed into irrigated fields. From this, the corresponding measures required to construct water conservancy projects were decided.

Similar consultations with villagers were carried out in the course of specialized studies by Jinxing County technicians in charge of forestry and horticultural production, animal husbandry, farmland improvement, and scientific farming. Based on these studies, scientific and technical course content was developed for training resettlers in production methods suitable to the Resettlement Area. During resettlement planning, further consultation with experts from technical areas that are part of the proposed measures for recovering agricultural production as well as the comments from local government will be sought, and adjustments made as necessary.

#### **4.1.1.3 Planning Methodology for Reconstruction of Infrastructure Facilities**

Plans for reconstructing infrastructure, including the construction grade levels, were based on the existing conditions in the ZPSPP Reservoir and Resettlement Areas as well as the size of the population being relocated to the Resettlement Areas.

To the extent possible, planning for infrastructure facilities has been and will be coordinated with local economic development planning, making full use of existing facilities and taking full consideration of resettlers' requirements for infrastructure after relocation.

A unified detailed planning will be examined by local governments, the planning and design will be performed by specialized department and the planning will be reviewed and finally accepted by experts engaged by the provincial, city, county and township resettlement offices. The construction schedule for the infrastructure facilities will be integrated with the overall Resettlement Action Plan (RAP), so that the villagers will not be adversely affected too early prior to their moving.

### **4.1.2 Calculation of Population to be Relocated**

#### **4.1.2.1 Natural Population Growth**

Natural population growth in Jinxing County is 1 percent, as calculated over the last decade and according to the population control policies of Jinxing County Government. The population affected by the ZPSPP Reservoir is calculated by natural population growth on the basis of the 2001 detailed site survey up to ZPSPP Design Level year of 2006. The naturally increased population is 182. The population affected in different villages by ZPSPP reservoir inundation is shown in Table 4-1.

**Table 4-1 Population Affected by ZPSPP Inundation in Design Level Year of 2006**

VILLAGE	POPULATION AFFECTED
<b>AGRICULTURAL POPULATION</b>	
Shimen Village	243
Yanzhuang Village	170
Zhanghewan Village	178
Nanhaoting Village	1,604
Nansi Village	309
Beihaoting Village	422
<b>NON-AGRICULTURAL POPULATION</b>	
Enterprises Owned By Ceyu Town	60
Nanhaoting Village	117
Beihaoting Village	20
<b>TOTAL</b>	
Agricultural Population	2,926
Non-Agricultural Population	197
<b>SUMMARY</b>	<b>3,123</b>

#### 4.1.2.2 Population to Be Relocated

Population to be relocated is referred to the population directly affected by inundation, the population whose farmland is inundated. Although their houses are above the inundation line, their farmland is inundated and hence has lost production conditions, and the natural growth of the above-mentioned populations in total is calculated up to the design level year of 2006. The population directly affected by inundation is 1,547 persons, including an agricultural population of 1,362 and a non-agricultural population of 185. The population whose farmland is inundated is 1,359. The population expected to result from natural growth is 182, including a non-agricultural population of 12. In total, the population to be relocated is thus 3,123, including an agricultural population of 2,926, as shown in Table 4-1.

The formula used to calculate the population to be relocated by the design level year is:

$$R_{\text{level year}} = R_{\text{survey year}} (1+r)^n$$

R level year = population in the design level year (2006)

R survey year = population in the survey year (2001)

r = natural growth rate (1%)

n = number of calculated years

#### 4.1.3 Environmental Carrying Capacity of Reservoir and Resettlement Areas

##### 4.1.3.1 General Situation

Jingxing County (2001) has an area of land 1,383 km<sup>2</sup>. Its farmland is 24,383 ha, with per capita farmland at 0.082 ha for the agricultural population, including per capita irrigated field of 0.039 ha. The total population is 330,964, including an agricultural population of 294,172, accounting for 89 percent of the total population. The average population density is 239 persons/km<sup>2</sup>. Table 4-2 below summarizes the land resources and population density of Jingxing County.

Jingxing County has very little high fertility land, only about two percent of total farmland. Medium fertility land accounts for 54.4 percent. The difference in the Land Reclaimability Rate of the County's many townships and towns is very great. The middle and northern parts of Jingxing County have a relatively high Land Reclaimability Rate, above 40 percent, for instance in the resettlement receiving area of Beizheng Township. In contrast, the arability rate of farmland within the ZPSPP Reservoir Area is less than 10 percent. Jingxing County has 466.7 ha of reclaimable wasteland, 14,386.7 ha of forested barren land and 37,953.3 ha of livestock grazing land. Therefore forestry and animal husbandry must necessarily be developed along with agriculture to increase agricultural productivity within the County.

Water resources are limited in the County, and the utilization rate of existing water resources is relatively high. In the mountainous parts of the County, such as the ZPSPP Reservoir Area, irrigation generally depends on the natural flow, as in the case of the existing Zhanghwan Reservoir, where irrigation depends mostly on river channels and only where economically feasible on the pumping of water. In the middle and northern parts of Jingxing County much irrigation comes from the development of gravity flow irrigation canals, but ground water may also be utilized for irrigation.

#### 4.1.3.2 Environmental Carrying Capacity of the ZPSPP Reservoir Area

Table 43 presents the current situation regarding the population, land and water resources of the townships and villages in the ZPSPP Reservoir Area.

**Ceyu Town:** Ceyu Town's population density is 92 person/km<sup>2</sup> and its per capita farmland is 0.07 ha. After ZPSPP is constructed, the per capita farmland will be 0.071 ha, including irrigated fields of 0.017 ha. There are 5747.9 ha of wild grassland that can only be used for grazing or as forestland. Due to low fertility of the farmland, the development and utilization potential of water and land resources is limited.

**Shimen Village:** Shimen has only 4.7 ha of irrigated fields, largely because of poor fertility and the limited utilization of its potential for water (which in any case is scarce) and land resources. Construction of the ZPSPP will occupy 23.4 ha of Shimen's dry land, and since there is no reclaimable land surrounding the village, all 243 affected people will need to be relocated.

**Yanzhuang Village:** The Yanzhuang Village affected population is 170. Yanzhuang lost a large area of their farmland when the Zhanghewan Reservoir was constructed in 1977. Yanzhuang's present per capita farmland is only 0.058 ha. Land surrounding the village is scarce, and land and water resources capacity for moving nearby is inadequate. Therefore, Yanzhuang will be entirely relocated.

**Table 4-2 Farmland Resources of All Townships and Towns in Jingxing County and Population Density**

Township/ Town	Total Area		Farmland Area (ha)		Farmer Households	Agricultural Pop. (Person)	Farmland (ha/person)	Irrigated (ha/person)
	Area (km <sup>2</sup> )	Population Density (persons/km <sup>2</sup> )	Total	Irrigated				
Weishui Town	100.21	599	2498.1	1095.8	10061	36378	0.069	0.030
Shangan Town	57.11	399	1767.2	1006.1	6255	22293	0.079	0.045
Wujiayao Township	45.81	289	1211.1	256.6	3467	13101	0.093	0.020
Beizheng Township	18.49	582	1036.2	684	3131	10462	0.099	0.065
Tianchang Town	101.06	416	2720.0	1455.8	10887	37454	0.072	0.039
Xiulin Town	58.68	434	1737.6	1297.8	6670	22977	0.076	0.056
Yujia Township	33.45	240	790.1	251	2258	7690	0.103	0.032
Nanyu Town	80.88	197	1158.1	310.5	4329	15247	0.076	0.020
Weizhou Town	79.47	335	2487.4	1639.1	6862	26432	0.094	0.062
Sunzhuang Township	53.81	294	1183.3	888.5	3955	15606	0.076	0.057
Xiaozuo Town	79.46	237	1227.7	259.6	4845	17238	0.072	0.045
Nanxing Town	45.79	177	862.3	412.9	2165	7822	0.110	0.053
Xinzhuang Township	161.01	71	1187.4	255.1	2915	10945	0.108	0.023
Nanzhangcheng Town	103.13	126	1034.5	304.2	3250	12148	0.085	0.025
Nanwangzhuang	78.72	139	1121.4	218.7	3060	10644	0.105	0.020
Cangyanshan Town	119.17	87	821.7	266.9	2634	10132	0.081	0.026
Ceyu Town	166.44	92	1046.5	257.33	4261	14761	0.071	0.017
Foundation Seed Farm			492	492				
Total	1382.69		24382.6	11351.93	81005	291330	0.082	0.039

Note: The data above are based on the national economic statistics of Jingxing County in 2000.

**Table 4-3 Land Resources in the Townships, Towns and Villages in the ZPSPP Reservoir Area (ha)**

Township, Town and Village	Total Area	Farmland Area			Area of Unusable Land			
		Total	Irrigated	Dryland	Total	Natural Grassland	Exposed Rock and Gravel	Field Ridge and Other
Ceyu Town:	16643.7	1046.5	257.3	789.2	7735.0	5747.9	1687.5	299.6
Ceyu Village	1423.6	154.9	10	52.0	1002.1	578.2	366.7	57.2
Yanzhuang Village	980.7	69.7	25.3	37.3	754.2	586.5	140.6	27.1
Shimen Village	971.2	84.7	4.7	76.7	825.1	630.9	160.6	33.6
Zhanghewan Village	198.6	25.6	6.3	19.3	167.1	135.5	25.8	5.8
Nanhaoting Village	1256.3	83	46.7	68.6	1008.2	873.1	80.1	55.0
Nanshi Village	1251.8	62	10	60.2	1011.8	739.3	215.4	57.1
Beihaoting Village	356.6	68.93	38.53		249.2	233.2	6.3	9.7

Note: (1) The above data are based on "Summary of Jingxing County National Economic Statistics" (1998) and "General Planning of Land Utilization at Township Level in Jingxing County". Nanhaoting Village's irrigated field is 27.8 ha. The irrigated field of the village below the land acquisition line is 72.6 ha.

(2) Other land occupation such as residential area, transportation, and water bodies are not included in this table.

**Zhanghewan Village:** Zhanghewan Village affected population is 178. Most of Zhanghewan Village was relocated to New Zhanghewan Village within Beizheng Township, one of the ZPSPP Resettlement Areas, in 1977 when the Zhanghewan Reservoir was built. Only a small number of people live in old Zhanghewan Village at present, and these mostly only during the non-farming winter season. Most young and middle-age adults work for short periods outside the ZPSPP Reservoir Area. Construction of the ZPSPP will entirely inundate Zhanghewan's farmland. Therefore, since there is little environment carrying capacity around the old village site, Zhanghewan will move to New Zhanghewan. Besides the benefit of reuniting with the original community, the environmental carrying capacity at New Zhanghewan has more potential for the recovery of production and living conditions.

**Nanhaoting Village:** Nanhaoting Village has a population of 1740, including an agricultural population of 1630. Its farmland is 83 ha, including 46.7 ha irrigated fields. Per capita farmland is 0.051 ha, and per capita irrigated fields 0.029 ha. ZPSPP will inundate 75.63 ha of Nanhaoting's farmland, including 72.59 ha of its irrigated fields. The affected population will be 1604 in the design level year of 2006. According to the 1993 detailed site investigation, there will still be approximately 22.67 ha of reclaimable farmland, including 20.6 ha of dry farmland that can be converted into irrigated fields. Since the reservoir surface will be raised, existing pump stations will be more economical than they are at present. Through reconstructing its old pump stations, Nanhaoting will gain 43.44 ha of farmland, including 34.66 ha of irrigated fields. This will allow 304 people to move within Nanhaoting's boundaries. In addition to the agricultural land resources identified, there is a large area of wild grassland above the inundation level, which will be developed for forestry, horticulture, and animal husbandry to increase the income of the villagers not resettled to northern Jingxing County. The per capita farmland after resettlers have been relocated within Nanhaoting will be 0.073 ha, and irrigated fields 0.057 ha. This is higher than the average level before inundation.

**Beihaoting Village:** Beihaoting Village has a population of 417, including agricultural population 398. Its farmland is 68.934 ha, with per capita farmland of 0.173 ha. The population to be relocated is 442 in the design level year. All of Beihaoting Village's infrastructure facilities and irrigated fields and most of its dryland will be inundated by the ZPSPP reservoir, The drought-prone and impoverished remaining dry land will be scattered along highland slopes and will be difficult to irrigate. Therefore, it was decided, after consultation with the local governments and villagers, Beihaoting will be relocated to New Beihaoting of Weizhou Town, and the remained farmland will be converted to forest to improve conservation in the area nearby the ZPSPP Reservoir.

**Xigou Village:** Xigou Village will not have to be relocated, since the ZPSPP will restore access, lost through inundation, to the village. Xigou's agricultural production and livelihood will thus not to be affected.

**Nansi Village:** Nansi Village has an agricultural population of 890 and farmland of 62 ha, including 10 ha of irrigated fields. Its per capita farmland is 0.070 ha and per capita irrigated fields 0.011 ha. The farmland to be inundated is 20.27 ha, including 10 ha of irrigated fields. This represents a loss of 95 percent of the village's most productive irrigated fields. This will affect a population of 309 in the year 2006. The remaining land will be almost all highland drylands of low yield and difficult to transform by irrigation. Although there are potential resources in the village's wild grasslands for development of forestry and animal husbandry, agricultural fields will be too few, and their environmental carrying capacity too limited, to

ensure the basic villagers' grain requirements. Therefore, all of Nansi's 309 people will be relocated.

#### **4.1.3.3 Environmental Carrying Capacity of the ZPSPP Resettlement Areas**

The five (5) Resettlement Areas in northern Jingxing County were selected after comparison and analysis of a wide range of factors, such as: the numbers of resettlers requiring relocation within Jingxing County and the corresponding requirement of land resources; the land conditions of Jingxing County's towns and villages; the natural conditions and agricultural economy of the county's towns and villages, such as having higher per capita farmland, better water conservancy potential, more advantageous location regarding transport, or a better developed economy. Land from Beizheng Township and Weizhou Town's several villages will be allocated for the new resettlement sites.

Table 4-4 shows the farmland situation of these host villages to contribute their land for the resettlement sites.

#### **Land Resources in the ZPSPP Resettlement Area**

##### **(1) Beizheng Township:**

Beizheng Township is located in the central part of the Jingxing Basin, and its neighbors are Weishui, Kuangshi, Weizhou and Xiouling Towns. Beizheng Township is excellently located with respect to transportation and communications.

Beizheng Township's Land Reclaimability Rate is as high as 56 percent, compared to that of Jingxing County, which averages 17.6 percent. The Township's proportion of irrigated fields is 67.3 percent of all agricultural land, compared to the County average of 55 percent. Renming Irrigation Canal, Mianyou Left Trunk Canal and East Sub-trunk Canal cross Beizheng Township, so that its water conservancy conditions and a relatively high soil quality combine to make the township an attractive agricultural location. Although Beizheng Township has no Class I farmland, 52.1 percent of its farmland is Class II, having a medium fertility. Its potential for comprehensive agriculture development was one reason for choosing Beizheng as a ZPSPP Resettlement Area.

**Table 4-4 Farmland Situation of Host Villages**

VILLAGE	Agricultural Households	Agricultural Population (persons)	Laborer (persons)		Farmland (ha)		Per Laborer Farming Land (ha/person)	Per Capita Farmland (ha/person)	Per Capita Irrigated Field (ha)
			Total	Male	Total	Irrigated			
<b>Beizheng Township</b>									
Beizheng Village	521	1682	406	175	207.6	98.0	0.511	0.124	0.059
Zhongle Village	430	1517	670	322	169.7	110.0	0.253	0.112	0.081
Dongnanzheng Village	411	1290	401	172	141.1	76.7	0.352	0.117	0.063
Xinanzheng Village	619	2150	807	390	158.7	148.9	0.197	0.081	0.076
<b>Weizhouzheng Town</b>									
Zhuangzitou Village	559	2149	1248	709	335.3	237.5	0.269	0.157	0.111
Nanpingwang Village	547	2179	1368	685	264.1	230.7	0.193	0.123	0.108
Beipingwang Village	333	1211	731	372	127.6	97.0	0.175	0.107	0.081
Lujiayu Villae	130	573	392	230	82.3	19.1	0.209	0.146	0.034
Sanyu Village	288	1101	692	380	185	34.1	0.267	0.168	0.031
Shangzhuang Village	189	637	409	250	78.7	5.3	0.192	0.189	0.013
Wuliu Village	63	213	138	74	23.2	10.0	0.168	0.117	0.050
Yizi Village (Weishui Town)	166	518	243	143	57.8	43.6	0.238	0.112	0.084

Beizheng Township's per capita farmland is 0.105 ha, and its per capita of irrigated fields is 0.071 ha. The villages of Beizhang, Zhongle, Dongnanzheng and Xinanzheng have the best land resources. For instance, the per capita farmland of Beizheng Village is 0.124 ha, its per capita of irrigated fields is 0.059 ha, and the farmland per capita is 0.51 ha. The farmland per capita in Zhongle Village and irrigated fields are 0.112 ha and 0.081 ha respectively. A lack of adequate labor, due to alternative employment opportunities in the nearby urban centers, has caused part of Beizheng's farmland to remain fallow or under extensive cropping, so the host villagers have expressed a willingness to allocate some their farmland to the ZPSPP resettlers.

**(2) Weizhou Town:**

Weizhou Township is located in the northeastern part of Jingxing County. Its neighbors are Weishui and Shangan Townships, Kuangshi Town and Luquan City. Like Beizheng Township, it is excellently located with respect to transportation and communications

Weizhou Township's Land Reclaimability Rate is 31.3 percent, and its per capita farmland is 0.094 ha, with 0.062 ha of irrigated fields accounting for 65.9 percent of its farmland. The Township is a center of grain production in Jingxing County. Mianyou Right Trunk Canal and Renming Eastern Trunk Canal both run through Weizhou Township, so it has relatively good irrigation conditions that, with its numerous hills and rivers, are favorable for diversified cropping.

The host villages to contribute their farmland for the ZPSPP Resettlement Areas have comparatively abundant land resources, with relatively higher per capita farmland and per laborer farming land than Jingxing County as a whole. For instance, Zhangzhitan Village's 0.156 ha per capita farmland is double the average of the whole County, as is its 0.111 ha per capita irrigated fields. Since the population is small and has relatively more land, which accounts for about 100 ha of dryland within Zhangzhitan. Since the land has potential for further development, the village can afford to allocate some land to the Resettlement Areas and will in all likelihood, as has been generally done elsewhere in China, use the received compensation to either make improvements on their remaining land or to invest in village enterprises.

**(3) Weishui Town:**

Weishui Town is a neighbor of New Zhanghewan Village. Its Yizi Village has ample farmland and a high 0.238 ha per laborer farmland, so Yizi has been asked to allocate land for New Zhanghewan Village to accommodate 170 resettlers from the Zhanghewan Village in ZPSPP Reservoir Area.

**Natural Conditions and Agricultural Production of the ZPSPP Resettlement Areas**

All villages within the ZPSPP Resettlement Areas belong to a grain, oil and vegetable production zone of low land hills and rivers, where the land appears flat and broad. Farmland is concentrated in an elevation range of 150-300 m. Soils are mainly calcareous cinnamon soil, meadow soil, moor meadow soil and cinnamon soil. The surface layer of cropping soils is composed of light-textured soil and medium-textured soil, generally 1-10 m in depth, but in the flood bed land is about 1 m in depth. The organic substance content is 1.1-1.2 percent, total nitrogen 0.089%, alkaline nitrogen 64.46 ppm. The soil layer of non-cropping land is rather thin, mostly between 20-40 cm. Natural vegetation is mainly grass, with poor coverage and severe loss of soil and water through erosion.

The annual average precipitation is 569 mm. The dynamic accumulative temperature is 4,875.4°C. The frost-free period is 190 days, and the annual sunlight is 2,714 hours. These are quite suitable conditions for growing crops.

The Ye River flows through the ZPSPP Resettlement Area, with the Jinliang and Xiaozuo Rivers joining it on the way. Ground water may be developed in the region for irrigation to supplement the Renming Canal and Mianyou Canal System.

The cropping system for the most part is two crops per annum, with a cropping index of about 150 percent. The main crops are wheat, corn and millet, and, to a lesser extent, cotton, oil crops and vegetables. The grain production level differs little from that of the rest of Jingxing County. Beizheng Township's per ha grain output in 1998 was 3,962 kg and Weizhou Township's was 3,900 kg, compared to the Reservoir Area's average 5,200 kg /ha the overall average of the five individual Resettlement Sites of 3,900 kg, and the County-wide average of 4,200 kg. With these favorable agricultural conditions, the ZPSPP Resettlement Area has considerable potential to develop its agricultural production.

#### **4.1.4 ZPSPP Resettlement Scheme**

The above analysis of the ZPSPP Reservoir and Resettlement areas' natural conditions allowed the resettlement designers to make calculations village by village of the population to be resettled; to get a resettlement methodology; and to determine the areas to be resettled.

##### **4.1.4.1 Population to be Relocated**

The population to be resettled includes (a) people living below inundation level, (b) people affected by the loss of their farmland, and (c) the natural growth population based (a) and (b). Table 4-1 shows that by the year 2006 the population to be relocated by the ZPSPP is expected to be 3,123, including an agricultural population of 2,926.

##### **4.1.4.2 Villages to Be Relocated**

In accordance with the practical conditions of the Zhanghewan Reservoir Area and Jingxing County, the ZPSPP resettlement will be land-based and on a restoration of agricultural production for the agricultural population, while the non-agricultural population will continue in their original occupations.

Those from the Reservoir Area where resources are adequate will be resettled within the boundaries of their old villages, while those from the Reservoir Area where these practical conditions are not available will be relocated elsewhere within the County.

The villages to be relocated have been determined village by village on the basis of the population to be relocated from each village. This has required the analysis of the land resources and environmental carrying capacity of both the ZPSPP reservoir area and the planned resettlement sites; consideration of the suggestions of the Jingxing County Government, as well as the opinions and stated requirements of the resettlers themselves; and a comprehensive comparative environmental carrying capacity analysis of the resettlers' requirements and the land available to be allocated.

**(1) Nanhaoting Village**

The population to be relocated from Nanhaoting by the year 2006 is 1,781, including an agricultural population of 1604 and a non-agricultural population of 177. In accordance with the comparative analysis of resettlers' requirements versus resources available, it was determined that 453 persons may be moved within the Reservoir Area, including an agricultural population of 304 and a non-agricultural population of 149. Those to be relocated elsewhere in Jingxing County are 1,328, including an agricultural population of 1,300 and a non-agricultural population of 28. The latter, although working outside of agriculture, are from agricultural households. A new resettlement sites will be established north of Zhangzhitou Village, Weizhou Town in northeastern Jingxing County for the Nanhaoting resettlers. Land will be acquired from a number of host villages: Zhuangzhitou, Shanyu, Lujiaoyu and Shangzhuang.

**(2) Nansi Village**

Nansi's population to be relocated by the year 2006 is 309 (agricultural population). A new resettlement site will be established east of Zhanghe Village, Beizheng Township in northern Jingxing County. For this purpose, land will be acquired from Beizheng, Zhangle and Dongnanzheng host villages.

**(3) Beihaoting Village**

Beihaoting's population of 442, including an agricultural population of 422 and a non-agricultural population 20 (Design Level Year 2006), will be relocated to the existing New Beihaoting Village, Weizhou Town. Land for the new resettlement site will be acquired from Zhuangzhitou Village.

**(4) Yanzhuang and Shimen Villages**

The population from these two villages to be relocated by the Design Level Year 2006 is 413, of which 170 are from Yanzhuang and 243 from Shimen Village. The resettlement site will be east of Wuliu Village, Weizhou Township. Land will be acquired from Nanpingwang, Beipingwang and Wuliu villages.

**(5) Zhanghewan Village**

The population to be relocated from Zhanghewan is 178. They will be relocated in New Zhanghewan, Beizheng Township. Land will be acquired from Xinanzheng Village of Beizheng Township, and from Yizhi Village of Weshi Town.

The population to be relocated in the above five resettlement sites is 2,622 (agricultural population) and 48 non-agricultural population. Table 4-5 and Figure 4-1 show the population to be resettled and the villages to be relocated.

The new resettlement sites are close to the Mining Area of Shijiazhuang City and the Jingxing County Seat, which are urban centers of industry and tertiary enterprise, with convenient transportation and comprehensive infrastructure facilities. This will help the recovery of the resettlers' agricultural production as well as for the development of other, diversified enterprises.

**4.1.5 Construction Plan for the New Villages at the ZPSPP Resettlement Sites****4.1.5.1 Planning Principles for the New Villages**

- (1) Planning for the new Resettlement Villages will follow principles beneficial for production and for re-establishment of community life and livelihood. The construction of infrastructures in Resettlement Village will follow a reasonable layout that can be developed in a coordinated manner and with an adequate margin for further development, taking into account population growth.
- (2) New village sites are selected according to their slope, on wild and impoverished land to the extent possible, according to the principle of protecting productive land resources.
- (3) Resettlement planning will be integrated long and short term goals, based on projected population growth, to develop construction standards and a plan for developing the new Resettlement Sites that will be implemented in stages to restore and improve the resettlers' original living standards.
- (4) In order to create a reasonable and healthy living environment for the resettlers, the planning layout for the new Resettlement Sites will be suitable to the local conditions, taking into account the physical conditions and the living customs of both the Reservoir and Resettlement Area peoples, and maintain local characteristics.
- (5) This has required, and will continue to require, consulting closely with the resettlers, listening to their opinions, taking into account their wisdom, and making a concerted effort to avoid village plans that have not received their approval.

**Table 4-5 ZPSPP Affected Villages**

Inundated Villages	Population To Be Relocated (persons)			Receiving Villages	Population To Be Relocated (persons)	Planned New Village Site
	Agricultural	Non-Agri.	Total			
Nanhaoting	1300	28	1,328	Zhuangzitou, Shanyu, Lujiayu, Shangzhuang	1300	North To Zhuangzitou (New Nanhaoting Village)
Nansi	309		309	Beizheng, Zhongle, Dongnanzheng	309	East To Zhongle Village
Beihaoting	422	20	442	New Beihaoting, Zhuangzhitou	422	New Beihaoting Village
Shimen	243		243			
Yanzhuang	170		170			
Total	413		413	Nanpingwang, Beipingwang, Wuliu	413	East To Wuliu Village
Zhanghewan Village	178		178	New Zhanghewan Of Beizheng Township, Yizhi Of Xinanzheng Weishui Town	178	New Zhanghewan Village
Summary	2622	48	2670		2622	

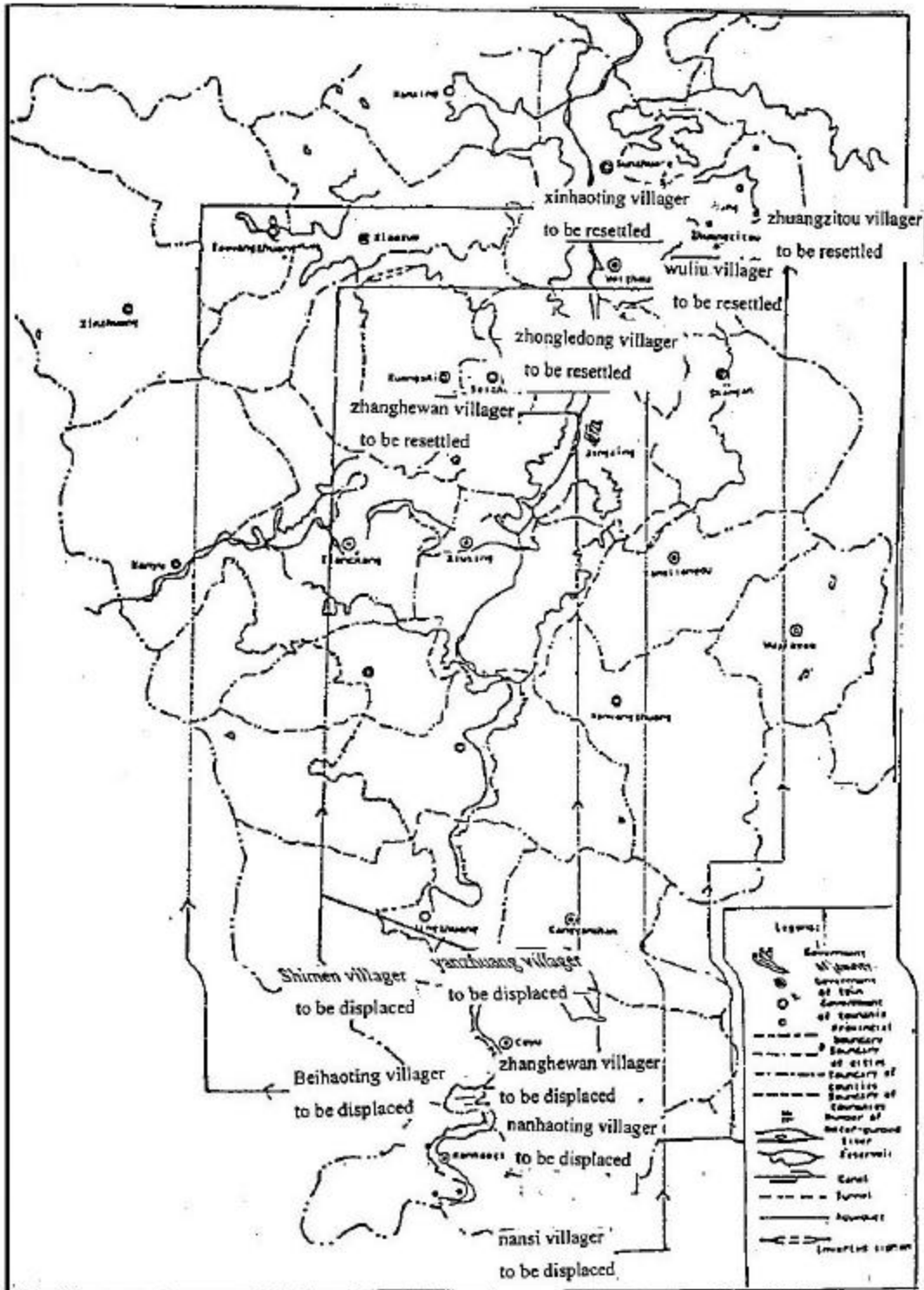


Figure 41: Map of ZPSPP Resettlement, from the ZPSPP Reservoir to the Resettlement Areas in Northern Jingxin Country

#### **4.1.5.2 Planning Standards for Villages and Towns**

Table 4-6 shows the village land indices will be taken into account when following the Planning Standards for Villages and Towns (GB 50188-93), which is the basis for planning new resettlement sites.

#### **4.1.5.3 Planning for the Resettlement Village Housing and Infrastructure**

The selection of the ZPSPP Resettlement Sites was based on consultation with local governments and with the resettlers themselves, as well as on site investigation studies. All of the Sites were measured on 1:2000 topographic maps, and the new Resettlement Villages were planned according to village layout diagrams. The scale and grade for all public facilities were determined in accordance with State requirements.

Figures 4-7 and 4-8 are a topographic map and a layout diagram for Yanzhuang and Shimen Resettlement Villages. Detailed construction drawings will be prepared prior to the construction of the Resettlement Villages.

The Construction Fund for building the new Resettlement Villages will be primarily from the compensation money received for old housing and infrastructure in the Reservoir Inundation Area. The planning for the new Resettlement Villages is based on the standards that will be improved over those in the original villages. On the other hand, if villagers wish to upgrade the standards or expand the scale beyond the resettlement specifications, they will contribute financial resources by themselves.

**Table 4-6 ZPSPP Resettlement Area's Residential Site Construction Land, Allocation Indices**

Resettlement Village	Receiving Area	Population Resettled by Year 2006 (persons)	Housing Plot		Public Housing Land		Production Housing and Facilities Land		Access Roads Land		Public Projects Land		Warehouse		Green Space		Total	
			m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha	m <sup>2</sup>	ha
	(Land Occupation Standard)	Per Person	40		6		4		7		2		2		4		65	
Nanhaoting	North To Zhuangzhitou	1328	53120	5.31	7968	0.80	5312	0.53	9296	0.93	2656	0.27	2656	0.27	5312	0.53	86320	8.63
Beihaoting	New Beihaoting	422	17680	1.77	2652	0.27	1688	0.17	3094	0.31	884	0.09	884	0.09	1688	0.17	27430	2.74
Yanzhuang Shimen	East To Wuli	413	16520	1.65	2478	0.25	1648	0.16	2891	0.29	826	0.08	826	0.08	648	0.07	26845	2.68
Nansi	East To Zhongle	309	12360	1.24	1854	0.19	1236	0.12	2163	0.22	618	0.06	618	0.06	1236	0.12	20085	2.01
Zhanghewan	North To Zhanghewan	178	7120	0.71	1068	0.11	712	0.07	1246	0.12	356	0.04	356	0.04	712	0.07	11570	1.16
	Total	2670	106800	10.68	16020	1.60	10680	1.07	18690	1.87	5340	0.53	5340	0.53	10680	1.07	173550	17.35

**Planning for Housing**

The per capita living floor space in the planned new Resettlement Villages is about 27.5 m<sup>2</sup>, and the per capita housing construction plot is 40 m<sup>2</sup>. Planning for housing will conform with the topographic conditions as well as to the resettlers' own customs and preferences. The new houses will be brick-wood or brick-concrete structures. The county will be responsible for the planning, the provision of building materials, and the construction teams. The resettlers may build housing at a higher standard than that proposed by the planning authorities, but they will have to pay the difference themselves. Resettlers may also build their own houses if they wish. In this case, they may use the general blueprints provided by the Resettlement Office if they so chose. The Public Opinion Survey for the ZPSPP Reservoir Area shows that currently some 63% of the resettlers wish to adopt a self-dismantling and self-building method, some 33% wish to unite with other households to build their houses, and 4% choose to have their houses built through the village collective.

**Building Procedure**

- (1) House land will be marked on site and distributed to each resettler household in the different resettlement sites. In addition to their being able to review the house plots indicated on a map, resettlers will be able to visit the sites for identification of their own house plots;
- (2) Statistics will be collected for resettler choices of three different building methods: 1) self-dismantling and self-building, 2) cooperation of several households to build the houses, and 3) relying on village collectives to build the houses;
- (3) Infrastructure facilities at the Resettlement Sites will be built before houses are built;
- (4) Building materials, construction teams and other aids will be provided according to the resettlers' choice of building method;
- (5) The resettlers' house building should be under direction, coordination, inspection, supervision and final acceptance by the township resettlement office.

**Funds Management**

Resettlement funds are part of the total ZPSPP investment, and the ZPSPP Project Office (ZPO) will allocate them to the Shijiazhuang City Resettlement Office (SCRO) by in accordance with an official agreement signed by the ZPO and SCRO, which includes a defined payment schedule. The use of the funds will be supervised by the ZPSPP Office resettlement supervisor, other conventional audit and HPRO and the SCRO forward the funds to the Jinxing County Resettlement Office (JCRO), in accordance with the agreement and finally to the relevant townships, villages and resettlers.

**Special Services**

Jingxing County Government will establish a Resettlement Management Service Center to provide such services as provision of building materials, transportation, and certifying construction teams for the Resettlement Sites, and other services. In addition, the County Government will also be responsible for arranging medical facilities, safety insurance and other special services to assist in the relocation of those who are especially vulnerable, such as elderly people, children, pregnant women, the handicapped, and the sick.

### **Planning for Public Facilities**

Public facilities in the Resettlement Sites include: primary schools; village committee offices; a clinics; culture centers; wells for domestic and livestock use; water towers; internal roads and paths; and retaining walls for structures and terraces and yard leveling.

The placement of public facilities within the new Resettlement Villages will be according to their functions. For instance, a typical resettlement village layout with the Village Committee Office in the center of the village, which is helpful for its function on the other hand, the schools and cultural center will be located at more quiet sites. If possible, the drinking water well will be combined with the irrigation well, to have an increased economic benefit from one multi-purpose well. This will be the case in the Yanzhuang and Shimen sites of east of Wuliu Village and also at the Zhongle site. Beihaoting and Zhanghewan villages from the Reservoir Inundation Area will be re-united with New Beihaoting and New Zhanghewan villages established in the Resettlement Area in 1977, with new facilities added to the already established host villages accommodate the population increase.

Since some Nanhaoting Village resettlers will be resettled nearby within the Reservoir Area, the public infrastructure of the old village will be reconstructed and renovated in accordance with the scale and grade of the original buildings.

**Table 4-7 Public Facility Standards for the ZPSPP Resettlement Sites**

	FROM:	Nanhaoting	Zhanghewan	Beihaoting	Nansi	Yanzhuang & Shimen	
PUBLIC FACILITY	TO : UNIT	North To Zhuang- Zhitou	New Zhanghewan	New Beihaoting	East To Zhongle	East To Wuliu	TOTAL
Primary School	m <sup>2</sup>	550	80	200	220	180	1,230
Village Commission	m <sup>2</sup>				50	70	120
Clinic	m <sup>2</sup>	50		35	40	30	155
Scientific & Technical Cultural Center	m <sup>2</sup>	60	30	40	45	30	205
Width Of Main Street	m	12			10	10	
Well For Domestic and Livestock Use	Set	1	1	1			3
Water Tower	Set	1	1	1	1	1	5
Walking Way	km	3.1	1.1	1.7	2.0	1.5	9.4
Retaining Wall	m <sup>2</sup>						1,500
Yard Leveling	m <sup>3</sup>						74,300

### **Planning for Domestic Water**

In order to ensure resettlers' domestic water, a motor pumped well will be drilled in New Nanhaoting, New Zhanghewan and New Beihaoting villages for drinking water. In Nansi and the Yanzhuang & Shimen Resettlement Sites, wells will function both for drinking and irrigation. A water storage tower will be built in each Resettlement Site. Well water will be pressurized by the tower and purified by chemicals and sand filter and will run to households from the storage tower.

The design and planning standards for the daily quantity of well water via the water storage tower and pipe system are as follows:

Domestic Water for Residents in Rural Areas:	60 Liter/Person
Water for Livestock:	50 Liter/Person
Domestic Water for Residents in Urban Areas:	80 Liter/Person

The design standards take into account a certain margin for further development to accommodate a gradually increasing population, development of the local economy, and an anticipated rising standard of living.

### **Planning for the ZPSPP Special Infrastructures**

The planning for infrastructure in the resettlement sites, including access roads, power and telecommunication and broadcasting lines, will be included in economic development plans of the local county.

**(1) Planning For Transportation Facilities:** All villages in the Resettlement Area have good transportation facilities. There are highways from New Zhanghewan Village and New Beihaoting Village to their respective townships and to other neighboring villages.

The Zhuangzhitou Resettlement Site lies northeast of Zhuangzhitou Village. There already is a 1.5 km gravel access road from Zhuangzhitou to the Resettlement Site. The road will be reinforced, widened and repaired for the resettler relocation.

A total of 309 resettlers will be accommodated in the Resettlement Site known as "Zhongle Village", northeast of Zhongle Village. At present, there is an earthen access road through Zhongle to the Resettlement Site. For the convenience and safety of Zhongle villagers, an additional inter-village access road with 3.0 km length will be built to the Resettlement Site bypassing Zhongle Village. This road will be 5 m in width.

Some 413 persons from Yanzhuang and Shimen villages will be resettled in the Resettlement Site named "East To Wuliu Village". An earth-gravel road 7 m in width exists on the southern edge of Wuliu Village, which will be reinforced, widened and repaired. This road will be paved and lengthened to 3.5 km to be an access road to the new Resettlement Site.

Table 4-8 shows the total of 4.8 km of tractor ways and 9.4 km of walking paths to be built in the five Resettlement Sites for the convenience and economic use of the resettlers.

**Table 4-8 ZPSPP Resettlement Area Access Roads (km)**

Item	North To Zhuangzhitou	New Zhanghewan	New Beihaoting	East To Zhongle	East To Wuliu	Total
Intervillage Roads	1.5			3.0	3.5	8.0
Tractor Roads	1.6			1.6	1.6	4.8
Path For Walking	3.1	1.1	1.7	2.0	1.5	9.4

**(2) Planning For Telecommunication Lines:** As Table 4-9 shows, telecommunication lines for the resettlement sites will be built by using plastic coated wires and 7.5 m high concrete poles. All resettlement villages will have telecommunication connections to their respective townships and towns.

**Table 4-9 ZPSPP Resettlement Area Telecommunication Lines (km)**

Resettlement Site	FROM:	TO:	Length (km)	Remarks
North To Zhuangzhitou	Weizhou Town	New Nanhaoting	8.0	
East To Wuliu Of Weizhou	Weizhou Town	Yanzhuang Shimen Village	6.5	
East To Zhongle	Beizheng Township	Nansixin Village	2.5	
New Beihaoting	Weizhou Town	New Beihaoting	3.5	
New Zhanghewan	Beizheng Township			Exists

**(3) Planning for Power Cables:** Power cables for the Resettlement Sites include 10 kV high-voltage and 380V/220V low-voltage lines and all other necessary power equipment, such as transformers.

#### a. East to Zhongle Village

East to Zhongle Village can be connected to Jingxing County's power system through a tap to the Meat Cattle Processing Plant of No. 531 (having taken into account load increasing). The 10 kV cable connection will be 6.4 km long and will use LGJ-50 aluminum wire. A 0.2 km long low-voltage 380V/220V illumination line will also be installed, with LGJ-35 conductor. In accordance with the projected demand for electricity, a 50 kVA and a 100 kVA transformer, totaling RMB 296,800 investment, will be set up.

#### b. North to Zhuangzhitou Village

The Resettlement Sites near Zhuangzhitou will have power connects from Zhuangzhitou. Since line capacity at present from Zhuangzhitou Village to Weizhou Town is insufficient for this increased requirement, the original LGJ-35 conductor will be replaced by LGJ-50 conductor. The power conveyance will be high-voltage 10kV cable 3.58 Km in length. The Resettlement Sites will also have 380V/220V low-voltage illumination wire 1.0 km in length. There will be a well for drinking water and three (3) motor pumping wells for irrigation in the Resettlement Site. Therefore, one set of 50KVA and 2 sets of 100 kVA transformers will be installed. According to calculation, the 100kVA transformer is used for both the drinking water well and irrigation well and will be operated with alternate starting times.

#### c. East to Wuliu Village of Weizhou Town

In the East to Wuliu Resettlement Site, one motor pumping well for both irrigation and drinking water will be set up. The 1.4 km long 10kV power line will come from Weizhou Town, with LGJ-50 steel-cored aluminum wire. The low-voltage illumination line to be installed will be 0.25 km long. One 50KVA and one 100KVA transformer will be set up for the site's motor pumping well and for illumination respectively

#### d. New Beihaoting and New Zhanghewan Villages

Since these two villages are to accept resettlers from their former village sites in the Reservoir Area, the original lines in New Beihaoting and New Zhanghewan will be used for establishing power cable connection. A 1.2 km long 10 kV power cable, a 0.4 km long low-voltage illumination wire, one 50KVA and one 100KVA transformer will be installed for New Beihaoting. New Zhanghewan will have a 0.56 km long 10 kV power cable, some 0.2 km of low-voltage illumination wire, and one 100KVA transformer for both illumination and for its one additional drinking water well.

Table 4-10 shows the planned power lines for the Resettlement Sites.

**Table 4-10 ZPSPP Resettlement Area Power Lines**

Resettlement Site	10 kV Line			380V/220V Line	Transformer	
	FROM:	TO :	Length (km)	Length (km)	100 KVA (Set)	50 KVA (Set)
East To Zhongle	County Meat Cattle Processing Plant	East To Zhongle for All Motor-Pumping Wells	6.4	0.2	1	1
North To Zhuangzhitou	Zhuangzhitou Village	North To Zhuangzhitou for All Motor-Pumping Wells	3.58	1	2	1
East To Wuliu	Weizhou Town	East To Wuliu for Motor Pumping Well	1.3	0.25	1	1
New Beihaoting	New Beihaoting Village	Motor Pumping Well In The Village	1.2	0.4	1	1
New Zhanghewan	New Zhanghewan Village	Motor Pumping Well In The Village	0.2	0.2	1	

#### (4) Broadcasting Lines<sup>1</sup>

New Beihaoting and New Zhanghewan villages have broadcasting lines. As shown in Table 4-11, the broadcasting lines for the other three new Resettlement Sites will be connected from their respective township or town.

**Table 4-11 ZPSPP Resettlement Area Broadcasting Lines**

Resettlement Site	From:	To:	Length (km)	Remarks
North To Zhuangzhitou	Weizhou Town	New Nanhaoting	8.0	
East To Wuliu	Weizhou Town	Yanzhuang Village	6.5	
East To Zhongle	Beizheng Township	Nansixin Village	2.5	
New Beihaoting				Exists
New Zhanghewan				Exists

#### 4.1.6 Income Restoration

The Resettlement Design Team has defined the scope of the Resettlement Economic Development Planning and what its main components are likely to be. The Team has carried out market predictions in accordance with current socioeconomic conditions and has, after identifying a number of specific measures, determined an investment amount in accordance with the size of the affected population. The basic methodology for carrying out the PRC's policy of Development Resettlement is to first of all determine the planning objectives. In this case, the main objective is restoration of the community farming base, followed by promoting a diversification of economic activities. To achieve these objectives will require: allocating the necessary amount of land; carrying out soil improvement and construction of water conservancy facilities, transforming dry land into irrigated land; optimizing the cropping structure; and popularizing scientific farming and the development of a diversified economy.

The planned move from the Reservoir Inundation Area and the Resettlement Sites is based on careful investigation of the current socioeconomic conditions of both the Reservoir and the Resettlement Areas. During the actual relocation, resettlers' income may be reduced. However, the Resettlement Sites have favorable opportunities to develop secondary and tertiary industries, and through long-term post-relocation support, resettlers' income will improve substantially. According to the forecast, per capita income of resettlers after their move to the Resettlement Sites is over RMB4,000 yuan after 2006, which is higher than that their current income that is RMB2,299 yuan.

##### 4.1.6.1 Plan to Develop Land Resources in the Reservoir and Resettlement Areas

Development and utilization of the land resources in the Reservoir and the Resettlement Receiving Areas is essential for successful resettlement. Most of the resettlers are peasants, perennially engaged in farming. An objective of the resettlement planning will be for them to be able to get used to their new environment as soon as possible, and development of land resources is a way to achieve this.

The development of the land resources will rely on two methods: (a) reclamation of new land and (b) improvement of existing farmland. Land reclamation and improvement will ensure that the per capita farmland holding and its unit production value after resettlement will be no lower than that before resettlement.

**Nanhaoting Village:** Nanhaoting Village, where there are large areas of barren hill and wild grassland, will account for most of the resettlers staying in the Reservoir Area. Nanhaoting's unused land accounts for 62.5 percent of the total Township land area.

Nanhaoting Village will receive 304 ZPSPP resettlers (agricultural population). Some 22.67 ha of farmland will be reclaimed for them. Owing to the relatively low elevation of the newly reclaimed farmland and the relatively mild land formation, 20.6 ha will be transformed into irrigated fields using pumping irrigation, so that Environment Carrying Capacity will be further increased.

**Beizheng and Weizhou Towns:** Beizheng and Weizheng Towns in the Resettlement

Receiving Area have a smaller percentage of unused land, 32.1 percent and 47.1 percent of their total land area, respectively. Therefore, although there is relatively more farmland in the Resettlement Area, only a little farmland is not being fully used or is lying fallow. Because of this, the land utilization and development focus in the Resettlement Area will be further promoting the production capacity of the existing farmland, that is, on transforming dry land into irrigated fields, renovating low-yield fields to be high-yield fields, upgrading the unit area output, and in every way possible increasing land and water capacity to aid the ZPSPP resettlers in getting as much out of the existing land as possible.

### **Standard for Production Arrangement of Resettlers**

Farmland resources in Jingxing County are not great, and there is little barren land available for utilization and development. The report Summary of Statistics Data prepared by the Jingxing County Statistics Bureau indicates that the average County per capita farmland holding is 0.082 ha, including 0.039 ha of irrigated fields. The per capita farmland holding of the ZPSPP Reservoir Area is 0.077ha, including 0.021ha of irrigated land. Resettlers who are engaged will be allocated with 0.087 ha of farmland per capita, including 0.047 ha irrigated land, which is higher than the per capita averages of Jingxing County or of the Reservoir Area. In addition, they will be given 0.067 ha per capita wild grassland. This is in keeping with the principle that resettlers will have their original level of land holdings or higher. In the process of providing the ZPSPP resettlers with more than adequate land, the per capita holdings of the host villages will also be maintained at an appropriate level. Table 4-12 compares the per capita farmland holding level of Resettlement Area host villages after resettlement and the per capita farmland holding of resettlers before and after their resettlement.

### **Plan for Resuming Agricultural Production and Transforming Farmland**

The key to realize the main resettlement objective that the resettlers' production and standard of living reach and exceed the original pre resettlement level as quickly as possible is the resumption of production and transformation of farmland.

#### **Main Contents of the Plan for Resuming Agricultural Production:**

1. Based on careful site investigation, and consultation with both the resettlers and host villagers, the former will sign agreements, under the government's direction, for land allocation. The land allocation will be completed before the resettlement.
2. The construction of water conservancy projects will be organized within the framework of both the ZPSPP construction schedule and the resettlement plan and completed in advance of the resettlement.
3. The land allocation procedure will be completed prior to the relocation, and site visits to the Resettlement Sites will be organized early on for resettler household representatives to familiarize them with the site conditions and to assist them in understanding the measures being taken to effectively resume their agricultural production.

**Table 4-12 Comparison of Before and After ZPSPP Relocation Per Capita Farmland Holdings (Ha/Person)**

		Existing Level		After Land Redistribution		Village With People Resettled	Resettlers' Holdings Before Relocation (the year 2006)		After Relocation	
		Farmland	Irrigated	Farmland	Irrigated		Farmland	Irrigated	Farmland	Irrigated
1	Beizheng	0.123	0.058	0.117	0.054	Nansi	0.066	0.011	0.087	0.047
	Zhongle	0.111	0.073	0.103	0.069					
	Dongnanzheng	0.109	0.060	0.108	0.059					
2	Nanpingwang	0.121	0.116	0.112	0.103	Yanzhuang	0.053	0.019		
	Beipingwang	0.105	0.080	0.095	0.072	Shimen	0.096	0.005	0.087	0.047
	Wuliu	0.110	0.047	0.098	0.047					
3	Zhuangzhitou	0.156	0.111	0.123	0.096	Beihaoting	0.163	0.091	0.087	0.047
	Sanyu	0.168	0.031	0.115	0.031					
4	Lujiayu	0.144	0.033	0.125	0.033	Nanhaoting	0.048	0.027	0.087	0.047
	Shangzhuang	0.123	0.008	0.110	0.008					
5	Yizi Village	0.112	0.084	0.095	0.074	Zhanghewan	0.143	0.0357	0.087	0.047
	Xinanzheng	0.074	0.069	0.071	0.067					

**Table 4-13 ZPSPP Resettlement Area Land Acquisition and Farmland Development (Ha)**

Resettlement Sites (Villages)	Agricultural Population Resettled (persons)	Farmland Redistribution (ha)		Farmland to be Improved And Developed (ha)		Resettlement Villages
		Subtotal	Irrigated	Dry Land To Irrigated Field	Capital Construction Of Farmland	
I Resettlement Receiving Area	2622	227.9	67.7	53.6	108.4	
1 Beizheng, Zhongle, 1 Dongnanzheng	309	26.9	12.9	11.6	2.4	Nansi
2 Nanpingwang, Beipingwang, 2 Wuli	243	35.9	16.3		19.6	Yanzhuang, Shimen
3 Zhangzhitou, Shanyu, 3 Lujiaju, Shangzhuang	1300	115.6	12.4	42.0	62.4	Nanhaoting
4 Zhuangzhitou (New Haoting)	422	34.0	18.4		15.8	Beihaoting
5 Xinanzheng, Yizi	178	15.5	7.7		8.2	Zhanghewan
II Reservoir Resettlement Receiving Area	304			20.6	8.4	
1 Nanhaoting	304			20.6	8.4	Nanhaoting
III Total	2926	227.9	67.7	74.2	116.8	

Remarks:

1. Resettlement Population Refers To The Population at Design Level Year 2006
2. Planned Farmland Irrigation Is Agricultural Production Land, Excluding Land For Resettlement Village Residential Sites. There is a non-agricultural population of 197.

4. Technical training in scientific farming methods will be given to both the resettlers and to the host villagers, including subjects such as fruit, domestic fowl, and animal production.
5. To make it easier for resettlers to rapidly resume and develop agricultural production, the construction of the Resettlement Villages and their related public and infrastructure facilities will also take place before relocation.
6. By making use of convenient traffic conditions of the Resettlement Sites, the resettlers will have more opportunities to develop secondary and tertiary industries, and their income structure will change. Jingxing County relevant governmental departments will help the resettlers increase their income taking advantage of these opportunities.

### **Renovation Plan for Farmland**

Resettlement villages need to acquire a total farmland of 223.2 ha (including Resettlement Area land). This includes 67.8 ha of dry land to be transformed into irrigated land. It is planned to develop 75.9 ha of farmland. Table 4-13 shows the resettlement area land acquisition and farmland development.

### **Primary Measures for Developing Agricultural Production**

#### **Exploiting Ground Water**

The ZPSPP Resettlement Area in northern Jingxing County is located at the downstream end of the Renmin and Mianyou canals, which will provide irrigation during normal years. However, to avoid any potential negative impacts on agricultural production during dry years, investigation and development of ground water is a key feature of the resettlement planning. The investigation of the groundwater in northern Jingxing County indicates that although the groundwater is relatively deep, the water-bearing layer is extensive, has a good yield, and the water quality complies with standards for irrigation and drinking water. Output of a single well will be in the range of 30-80 m<sup>3</sup>/h, which indicates favorable conditions for groundwater exploitation. Therefore, a primary measure for developing agricultural production will be the drilling of deep wells to exploit groundwater as a supplement to surface water irrigation.

#### **Capital Construction of Farmland**

The capital construction for farmland will improve low quality and uneven, rugged fields and will transform dry land into irrigated fields. Specific engineering measures will include: land leveling and cut and fill; coffering and bunding; reconstructing water-damaged terrace bunds to preserve soil; measures to increase fertility and water retention; and other measures of erosion control to promote farmland productivity. The detailed site investigation indicated that the total cost for capital construction for 1 ha of land will be RMB5,400 yuan, including engineering expense RMB3,450 yuan, as well as other auxiliary expenses of RMB1,950 yuan.

#### **Fertilization and Soil Improvement**

The soil in the ZPSPP Resettlement Area is calcareous alluvial soil, with poor structure, porosity and physical chemical performance. Most is Class III-Class IV, with some Class V. Because the soil productivity is low, and grain yield is low and unstable, considerable effort will be required to improve the soil.

Soil improvement measures will include deep plough and thorough harrowing, to increase fermentation of soil to 20 cm in thickness, and adding organic fertilizer.

### **Science and Technology Training**

Resettlers and host villagers will receive training in production operations and in agricultural technology and management before the former move to the new Resettlement Site. This will include:

1. Introduction, before moving to the Resettlement Sites, to the Resettlement Area's natural and agricultural production conditions, as well as to the characteristics and methods of technical operations suitable to the Area. This is to help the resettlers get used to the new environment and to quickly start production activities;
2. Training of agricultural workers in modern scientific technology and operation methods for arable farming, timber and fruit tree growing, poultry raising, primary and secondary food processing, and so on;
3. Management training in agricultural and secondary occupations to establish and support a diversified economy;
4. Introduction to new technologies of field irrigation, water saving irrigation methods, and the use and maintenance of motors and pumps.
5. Setting up demonstrative fields in the Resettlement Sites to promote farming technology.

Hebei Province's resettlement offices at all levels have rich experience in training resettlers in production and agriculture technology management, with on the ground good results. The Hebei Province Resettlement Office (HPRO) has set forth a plan for the HPRO and the Department of Economics at Hebei Agricultural University to hold a "Training Class for Reservoir Resettlement Management and Practical Production Technical Personnel in Hebei Province". The class will include lectures on agricultural and production technology, for instance: high output and quality elite seeds ("Two High and One Elite"); rural shareholding systems; economic contract legislation; practical technology of forestry and fruit production; aquaculture; animal husbandry; poultry raising; and greenhouse vegetable growing. Classes will also visit advanced resettlement villages and resettler-run enterprises of other projects.

The HPRO will run annual a training class for production technology and scientific management. The SCRO will also begin training classes for one or two kinds of production technologies each year.

Training objectives will include broadening the trainees' understanding and perspectives to help them to find ways to alleviate their own poverty and to become rich through the application of new technologies.

### **Selection of Good Strains**

Upgrading of and selecting good strains will promote agricultural production development. In accordance with the detailed site investigation, local varieties can be improved through adoption of the following strains: Corn Nong Da No. 60; Wheat Ji Mai Nos 26 and 27; Millet Ji Gu No. 11 and Yu Gu No. 2; Soybean Ji Duo No. 7; Red Bean Ji Hong Nos 5, 2 and 4; and Sweet Potato Nanjing No. 1. Adoption of good strains with drought-disease resistance and high yield properties will also be carried out for local grains.

Based on the field experiments conducted by the Jingxing County Agricultural Bureau

(JCAB), selection of good strains will increase output and income. Everything being equal, fields adopting the above strains will increase output by 515 percent over fields with the original strains.

#### 4.1.6.2 Plan for Water Conservancy Works in the ZPSPP Resettlement Area

##### Water Sources

Except rain, the water resources available in the ZPSPP Resettlement Area for cropping include surface water, via irrigation canals, and groundwater irrigation by deep bore well.

- (1) **Surface Water:** The centralized Resettlement Sites are in Beizheng Township's Beizheng and Zhongle villages and in Weizhou Town's Nanpingwang, Beipingwang and Zhuangzhitou villages. All are to the northwest, north and northeast of Jingxing County Seat. The long-term average rainfall in this area is 569 mm. Since the rainfall greatly varies over the years, and from year to year, field irrigation mainly depends on water diverted from the Mian River through the Mianyou and Mianzhuo Canals. The upstream stretch of the Yi River above Beihengkou, before it joins the Gantao River, is called the Mian River. In recent years, the flow of the Niangziguangquan, a large grouping of natural springs, into the Mian River has decreased, and so water volume diverted through Mianyou Canal has also decreased. Adding to this reduction of water into the Mian River has been an increase in water consumption for industry, agriculture and domestic usage in upstream Siangxi Province. The insufficiency of surface water has restricted further development of agricultural production in the ZPSPP Resettlement Area. It may be possible to ease the Mianyan Canal's water shortage, through discharging water from the ZPSPP Reservoir, diverting Gantao River through the Yinggan Canal and the Mian River through the Jimian Canal. But the three largest Resettlement Sites are all on the far downstream stretch of Mianyan and Mianzhu Canals' trunk sections, so even with the alleviation measures made possible by the ZPSPP Reservoir, the water source for the Resettlement Area will continue to be relatively poor during drought years.
- (2) **Groundwater:** Because of the limitations of surface water irrigation described above, it will be necessary to exploit ground water developing deep bore well-irrigation. Overall, groundwater resources in Jingxing County are poor. The Resettlement Areas is in a low mountainous and hilly area of elevation 200-300 m. The land inclines gradually from west to east, and is mainly limestone of the Ordovician System and gneiss of the Low Proterozoic Earthen formation, with high permeability and numerous fault zones. Groundwater in this region of Jingxing County is generally 20-30 m below the surface. Around Beizheng Township's Zhongle Village, the groundwater is as deep as 80-90 m. The groundwater is mainly supplemented by atmospheric water, water leakage from rivers and irrigation canals running close by and karst fissure water. Because the water volume in the surface upper layers is not ensured, groundwater exploitation will be conducted in the deepest layers. Chemical analysis shows that the groundwater consists of 7 categories. In the Resettlement Area, the main water type is  $A \text{HCO}_3^- - \text{Ca}^{2+} + \text{Mg}^{2+}$ , with a temperature of about 15 C and mineralization at 0.27-0.39, which meets the requirement of agricultural irrigation water.

##### Soil

Soil in the Resettlement Area is mainly cinnamon and calcareous cinnamon soil. The soil

forming substances for cinnamon soil are a variety of weathered rock-cliff debris and alluvium. Their texture is light to medium soil. The pH is 6.8-7.8, and the content of carbonate of lime is less than 1 percent. The calcareous cinnamon soil is spread widely in the lower mountains and has the widest distribution of any soil subcategory. It is a major farming soil with a higher maturation degree, appropriate texture and good perviousness. The soil layer is generally thick, pH is 7.5-8.5, and the content of carbonate of lime is about 8%. The ZPSPP Resettlement Area soil fertility is shown in Table 4-14.

**Table 4-14 Soil Fertility in ZPSPP Resettlement Area**

Soil Subcategory	Alkaline Nitrogen (PPM)	Quick -Acting Phosphorus (PPM)	Quick -Acting Potash (PPM)	Substitution Quantity (me/100g)	Organic Substance (%)	Total Nitrogen (%)	Total Phosphorus (%)
Cinnamon Soil	98.68	2.51	137.17	13.05	2.609	0.137	0.05
Calcareous Cinnamon Soil	68.4	3.74	110.7	14.09	1.59	0.143	0.038

### **Plan of Water Conservancy Works**

#### **The Plan for the ZPSPP Reservoir Irrigation**

Several irrigation canals are downstream of the Zhanghewan Reservoir and within Jingxing County. These are the Mianyou, Renming and Xigou (1st phase works) Canals covering a large irrigated area, and the Yinganjimian Canal. The trunk channel of the Mianyou Canal diverts water in the vicinity of Didu on the Mian River. Its designed diversion flow is 10 m<sup>3</sup>/s. The Mianyou Canal divides into a Right and a Left Channel at Falulin. The Renming Canal diverts water downstream of Tianchang Town. Its trunk channel's diversion flow is 7 m<sup>3</sup>/s. It also divides into an East and a West Channel. The Mianyou and Renming canal systems together cover an irrigated area of about 22,000 ha, including 15,333 ha within Jingxing County. The Zhuangzhitou, Wuliu and New Haoting Resettlement Sites will be in the irrigation area served by Renming Canal's East Channel. The Nanpingwang, Beipingwang, Lujiayu, Shangzhuang, Shanyu, New Haoting Resettlement Sites are in the Mianyou Canal's Right Channel's irrigation area. Beizheng Township's Zhongle and Beizheng Resettlement Sites and the Resettlement Site at Donguanzheng are in Mianyou Canal's Left Channel's East Sub-channel irrigation area.

The ZPSPP Reservoir's designed irrigation area is 8,167 ha, all of which is in Jingxing County. According to local irrigation plans, the Xiyue Canal will be extended by 62.3 km as part of its 2nd phase works. This will increase the irrigated area by 2,133 ha, mainly in the northwestern part of Jingxing County. The farmland originally irrigated by the Yuejin Canal will continue to be irrigated, through putting an intake in the ZPSPP Dam. Meanwhile, in the vicinity of Jingzhuang, a diversion sluice gate will be built on the Xiyue Canal to divert water to the Yinganjimian Canal. This will increase the flow of the Yinganjiunian Canal by 3 m<sup>3</sup>/s, so that the irrigation guarantee rate for 200 ha of farmland surrounding Mianyou Canal's Right Channel will be improved.

The pressure during the dry years in the Mianyou Canal's Left Bank and the Renming Canal irrigation areas will be lightened by the diversion of Gantao River water to relieve the Mian River shortage, and this will also benefit the ZPSPP Resettlement Area.

The planned building of the Dongyue Canal, with a designed diversion flow of 3.5 m<sup>3</sup>/s, a trunk channel 59 km long, and an irrigation control area of about 2,200 ha, will also improve

irrigation in the southeastern part of Jingxing County.

In addition, the farmland originally under irrigation by Yuejin Canal will be continuously supplied with water through the intake preserved in the dam.

### The Plan for Groundwater Exploitation in the ZPSPP Resettlement Area

It will be necessary to exploit groundwater in the Resettlement Area to supplement surface water irrigation, so that dryland may be transformed into irrigated fields and the resettlers and their livestock are ensured a reliable water supply through drought years. The resettlement standard of 0.047 ha per capita irrigated field holding will define the area of dry land that needs to be transformed into irrigated fields as well as the number of deep-bore wells, each well irrigating 13.34 ha, required. However, per capita irrigated field in inundation area and throughout the county is 0.038ha and 0.041ha respectively.

A total of 2,622 ZPSPP agricultural resettlers will be relocated to the Beizheng Township and Weizhou Town Resettlement Area. To accommodate them, 53.59 ha of dry land will need to be converted to irrigation and six (6) machine-pump wells will need to be drilled. Table 4-15 shows the plan for developing agricultural water conservancy works in the Resettlement Area.

**Table 4-15 ZPSPP Resettlement Area Water Conservancy Works Development Plan**

Resettlement Site	Conversion of Dryland To Irrigated Fields (Mu)	Machine Pump Wells For Irrigation (Set)	Groundwater Depth (M)	Water Flow of Single Well (M <sup>3</sup> /H)	Hole Depth (M)	Drilling Price (RMB Yuan/Meter)	Cost of Associated Facilities (10,000RMB Yuan)	Investment (10,000 RMB Yuan)
East To Zhongle	11.6	1	80-86	60-80	300	700	33.81	33.81
East To Wuliu		1	20-30	30~50	320	700	34.72	34.72
North To Zhuangzhitou	42.0	4	25-30	20~30	350	700	39.45	157.8
<b>SUBTOTAL</b>	<b>53.6</b>	<b>6</b>						<b>226.33</b>
Reservoir Resettlement Site at Nanhaoting	14.3	Reconstruct 3 Pump Stations (Upon Compensation For Original 7 Pump Stations)						8.4

Note: Machine-pump wells of East to Zhongle village and East to Wuliu Village will be used for both irrigation and domestic and drinking water supply.

#### 4.1.6.3 Plan for Developing a Diversified Economy in ZPSPP Resettlement Area

In the 1980s, China experienced a series of economic reforms resulting in social change that has significantly influenced the masses of Chinese peasants, the ZPSPP resettlers included.

The views and ideology of Chinese peasants have undergone a silent transformation that can be seen in the following ways:

1. Their mode of thinking has been transformed from a narrow approach to a multi-dimensional one;
2. They no longer depend on land as their sole means of livelihood;

3. They are moving out of their living area to initiate and participate in the booming family, village and township commercial enterprises; and
4. Their commercial acumen has been greatly stimulated by China's developing market economy.

With this transformation in thought and action, China's peasants are gradually commencing the process of becoming rich. In Jingxing County, for instance, a 1998 report shows that total income from non-cropping sources is as high as 80 percent. After producing their own grain and submitting the grain required for public purposes, the peasants have begun to turn their surplus energy to secondary and tertiary industries.

The resettlers relocated by construction of the Zhanghewan reservoir in 1977 shared in the general poverty of those times. In the last decade, they have benefited from the more advantageous location of their resettlement sites in Beizheng Township and Weizhou Town, where proximity to the Jingxing County Seat and to the Shijiazhuang Mining Zone has provided opportunities for many of them to become rich through involvement in transportation and trading. Presently there are more than 100 vehicles in New Zhanghewan Village, many of them heavy trucks that contract for hauling coal and other commodities, and those with an annual net income over RMB2,000 yuan account for almost eighty percent of the total population.

The new business climate and opportunities due to closeness to urban centers need to be taken into consideration while preparing the ZPSPP resettlement planning, so that resettlers are able take advantage of the favorable location of the Resettlement Area. To this end, resettlers and host villagers have met together, including 30 percent women participants, to discuss and plan for ways to encourage a diversified economy, and adopt their suggestions

### **Plan for Forestry and Horticultural Production in the ZPSPP Resettlement Area**

The resettlers relocated in the five Resettlement Sites will be encouraged to plant individual fruit trees in the surrounding areas, on the side of roads, along canals, on field borders, and by their homes, to make full use of idle land, sides and corners of land, and unused slopes. The local governments and resettlement of fices will provide fruit and other tree saplings as well as technical consultation and direction.

Apple, walnut, apricot, poplar, and tung trees will be especially encouraged, although a Resettlement Site's special characteristics will be taken into account in choosing trees. For instance, the following trees will be encouraged the specific sites:

Beizheng	Apple, Walnut, Apricot
North To Zhuangzhitou	Apple, Walnut, Date
New Zhanghewan	Apricot
New Beihaoting	Apple, Date

Ten fruit trees per person will be the objective of the planting. Certain areas have been chosen for developing persimmon and other economic trees to increase household economic income, to beautify the environment, and prevent loss of water and soil in order to maintain ecological balance. The above fruit trees normally bear fruit in three to four years and enter into full production in five years.

### **Plan for Animal Husbandry Development in the ZPSPP Resettlement Area**

Resettlers will be allocated a per capita 0.067 ha of unused slope land and wild grassland in the Resettlement Area. The development of grain production will bring about a corresponding development of animal husbandry and pig-raising. Zhuangzhitou, Nanpingwang and Beipingwang all belong to Jingxing County's main pig-raising zone. In the RAP, much emphasis will be given to methods of family pig-raising, with encouragement for each person to raise one (1) pig. The Government and Resettlement Offices will take initiative to introduce good species and to promote scientific methods to increase per capita income from animal husbandry.

### **Development of the Private Economy**

To stimulate development of the private economy, such as private transportation, the restaurant and service industry, and private labor, direction will be given to the resettlers engaged in these occupations so that they will be able to provide better service to the market economy. One of the chief measures will be for the JCRO and township resettlement offices to assist resettlers in gaining information and contacts regarding marketing to and work with enterprises, factories and markets in Jingxing County Seat, Shijiazhuang City's Mining Area and in Luquan City. This assistance will be especially important for agricultural households seeking to diversify the household economy through non-agricultural means.

Aside from the traditional endeavors such as timber and fruit production, animal husbandry, and so forth, construction of the ZPSPP will afford new opportunities in aquaculture and tourism.

Fish breeding in the ZPSPP reservoir may be carried out by families or collectives, within limits imposed for protecting the reservoir water quality. The Zhanghewan Reservoir Administration Section (ZRAS) under the JCHB has already had experience with fish breeding using cages, and they recommended Tiapia as the major species for further aquaculture development. Resettlement planning will explore aquaculture further as a way to increase resettlers' income.

The Zhanghewan Reservoir is only 16 km from a popular scenic area at Changyan Mountain, and with the recently completed Tai-Shi Expressway, both areas are now an easy drive from Shijiazhuang. There are a number of other scenic areas as well between Shijiazhuang and Jingxing County Seat and the reservoir area, such as Baishan Rock and Thousand Bulbar Rock and Cangyan Mountain. The more detailed stage of resettlement planning will also examine more closely opportunities for developing local tourism to offer resettlers a chance to increase their income.

#### **4.1.6.4 Plan for Reestablishing the Living Standard of Non-Agricultural Resettlers**

The ZPSPP non-agricultural resettlers account for 6.3 percent of the total resettler population. Most of the non-agricultural resettlers are engaged in private trade or transportation, in the building industry or in other labor services. A few are in township administration and enterprises or in other township or village institutions. These administrative organizations will be reconstructed on the basis of their original function, scale and standard, so these resettlers will easily re-gain their pre-resettlement standard of living. BHIDRI, local governments, and the ZPSPP construction unit will, however, undertake a number of

measures, listed below, to ensure that non-agricultural resettlers are able to maintain or exceed their original standard of living after resettlement:

1. Those resettlers employed by enterprises or institutions will continue their original occupation.
2. Private businessmen and laborers will receive information on markets and operation conditions on a regular basis.
3. The housing standard for non-agricultural workers will be ensured the same as for agricultural resettlers.
4. Non-agricultural resettlers living on a fixed income will be given a salary during the relocation period, and those working in the private economy or as laborers will be given an allowance for relocation loss.

#### **4.1.7 Social Adjustment for Resettlers**

Since those displaced or losing land because of the ZPSPP construction and inundation will be doing so involuntarily, it is to be expected that both the resettlers and the host villagers will experience new psychological, physiological, and sociocultural pressures and challenges during the relocation period.

Experience proves that many kinds of pressure that the resettlers feel can be avoided or eased provided appropriate policies and positive measures are adopted in the resettlement planning phases of relocation and production recovery. During the design period, planning for the ZPSPP resettlement puts much emphasis on supporting the affected people through the period of social adjustment.

The resettlement planning and design personnel have worked among the affected communities for a relatively long time and have had much contact during the Detailed Site Investigation with the villagers of both the Reservoir and Resettlement Areas. Through talking with the villagers, the resettlement plan designers have come to understand the people's thoughts and requirements first hand. Most resettlers have said that they want to respect the national interests and to accept whatever arrangement the government has to offer. However, a few have expressed their worries regarding the circumstances they face.

With their first hand understanding of the resettlers and their socioeconomic conditions, the resettlement plan designers have, in keeping with State resettlement policies, have kept issues of social adjustment a high priority.

Throughout the ZPSPP resettlement planning and implementation, the following measures for social adjustment will be adopted:

##### **4.1.7.1 Land-Based Resettlement**

The detailed site investigation determined that 94 percent of resettlers are farmers, so resettlement will be land-based to maintain a way of life familiar to the affected villagers. Each relocated peasant will receive 0.087 ha of farmland, including 0.047 ha of irrigated fields. Since continuing agricultural production, resettlers can restore production and living

standard to the original level as well as further develop and promote them.

#### 4.1.7.2 Moving Close by if Possible and as a Social Unit.

Through experience over the years, China has adopted a resettlement policy of resettling peasants close by their original homes if possible. The ZPSPP resettlement planning has, after a determination of the Environmental Carrying Capacity of the area surrounding the Reservoir, absorbed as many resettlers as possible into their original communities. The rest are being moved to a location within the same county. They will be arranged to move within their original social units as village, in order to maintain to the extent possible the original social networks and production systems.

With the consideration of Jingxing County's practical conditions, the farmland required by the resettlement villages will be acquired in more than 2 villages, in order to ease the impact to the villages which they contribute their land.

#### 4.1.7.3 Planning and Construction of Public Facilities and Infrastructure Facilities

The host villagers will be paid compensation for the acquired land, based on its quality. In addition, the floor space of host village public infrastructure will be expanded 1,230 m<sup>2</sup> for primary schools, 155 m<sup>2</sup> for clinics, and 205 m<sup>2</sup> for cultural centers. They will also receive an additional 8 km of inter-village roads and 4.8 km of tractors roads.

#### 4.1.7.4 Planning for Water Conservancy Projects

Water conservancy is lifeline of agriculture and one of the necessary conditions of life. Therefore, among the measures of social adjustment services, water conservancy projects for both agricultural production and domestic water supply will be a key component for resettlement. Ground water will be exploited to raise guarantee rate of water supply through drilling six pump wells each able to irrigate about 13.3 ha of field.

Three (3) more pump-irrigation stations will be reconstructed in the reservoir area for resettlers moving back from the reservoir within the boundaries of their original villages.

#### 4.1.7.5 Strengthening Resettlement Administrative Agencies and Training Staff

The quality of staff at all levels will play a critical role in the success of resettlement. Therefore, the staff of all resettlement offices will receive training, with a special effort to recruit and train women.

The training for social adjustment will include an introduction to the State's guiding resettlement principles relating to social adjustment; the significance of social adjustment services; difficulties and problems that might arise during resettlement related to social adjustment; interactive skills for consultation and local participation; and conflict resolution.

#### 4.1.7.6 Training on Agricultural Technology

Courses will be according to the trainee's requirement and will be offered by the JCRO and the several agricultural and civil administration authorities of county and local governments.

The trainees will be designated by the township people's governments or recruited directly

from resettlers and host villagers, including women, with a certain educational level and some familiarity with agricultural technology. They will, by mastering and applying new technology and methods, become the backbone of production and promoters of agricultural technology for their communities.

A special feature of the training will be priority given to handicapped people for training in practical production technologies to diversify the Resettlement Area's economy.

Cultural Centers will be established in all villages. Corresponding funding for construction and technical training has been included in investment estimate.

#### **4.1.7.7 Planning for Agriculture Restoration and Development**

A plan for the economic development of the ZPSPP Resettlement Area will be a key part of resettlement, including: on-farm capital construction through leveling land to create "Three-Protections for Fields", that is, (1) protecting soil, (2) protecting fertilizer and (3) protecting water, to avoid loss of soil, fertility and water.

The ZPSPP resettlement calls for diversifying the economy of the Reservoir and Resettlement Areas through reclaiming erosion prone lands for forestry and fruit production, which will strengthen the natural environment of these areas while increasing resettlers' income. Apple and walnut are two of the fruit trees which resettlers will be encouraged to grow around their homes. As a result, agricultural structure will be adjusted after resettlement.

#### **4.1.7.8 Off-Farm Income Generation Opportunities**

In the course of construction of the Zhanghewan Pumped Storage Project and associated components like irrigation, afforestation and rural electrification will generate about 60,600 unskilled job positions in the Project area and surrounding areas during the construction period of the Project. Approximately Y 303 million will be spent on labor as salary payment. The creation of employment opportunities will bring in good opportunities for the APs to generate off-farm income. ZPSC will give priority to the vulnerable groups for employment opportunities with the Project. In addition, as the new resettlement area is close to Jinxing County seat and the mining area of Shijiazhuang City, more job opportunities outside of the Project activities and a wide range of off-farm employment opportunities also could be open to APs. ZPSC will coordinate with local labor bureaus, employment center and enterprises/business to assist in the identification of employment and business opportunities for APs, even if after the period after construction. Moreover, in order to stimulate the development of the private economy, such as private transportation, the restaurant and service industry, the EA will assist the resettlers in gaining information and contacts regarding marketing. This assistance will be especially important for agricultural households seeking to diversify the household economy through non-agricultural means.

In accordance with the provisions of the regulatory requirements, a Reservoir Post-Construction Rehabilitation Fund (RPRF), totaling RMB1.23 million each year, will be set up to provide additional financial support on reservoir resettlement for 10 years. The Shijiazhuang City Resettlement Office (SCRO) will administer the Fund, which will be specifically used for vulnerable people and resolving any remaining issues regarding reservoir resettlement. It is believed that if these compensation standards and measures are adopted and properly implemented, the APs will greatly benefit from the Project activities

and be made better off economically.

#### **4.1.7.9 Vulnerable Groups, Poor and Women**

During initial planning, 226 vulnerable households were identified, including 105 households headed by women, 36 households headed by people with disabilities, and 85 households that are at or below the poverty level. In addition to the above income restoration plan and rehabilitation plan to APs that will also apply to them, these venerable households will enjoy the following special provisions.

First, ZPSC will give priority to the vulnerable groups for employment opportunities with the Project. In the course of construction of the Zhanghewan Pumped Storage Project and associated components like irrigation, afforestation and rural electrification will generate about 27,270 positions to the poor, approximately RMB 135 million will be spent on poverty person as salary payment.

Second, a Special Development Fund, totaling RMB 1.6 million, or averaging RMB 7,000 per vulnerable household, will be established as a micro-credit program to improve their agricultural production and business development. The fund will be administrated as a revolving fund by the Shijiazhuang City Resettlement Office (SCRO) of the Shijiazhuang Municipal Government.

Third, assistance for house construction, including a house construction subsidy, will be provided by the village committee and local government.

During the resettlement process, ZPSC will pay particular attention to the needs and problems of women and women-headed households and will identify appropriate programs through various consultations with women, for example, training and employment opportunities provided under the Project, to ensure that women equally benefit from the Project. The programs for women will include a series of measures, such as: i) ZPSC will employ women staff during resettlement operations to work with and assist women in resettlement activities, particularly income restoration and poverty reduction plans for women; ii) Women will be given priority for employment opportunities generated by the Project; iii) A Special Development Fund, averaging RMB 7,000 per women-headed household and poor household, will be established as a micro-credit program as revolving fund to develop their agricultural production and business; iv) Special financial incentives (e.g., tax breaks, low-interest loans and subsidies) will be instituted for new small businesses/enterprises developed by women from the affected households; v) Assistance for housing construction and house construction subsidy will also be provided to women-headed households.

#### **4.1.7.10 Non-Agricultural Resettlers**

Non-agricultural resettlers are calculated to number 197 persons at the design level year 2006, accounting for 6 percent of the total resettled population.

Some 140 of these will be absorbed into their original communities close by the ZPSPP reservoir, while 47 will be relocated along with the majority of agricultural resettlers to northern Jingxing County. Those who move within their original communities will either continue in their pre-resettlement occupations or will continue in work outside the reservoir area. Many of those staying near the reservoir are employed by township-owned enterprises

or government service institutions. During relocation, it is required to strengthen propaganda to non-agricultural population who are taking part in business and labor, to keep in touch with them to learn their problems and difficulties. Thus, effective assistance can be offered according to practical situation. Resettlers who are in private work will receive assistance in obtaining business licenses, locating sources for their goods, or in upgrading their technological and production skills through training programs. Reservoir inundation compensation will be afforded for the reestablishment of enterprises and other institutions requiring assistance.

#### **4.1.7.11 Protection of Interests of APs**

Resettlement procedures include the signing of a number of documents that lay out responsibilities, rights, obligations, and the means for handling disputes. One agreement is just before relocation, when households ratify statements of their compensated assets. These lay out in detail the rights, benefits, and obligations of the household and State, including special concerns to be shown to old people and children during the relocation itself.

#### **4.1.7.12 Public Information Campaign**

According to a random sample survey carried out by BHIDRI, about 1 percent of inhabitants within the ZPSPP Reservoir Area say that they do not want to move. Some of inhabitants do not fully understand the role and significance of building the ZPSPP for stimulating national and local economic development. Therefore, the JCRO and townships will carry out in advance of relocation a public information campaign about the resettlement to resettlers and the benefits of the resettlement program. An important part of the public information campaign will be highlighting the current favorable living standard of the 1970s resettlers from the Zhanghewan Reservoir and also the positive aspects of Development Resettlement, which will improve the livelihood of the resettlers while keeping their original social network.

### **4.1.8 Social Adjustment Support**

#### **4.1.8.1 Goal of the Social Adjustment Support**

The goal of the Social Adjustment Support will be to raise resettlers' production and livelihood level as a whole by providing various supports for a minimum of five and a maximum of ten years, depending on local conditions, after their relocation, as well as to aid poor families out of from poverty and to strengthen the capability to take risks, so that the resettlers can not only restore their production level and living standards, and even exceed their original pre-resettlement level, but continue the sustainable development in the future.

#### **4.1.8.2 Social Adjustment Support Policies**

##### **Fund for Reservoir Resettlement**

In order to support resettlers for the long term, a fund of the post-resettlement support of reservoir resettlement will be established in accordance with current PRC laws.

In accordance with "The Stipulations of Compensation for Land Acquisition and Resettlement of Large and Medium-Sized Water Conservancy and Hydroelectric Power

Project Construction”, it is planned to draw a fund of post-resettlement support of per resettler, totaling RMB400 yuan each year from the date the ZPSPP begins generating power up to ten (10) years. This amount is based on the number of resettlers approved by the State, i.e., 3,123 at the Design Level Year 2006. The annual fund will be RMB1,249,200 yuan, and will be used as an allowance to resettlers for developing their production and for improving their income.

### **Social Adjustment Support Policies**

During the ZPSPP relocation and the early period immediately after relocation, there will necessarily be difficulties for recovery of agricultural production at a time when the resettlers have to gradually get used to a new production and living environment. Agricultural production will only be starting to reach desired outputs as dryland converted into irrigated land and became in production, and newly reclaimed farmland is in cropping and orchard trees are with fruits. Therefore, it will be necessary to provide additional support during this period.

The necessity of such support during the relocation period, immediately after, and even for a much longer period of adjustment lasting years, is reflected in China’s laws and regulations. On the basis of The Stipulations of Compensation for Land Acquisition and Resettlement of Large-and Medium-Sized Water Conservancy and Hydroelectric Power Project Construction, Jingxing County, HZPSPPC, Ltd. and BHIDRI have jointly proposed the following support policies to assist the resettlers over both the short and long term, taking into account the conditions of Hebei Province and the project area in Jingxing County:

1. Both resettlers and host villagers in the Resettlement Area will receive priority in recruitment, other things being equal, in Hebei Province’s industries, mines, electric power enterprises, cement plants, and in other industrial or agricultural development projects.
2. Hebei Province will give priority to the Reservoir and Resettlement Areas in apportioning various social development funds such as for agriculture, water conservancy, communication, telecommunication, forestry and animal husbandry, culture and education, health, and poverty relief.
3. Relevant taxes applied to farmers will be reduced for resettlers.
4. Resettlers will be given priority in recruitment for the ZPSPP construction

### **Social Welfare Guarantee**

The social welfare guarantee that the resettlers will obtain includes:

1. The resettlers whose income is lower than the poverty level will be provided grain and other subsidies in accordance with local standards.
2. The vulnerable persons (such as the handicapped, elderly, sick and so forth) not able to work will be given insurance for grain, housing, clothes, medical treatment and funeral affairs.

3. **Support For Resettlers In Early Period:** During the early period of relocation when resettlers are gradually becoming familiar with the production and living conditions in the Resettlement Area, their income may be decreased, the grain self-supply rate decreased and living standards affected. Therefore, it will be necessary to give a certain amount of positive support until their production and living standard are restored, or exceed the original pre-resettlement level. The Hebei Provincial Government has engaged the HPRO to begin exploring appropriate support methods. In addition, resettlers will be exempted from agricultural taxes for a certain period, the supportive methods will include the fund for post-resettlement support to reservoir resettlers. Preferential bank loans may also provide funds to support the resettlers in developing family-run industries and pursuing other secondary occupations that might require relatively little investment and have a fast and relatively high rate of return. If necessary, a grain allowance may also be provided.
4. **Resettlers' income level as a whole will be raised by completing the infrastructures and facilities in the Resettlement Area and introducing and promoting scientific technology.** Construction of infrastructure facilities in the Reservoir and Resettlement Areas will be closely coordinated with planned regional economic development. The construction fund for the infrastructure facilities will be allocated in advance so that the construction can commence early. Resettlers will be encouraged to participate in the construction of these facilities, since it is also an opportunity for them to increase their income. The compensation used to construct local infrastructure facilities in the Resettlement Area will provide an immediate convenience and benefit to the resettlers. Some facilities in Reservoir Area, such as the construction access roads will also be a permanent and long-run benefit to the resettlers and will be helpful for the economic development of the Reservoir Area.
5. **Introduction and adoption of Scientific Technology:** During the period of production restoration and development, the resettlers (including the host villagers in the Resettlement Area) will be trained in production technologies and, especially those scientific technologies for cropping and breeding, and provided with marketing information, so as to develop a higher level of production for both resettlers and the host villagers.

### **Risk Mitigation**

The ZPSPP Resettlement Planning has the objective to gain a stable living for resettlers the basis of cropping and agricultural labor. Resettlers will move to the Resettlement Area from inundation area, i.e. from the Reservoir Inundation Area – southwestern Jingxing County to the Resettlement Area in middle northeastern Jingxing County. The inundation area is a poor area of the County, with less farmland and inconvenient traffic, while the Resettlement Area has more farmland, correspondingly favorable water resources, and good geological and traffic conditions. Therefore, the new production and living environment could get a big improvement for the resettlers. However, the resettlers will also have the same risks as host villagers. Such risks, and their mitigation, are presented below:

1. **Natural Disasters:** Severe damage to agriculture by natural disaster, such as flooding is a constant risk. However, the investigation shows that natural disasters occur in the Resettlement Area much less frequently than that in the Reservoir Inundation

Area.

2. Instability of Income: Although this is a risk for both resettlers and host villagers, with the improvement of traffic conditions, liberation through scientific application of technology and greater access to information in the Resettlement Area, the resettlers' income security will be improved compared with that in the Reservoir Inundation Area;
3. Accidents: After the resettlers are relocated, the population of the Resettlement Area will become more dense and the traffic flow higher, as a result accidental risk will increase.

During the early resettlement period, resettlers will have difficulty resisting unexpected factors and will be vulnerable. Jingxing County People's Government will give sufficient consideration to the resettlers, so that their income will not be severely reduced by either foreseen or unforeseen risks. Their livelihood will be ensured during the difficult period of adjustment by the above social adjustment support policies helping them to restore their production and livelihoods.

#### **4.1.9 Comparison of Before and After Living Standards for Resettlers**

##### **4.1.9.1 Comparison of Before and After Living Standards for Resettlers**

The resettlement planning goal is for resettlers to reach, as soon as possible, and exceed their original living standard. The resettlement planning has involved government and its professional departments at all levels familiar with the local situation, consultation with the villagers affected by the ZPSPP inundation and relocation, and also consultation with outside experts. The resettlement planning is in conformity with local practical conditions and is feasible, as reflected in its main components, which are:

- (1) A Reliable Calculation of the Affected Population and Scope of The Resettlement  
The population affected by the reservoir inundation is, following the State's laws and regulations, calculated on the basis of a full and careful census, investigation of the inundated farmland area, and analysis of the land and water capacity of the Reservoir and Resettlement Areas. The affected population's natural growth was worked out on the basis of the last decade's population growth, and 1 percent, which is higher than the actual rate, was adopted as the growth rate of last ten years.
- (2) A Higher Per Capita Farmland Holding for Resettlers than the Reservoir Area or Jingxing County Average holding. The agricultural resettlers will be provided with 0.087 ha per capita farmland, including 0.047 ha per capita irrigated fields, both higher than the average per capita holdings in the reservoir area and the county as a whole. It is forecasted that the resettlers will, by their own efforts and with assistance from the State, recover and exceed their original living standard well within the five to ten years for which they will be the recipients of several social adjustment support policies.
- (3) Preparation of a Feasible Plan For Resuming Agricultural Production. The measures for resuming agricultural production in the Resettlement Area are practical and feasible because of the care taken in resettlement planning to accurately assess the on the ground situation and to prepare accordingly. The water conservancy projects planned are within

the scope of the current land and water capacity of the Resettlement Area. When the ZPSPP Dam is completed, the reservoir storage volume will be increased, which will improve the irrigation situation in the Resettlement Area through recently begun construction of the Gantao River Diversion Relief to the Mian Canal Project to increase irrigation volume including the ZPSPP Resettlement Area. Beyond this, the resettlement planning calls for drilling six (6) deep motor-pump wells for irrigation, effectively ensuring irrigation through the cycles of drought common to Jingxing County.

- (4) Consultation with Resettlers for Resettlement Villages. The plan for public and infrastructure facilities for the resettlement villages has been, and will be, prepared in accordance with the resettlers' demands. Their houses will be constructed in either a unified way or, when preferred, individually, with full State support. Compensation for the original houses (in the light of original floor space, investment to new housing, but deducting price of usable wood material) inundated in Reservoir Area will provide the basic funding, although resettlers may invest their own funds if they wish to build at higher standards than those of the resettlement planning.
- (5) Training in Scientific Technology and Provision of Social Adjustment Support Measures. Resettlement planning will make provision for training in scientific technology and the adoption of a series of social adjustment support measures that will help resettlers get used to the new environment, master the advanced agricultural technology required for greater crop diversity, and practical support to allow them to find the means of 'becoming rich' and to resume production and exceed their previous standard of living in a short time.

State support for resettlers' production and livelihood will last for five to ten years, depending on practical conditions in Reservoir and Resettlement Areas. Therefore, their production and living conditions will reach, and exceed the original level relatively fast after they relocated. Table 416 shows the principle production and standard of living indices for the resettlers before and after relocation.

**Table4-16 Before and After Relocation Comparison of ZPSPP Resettlers' Production and Living Conditions**

Index	Nanhaoting		Nansi		Beihaoting		Zhanghewan		Shimen		Yanzhuang	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Per Capita Farmland Holding (Ha)	0.051	0.087	0.066	0.087	0.163	0.087	0.143	0.087	0.096	0.087	0.053	0.087
Per Capita Irrigated Field Holding(Ha)	0.029	0.047	0.011	0.047	0.091	0.047	0.035	0.047	0.005	0.047	0.019	0.047
Per Capita Living Floor Space(M <sup>2</sup> )	28.1	27.5	25.5	27.5	24.8	27.5	24.3	27.5	22.2	27.5	25.1	27.5
Per Capita Grain Output (Kg)	533	558	382	440	931	558	546	440	362	558	356	558

Notes: Per capita living floor space means average construction area of per capita living space, excluding public housing and inhabitants' other structures affected by the inundation.

### 4.1.9.2 Income Restoration

#### **Income in the Reservoir Inundation and Resettlement Areas without the Project**

The social and economic investigation shows that villagers' per capita net income in the Reservoir Inundation Area in 2000 was RMB2,181 yuan and per capita net income in the Resettlement Area was RMB2,582 yuan. In 2000, the villager per capita net income in the Reservoir inundation area increased 3% compared with that of 1999, and the villager per capita net income in the Resettlement area increased 3.8% for the same period.

Table 4-17 shows the villager per capita net income in the Reservoir Inundation and Resettlement Areas from the year 2000 to 2006 without the ZPSPP being constructed" scenario.

**Table 4-17 Net Income of Farmers in Reservoir Inundation and Resettlement Areas**

Year	1999 (actual)	2000 (actual)	2002	2004	2006	2008	2010
Inundation Area (RMB/yr)	2117	2181	2350	2532	2740	2963	3205
Resettlement Area (RMB/yr)	2487	2792	2792	3078	3395	3743	4127

#### **Resettlers' Income during Relocation and after Relocation**

In accordance with construction schedule of the ZPSPP, the resettlers from the Upper Reservoir (Shimen and Yanzhuang Villages) will start to move during project preparation construction period, i.e. the first group of resettlers will move in 2003. Their income may vary in following three stages:

1. During 2001-2002 , resettlers won't have moved and will still be in the Reservoir Inundation Area. Therefore, their income will still increase at the same rate as earlier.
2. From 2003 through 2006, most resettlers will be moving, and their income will experience a restoration course mainly for following reasons:
  - Since the infrastructure facilities will still be under construction,, so the income from cropping and forestry and horticultural production will be negatively affected in some degree, although employment in this construction may mitigate this somewhat;
  - Due to time required to renovate farmland and bring it to maturity, the grain output be negatively influenced and income likely to be lower;
  - Forestry and horticultural production generally take 3 years to be in full production, so the income from forestry and horticultural production is likely to be relatively low during the adjustment period;

- Most resettlers will put their main efforts into rebuilding their homes, so their income from non-agriculture will be negatively influenced to a certain degree.
3. After the year 2006, with infrastructure facilities and renovation of farmland completed, the resettlers' income from cropping will begin to increase, and that from forestry and horticultural production especially, so the income should have a relatively large increase. In addition, since the Resettlement Area is near Shijiazhuang City's Mineral Area and urban area of Jingxing County's seat, when the resettlers complete their houses building, they will have more opportunities to take part in non-agricultural activities. Therefore, their income from non-agricultural activities should also increase and even exceed its pre-resettlement level.

On the basis of above analysis, it is forecasted that resettlers' income before and after the year 2006 will reach and exceed the original pre-resettlement level. Table 4-18 shows the forecasted values of per capita total income, income source, per capita productive output and per capita net income in the years 2006 and 2008. Table 4-19 shows the forecasted values of per capita net income in the period of 2000-2008.

**Table 4-18 Per Capita Income and Income Composition of Resettlers Before and After Relocation**

Item		Income & Output (year)	
		2006	2008
1. Per capita total income		3563	4420
Income sources	Cropping	457	458
	Forestry & horticultural production	100	150
	Aquaculture	260	300
	Laboring	2086	2812
	Others	660	700
2. Per capita productive output		765	732
3. Per capita net income		2798	3688

**Table 4-19 Per Capita Net Income of Resettlers Before and After Relocation**

Year	2000 (actual)	2002	2004	2006	2008
Before relocation (RMB yuan)	2181	2350	2532	2740	2963
After relocation (RMB yuan)	2181	2350	2450	2798	3688

For agricultural people, the main approach of restoring income is providing them replaced farmland, since the new location will have more non-farm job opportunities, the resettlers' income composition before and after relocation has following:

(1) A High Proportion in Labor

Resettlers' income from non-agricultural, labor is even now a high proportion of their income, averaging almost 60~ 78%. However, other income such as from cropping is a low proportion, between 20% ~ 39% of the total income. Therefore, resettlers' income restoration after relocation

mainly depends on resuming and raising their income from non-agricultural labor. As the Resettlement Area is close to the Shijiazhuang Mining Area, which has much better traffic condition than in the Reservoir Inundation Area, the resettlers will have much more opportunity to take part in non-agricultural labor activities. The proportion of resettlers' income from non-agricultural labor will increase from 61% of the total before relocation to 77.6% after relocation.

## (2) Resettlers Relying Less On Cropping

As resettlers' income from cropping is between 13% and 14% of their total income, the per capita cropping income is predicted to remain the same as before relocation. Although per capita farmland holding in Beihaoting and Zhanghewan host villages will, for instance, decrease, this will only affect their income from cropping, and since their income from non-agricultural labor and other activities accounts for 78% of their total income, they will be little affected. Therefore, although the resettlement planning will restore agricultural productivity, and this will be the course of action most comfortable for the resettlers themselves, their reliance on cropping will most likely be greatly reduced because of the advantageous socioeconomic conditions in the Resettlement Area. Villagers will continue to produce gain on their farmland to meet their basic requirements however, it is expected that like the host villagers in the Resettlement Area, they will take advantage of opportunities to spend more time pursuing other, non-agricultural labor activities. Therefore, the increase in their non-agricultural labor income as well other income generating opportunities can completely make up the loss of cropping income which is caused by decreasing of per capita farmland holding.

### 4.1.10 Planning for Infrastructure of the ZPSPP Reservoir Area

The restoration and reconstruction of infrastructure facilities in the Reservoir Area will include the restoration and renovation of roads and highways, the renovation of telephone and power lines, and compensation for and construction of cables and the Yuejin Canal.

#### 4.1.10.1 Construction of Highways and Resumption of Traffic within Reservoir Area

The ZPSPP Reservoir will inundate 4.5 km of mountainous area class III highway which will be reconstructed on the basis of original standards to 7 km length, including 5.21 km on the ZPSPP Reservoir's right bank and 1.78 km length on the left bank, partially heightening and reinforcing the road base. A reinforced concrete double-curvature 245 m long bridge will also be built 0.5 km downstream of existing highway.

To restore transport access around the Reservoir, a 285 m long reinforced concrete double-curvature bridge will be built north of Nanhaoting Village, and a 0.4 km long unpaved road will also be built to link up with the original highway at Xigou Village. To help resolve the problem of access for Xigou Village caused by inundation of its access road, a 0.3 km long road from the above bridge at the entrance of Nansi Village will be built for access to the trunk highway at the right bank of the Reservoir. Some 0.96 km of tractor roads will also be reconstructed in the Reservoir Area.

Table 4-20 shows the planning for roads to be reconstructed in the Reservoir Area.

**Table 4-20 Planning for Traffic Resumption in the ZPSPP Reservoir Area**

	Item	Length (Km)	Unit Price (10,000 RMB Yuan)	Investment (10,000 RMB Yuan)
I.	Highways			1,075.55
	1. Highway In Reservoir Area	5.78	131.44	795.75
	2. Reinforcement of Highways in the Reservoir Area	1.205		84.56
	3. Bridges	0.235	984	231.24
II.	Resumption of Traffic Within the Reservoir Area			348.92
	1. Link Road to Nansi	0.3		30.0
	2. Link Road to Xiguo	0.4		30.08
	3. Xiguo Bridge	0.285	984	280.44
	4. Tractor Roads	0.96	8.75	8.4
	Total			1643.9

#### 4.1.10.2 Telecommunication Lines in the ZPSPP Reservoir Area

Telecommunication lines cross the Gantao River twice. Some 5.07 km of these will be affected by inundation. In accordance with the Detailed Site Investigation, it was decided to realign the lines. The lines to be realigned total 14.0 km, including 8 km on the Reservoir's Right Bank from point P48 in the vicinity of Zhanghewan to point P 204 at Nanhaoting; 2.0 km from Nanhaoting Town to Nansikou; and 4 km from Nanhaoting to Xiguo. Extensions of # 210 cable will be set up by means of 7.5 m high concrete poles with 4-line steel horizontals. Relay lines and switchboards will also be reestablished.

Table 4-21 shows the planning for realignment and reconstruction of the ZPSPP Reservoir Area telecommunication lines.

**Table 4-21 Realignment and Reconstruction of Telecommunication Lines in Reservoir Area**

Realignment Lines	Length (Km)	Construction And Erection Expenses (10,000 Yuan)	Other Expenses (10,000 Yuan)	Preparation Expenses (10,000 Yuan)	Construction Contract Expenses (10,000 Yuan)	Total (10,000 Yuan)
Dam Site--Nanhaoting	8.0	21.695	1.507	2.268	1.134	26.6
Nanhaoting-- Xiguo	4.0	10.748	0.752	1.136	0.568	13.2
Nanhaoting--Nansikou	2.0	5.374	0.376	0.568	0.284	6.6
Total	14.0					46.4

#### 4.1.10.3 Realignment and Reconstruction of Power Lines in the Reservoir Area

After the ZPSPP Reservoir impounding, some of the transmission lines in the Reservoir Area will be inundated and require realignment. The new lines will be along the ZPSPP Reservoir Right Bank, the same as the telecommunication and telephone lines. Some 10 km of 10 kV line will be set up, with LGJ-50 steel-cored aluminum wire conductor, for an investment of 650,000 yuan.

Some 2.3 km of 10 kV line will be set up in order to reconstruct three (3) pump stations in Nanhaoting Village, using LGJ-35 steel-cored aluminum wire and the original transformer. The investment will be 149,500 yuan.

A 0.5 km long electric power line will be constructed to Nanhaoting Village, where the Design Level Year 2002 population will be 617. This will cost around 17,500 yuan.

#### **4.1.10.4 Realignment of Electric Cable in the Reservoir Area**

A specialized cable crosses the Gantao River, on the river bed, from Zhanghewan Village to the Right Bank. The cable control chamber is at 482.5 m elevation and will be submerged after the Reservoir impoundment. A new cable line will be realigned along a 12 km right of way, for an investment of 4,575,000 yuan.

#### **4.1.10.5 Inundation of the Yuejin Canal, Its Compensation and Measures for Rehabilitation**

The Yuejin Canal is an irrigation canal built in 1942 with local funds raised by the people themselves. At that time its scale was small, from Nanshikou only to Yanzhuang. The canal was extended to Jingzhuang Township and Luoyu Village at the foot of Changyan Mountain in 1965, irrigating around 533.3 ha of farmland of fifteen villages under Nanhaoting, Jingzhuang townships and Ceyu and Changyanshan towns.

Heightening of the Zhanghewan Reservoir dam will inundate the upstream stretch of the Yuejin Canal, resulting in the inundation the canal above the dam site and affecting the downstream water supply.

#### **Compensation for Yuejin Canal**

Some 8.21 km of the Yuejin Canal above the Dam site will be inundated. According to a 1/5000 topographical map, the irrigation area affected downstream from the ZPSPP Dam is about 100 ha, and the agricultural area directly inundated by the Reservoir is 79 ha.

In addition, the Reservoir will inundate canal facilities such as controlling gates, discharging sluices, a river weir, diversion sluice, pedestrian bridges, culverts, and pipe. The inundated stretch of the canal itself will include an earth-lined stretch of 3.5 km, an earth-stone lined stretch of 1.0 km and a stone-lined stretch of 3.71 km. The compensation amount will be 1,490,000 yuan.

#### **Water Supply Below the Dam Site**

Farmland irrigated by the Yuejin Canal below the ZPSPP Dam site is about 433 ha, including irrigation by gravity of 413 ha and lift irrigation of 20 ha.

The ZPSPP Dam crest will be 490 m after the present dam is heightened. The elevation of the section of the Yuejin Canal adjoining the dam is 469 m. In order to resolve water supply for the area below the ZPSPP Dam, the BHIDRI, the Hebei Water Conservancy Investigation and Design Institute (HWCIDI) and the Jingxing Water Conservancy Bureau (JWCB) will jointly

carry out a study. BHIDRI, HWCIDI, and JWCB believe that the best alternative is building a water intake in the ZPSPP Dam itself. Because the elevation of the section of the Yuejin Canal where it will join the ZPSPP Dam is 469 m, the minimum level of 471.0 m required for power generation can still meet Yuejin Canal's demand for irrigation water diversion. In accordance with the specific conditions of the Yuejin Canal, the irrigation guarantee rate may be as high as 75 percent. This reconstruction alternative is deemed feasible and will likely be chosen in the next Detailed Design Stage of the ZPSPP Reservoir Treatment Program.

## **4.2 Resettlement Action Plan for Rural Electrification**

### **4.2.1 Resettlement Action Plan**

The land occupied for transmission line and substation has already been approved by the Chinese government. Each affected villager will be compensated for the permanent land acquisition according to the relative stipulation in the *'Land Administration Law'*. Compensation standard for farmland is RMB 62,925 yuan per ha and RMB 4,080 yuan per ha for the wasteland. As far as a family is concerned, if the land acreage affected by the line and substation is small, the compensation payment will be given to the affected family directly, otherwise, the compensation will be paid to the affected villages which will be responsible for the land distribution and land development.

According to the analysis of the environmental carrying capacity, after land acquisition by the construction of rural electrification program, the rest land for each affected family is enough to maintain the family's life, there is no resettlement involved. The per capita farmland holding changes before and after land acquisition has no change almost. Therefore the affected village for transmission line and substation land occupation is little. Adjusting farmland within the villagers in the same villages could eliminate the impact. And the Village Committees will use the compensation fund to develop agricultural production through agricultural extension services to increase the income of the villagers. In addition, the affected people will be given priorities for the employment opportunities created by the rural electrification program. The tariff reduction program proposes a 50 percent tariff reduction under the program for those rural poor in the national poverty counties of the Project area with an annual average income per capita of RMB 820<sup>2</sup> from 2003 to 2008 will benefit more than 0.5 million rural poor in the Project area from the tariff reduction program and more than RMB 39 million will be reduced from their electricity bills annually, which will make electricity consumption for such basic needs as lighting and cooking more affordable for the poor.

## **4.3 Redeployment Plan for Closure of Thermal Power Units**

### **4.3.1 Redeployment Plan**

After the closure of the small units, there will be 2283 personnel should be redeployed in the 5 plants. Some of them will choose their job again. HEPC and the power plants have three options to redeploy the personnel:

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<sup>2</sup> Hebei provincial poverty line is defined as an annual per capita income of Y820. Under the poverty line, there were 23,000 poor living in the county, with poverty incidence rate at 7.8 percent.

- (1) 392 persons will be redeployed to the newly built or rebuilt units with the position they are familiar with after 1 month training.
- (2) 1536 persons will be trained for 6 months training and sent to the new position for the newly built or rebuilt units.
- (3) 251 persons will be trained and sent to the administrative position for the newly built plants.
- (4) The remaining 104 persons will be trained and redeployed to other departments (e.g., service department).

The redeployment will not cause any income difference to the concerned employees. Those who will be re-trained and re-assigned to other service departments of enterprises of power sector may encounter temporary psychological stress during the transitional period from old position to new positions and the new working environment. However, these impacts are expected to be minor. The Human Resources and Education Department in HEPC will be responsible for the transfer, allocation and training of the employees. In each power plant, there are also human resources and education division that will be responsible for the transfer and education for the employees in respective power plant. They will assist the affected people to experience smoothly the transitional period and settlement down through training and personal counseling.

#### **4.3.2 Newly Built and Rebuilt Power Plants**

- (1) Shijiazhuang Thermal Power Plant rebuilding project will build 2 x 140MW double-suction thermal units complete with 4 x 410t/h CFB boilers. The rebuilding project locates at the site of the current 11 small units. After they put into operation, the 11 small units will be dismantled.
- (2) Handan Thermal Power Plant will build 2 x 200MW units complete with 2 x 670t/h ultra high pressure drum boilers to replace the 1<sup>st</sup> and 2<sup>nd</sup> phase units.
- (3) Baoding Thermal Power Plant will building build 2 x 125MW thermal units complete with 2 x 450t/h CFB boilers to the north of the former main hall replace the 1<sup>st</sup> and 2<sup>nd</sup> phase units
- (4) Xingtai Power Plant plans to build 2 x 125MW units with shale fuel from Fengfeng mining area.
- (5) Shexian Power Plant (No. 150 Power Plant) will reconstruct 2 x 50MW thermal units to the west of the railway station to provide heat to the county town.

#### **4.3.3 Training Plan for the Resettled Personnel**

In order to provide necessary skills and knowledge to affected employees and facilitate their smooth transition, training will be provided to them. The detailed training plan and budget is presented in Table 4-22.

**Table 4-22 Training Plan**

No.	Subject of Training	Type	Period (Month)	Cost (RMB)	No. of Trainees
<b>A. Training for Operational Personnel Assigned to New Plants</b>					
1	Equipment	On job training	0.5	30,000	986
2	Production Process	On job training	0.5	30,000	986
3	Operation Standard	On Job Training	1	100,000	986
4	Safety	On job training	0.25	20,000	986
5	Emergency	On job training	0.25	5,000	986
6	Fire-protection	On job training	0.25	5,000	986
7	Others	On job training	0.25	5,000	986
8	On site Training	On Job Training	3	300,000	986
	<b>Total</b>			<b>495,000</b>	
<b>B. Training for Maintenance Personnel to Assigned New Plants</b>					
1	Fire-Protection	On job training	0.25	3,000	550
2	Emergency	On job training	0.25	3,000	550
3	Production Process	On job training	1	20,000	550
4	Safety	On job training	1	20,000	550
5	Equipment	On job training	1	20,000	550
6	Specialization	On job training	1	40,000	550
7	On site Training	On job training	2	150,000	550
	<b>Total</b>			<b>256,000</b>	
<b>C. Training for Administrative Personnel to New Plants</b>					
1	Fire-protection	On job training	0.15	1,000	251
2	Emergency	On job training	0.15	1,000	251
3	Production process	On job training	0.15	10,000	251
4	Safety	On job training	0.15	10,000	251
5	Equipment	On job training	0.15	10,000	251
6	Marketing	On job training	0.25	22,000	251
7	Financial mgt	On job training	0.25	20,000	251
8	Management	On job training	0.25	20,000	251
9	World trade	On job training	0.25	20,000	251
	<b>Total</b>			<b>134,000</b>	
<b>D. Training for Employees to Other Service Departments/Enterprises</b>					
1	Service training	Out job training	2	10,000	104
2	Marketing	Out job training	1	5,000	104
3	Management	Out job training	1	5,000	104
4	Specialization <sup>b</sup>	Out job training	3	27,000	18
5	Specialization <sup>c</sup>	Out job training	3	31,500	21
6	Other Profession	Out job training	3	97500	65
	<b>Total</b>			<b>176,000</b>	

Notes: <sup>a</sup> The above training will be arranged between 2002 and 2004. All of the training will be held in the relevant power plants and nearby training centers.

<sup>b</sup> Such as tailoring, sewing and so on.

<sup>c</sup> Such as catering, hotel management and so on