

A Preliminary Study on Water Resources in Shandan County in Qing Dynasty

——Taking Daoguang County's 25-year-old Shandan County as the Center

Zhizuo Zhang¹, Hongxia Huo²

¹College of History and Culture, Northwest Normal University, Lanzhou, 730070, China

²School of Social Development, Yangzhou University, Yangzhou, 225000, China

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Abstract: Located in the middle of the Hexi Corridor, Shandan County is one of the earliest areas of agricultural development in history. The water resources in the region are mainly river water, spring water and well water. Through the study of water resources, canals, water rules and the number of irrigated fields in the region, it is believed that the development of water conservancy facilities during the Daoguang period played a major role in agricultural development in the region.

1. Introduction

Located in the middle of the Hexi Corridor, Shandan County is a typical continental alpine and semi-arid climate. It is one of the early agricultural development areas in history. In the Qin Dynasty, Shandan was the area where the Moon was active. In the early Han Dynasty, it was under the jurisdiction of the Xiongnu. Later, it was recovered by the General of the Qionggou, and it was under the jurisdiction of Zhangye County. At the beginning of the dynasty, it was changed to Shandanwei. In the Qing Dynasty, it was changed to Shandan County, which belonged to Ganzhou Prefecture.

At present, the academic community has carried out in-depth and meticulous research on the agricultural history of Hexi. Although it also involves the development of farmland water conservancy in Shandan County, there are not many inks, especially the research on water conservancy development in Shandan County during the Daoguang Period of the Qing Dynasty. There are few. In view of this, the author intends to discuss the water conservancy development of Shandan County during the Daoguang Period of the Qing Dynasty, as contained in the "Shandan County Records" of Daoguang Period.

2. Water Resources

The current water resources in Shandan County are contained in the Shandan County Government Network of Gansu Province: the total water resources of the county is 194.5 million cubic meters, and the total amount of self-produced water resources is 124 million cubic meters, of which the surface water resources are 805.7 million cubic meters. Groundwater resources are 308.3 million cubic meters. The rivers in the territory include the Maying River, the Huocheng River, the Sigou River and the Shandan River, and the Xiaogou Xiaoyan in the shallow mountainous area of Dahuang Mountain [1]. According to the "Shandan County", the water resources in Shandan County are mainly river water, spring water or well water.

"Shandan County" volume three "Mountains" contained [2]:

Weak water: outside the west of the city, the source is out of the southeast of the county, northwest, southwest of the county, northwest of the east, north, northwest of the ancient city north, northwest of Ganzhou, north of the Heihe. According to the book, weak water. Both the west and the scorpion guide the weak water to Heli, and the rest wave into the quicksand, and the Han Geography: 'Dang Dan has weak water, and he lives in Yanze. In the northeast of Zhangye, the ancient text thinks of quicksand. Tang Kuozhi Zhizhi Zhangye has sixty-four miles northeast of Juyanhai, and the cover is weak water. To the northeast of the government into the quicksand. ...

and the old ambition to delete the Dan River.

According to: "Shandan County" contains weak water, now known as Shandan River, is a tributary of the Heihe River, north and south through the Shandan County. The upstream name Baishiya River originates from the Lenglong Mountain of Qilian Mountain. It flows to the Shandan Army Horse Farm in the north to the Maying River. The submerged stream below the Huazhaizi is underground, and the south of Shandan County is exposed to the spring, and merges into the Shandan River and turns to the northwest. It flows to the Heihe River in the north of Zhangye City, with a total length of 128.7 kilometers. The tributaries include the Rucheng River and the Tongziba River. Built with Liqiao and Yanjiadian Reservoir, it is the main source of water in Shandan County Oasis.

"Shandan County" volume three "Mountains" contained [2]:

Flood, one hundred and sixty miles southwest of the city.

According to: flood, that is, the flood river, the ancient name of the flood river, is the tributary of the north source of the turbidity. There are two source streams in the upper reaches, one originating from Zuoquanyujiayan, one originating from the vicinity of Zuoquanwencheng, respectively, passing through Fokou, Nantai, Mabao Village, etc., converging under Baihe Village, flowing through towns such as flood, Xiaolong and Jianyu. To the south of the village, into the turbidity of the source of the source of the river.

"Shandan County" volume three "Mountains" contained [2]:

Fulong Yuquan, the south of the city of the turn of the temple, its water south flow, water Qingyi tea.

According to the first volume of "Meng Xin Gan Ning Investigation", "From Beijing to Xinjiang Dihua" [5]:

There is a runner temple in the southeast of the city. There is a pool and pavilion in front of the temple. The scenery is quite good.

According to this, in 1919, there was a runner temple in the southeast of Shandan County. There is no such temple in Shandan County. The specific location is the runner booth in the Danan Lake Park in Jinshan. According to records, the runner temple was damaged during the 1954 earthquake and was later demolished. According to this, Fulong Yuquan should be in the present Nanhu Park.

"Shandan County" volume three "mountain" contained [2]:

Warm springs, forty miles southeast of the city, the springs of the plains, the two caves are cold and not frozen, and there are canals and fields.

Press: Warm Spring is located near the warm spring village of Qi Town.

"Shandan County" volume three "Mountains" contained [2]:

Ishii: In the east of the city, Zhang Houyong cuts the way to the trip.

Shengquan, twenty miles in the west of the city, Tongzhi Feng Shengquan, Gai Ming Shishi.

Nanhu, a southeast of the city, surrounded by Jiuli, commonly known as Nancao Lake, Duolu, Yongquan.

West Lake, a ten-mile west of the city, surrounded by seven miles, commonly known as Xicao Lake, also many reeds, there are springs.

Red salt spring, five hundred miles north of the city, the pool salt red, its root can be used as a device. Ming Hongwu's annual production commander was awarded a tribute to the tribute.

White salt pool, next to Juyan.

Press: Ishii, can not be tested.

Shengquan, according to "Shandan Ancient Castle" [8]:

In the first year of the Yuan Dynasty (1260), in the summer of April, the Marshal Shandan pressed out the Dongle Dakouzi, breaking the Alan Aya, and the capital was in Ganzhou East. In the early Ming Dynasty, Song Guogong's Feng Shengshuai's army was levied on the west, and the remaining forces of the Yuan Dynasty were swept away. Shangdu's tribute to more than 830 households in Ganzhou. Feng Sheng stationed in the army Dongle, the military and civilians took inconvenient water, a hole in the well, the military and civilian grateful, said Feng Shengquan.

The author consulted the relevant historical materials and did not find the record of Feng Sheng's

drilling in this. Therefore, whether there is evidence in the "Shandan Ancient Castle" is not available. "Tongzhi County Feng Shengquan" contained in "Shandan County Records" did not find relevant records in Tongzhi.

Nanhu, Shandan County has a Nanhu Park, which was built and expanded by the Lama Cylinder Spring. It is impossible to confirm whether it is the current South Lake.

West Lake, according to the introduction of Shandan County [9]:

In the early 1950s, Majiahu Bay, which is more than ten miles west of Shandan County, is now the northwest side of the Yujiadian Reservoir. There is also a large cemetery. The entire cemetery sits north and looks south. Ten meters in front of the tomb is a tall stone archway with various patterns. Entering the archway is a long straight road leading to the tomb. There are more than a dozen stone carvings, stone horses, stone tigers, stone sheep, stone turtles, stone camels and other stone carvings symmetrically arranged on both sides of the ramp. The shape is tall and fine. Lifelike. The tomb is tall, and there is a tombstone with a dragon-shaped pattern on the front. The inscription on the monument is engraved with more than one hundred words. Most of the characters can still be clearly identified. On each side of the tombstone, there is a dragon-shaped pattern on each side of the tombstone, and the name of the "Da Ming" in the middle of the tombstone. The cemetery is backed by the dragon's first peak, the west is close to the mountain, the south is connected with the snow peak, and not far from the front is the weak water river that flows westward. Crossing the river is the famous big Buddha temple and the cemetery, and one of the eight scenic spots of Shandan. "West Lake falls grass" wins the scene.

West Lake should be near the current Yanjiadian Reservoir. Red salt springs and white salt pools are not listed in the literature.

3. The Canal

In Shandan County, the agriculture of the Qing Dynasty relied mainly on irrigation. According to "Shandan County Continued Records" volume five "Wuba Water Conservancy" recorded [2]:

Tanjung is close to Xijiang, and the provinces are all deserts, with more soil and less fertile soil. The power of irrigation. Most of the water is three: mountain water; spring water. The dam is divided into five: divided into 13 dams; divided into five sluices; and Dongshan Xishan and other nine canals; Muhua can also be the size of the four channels. The sub-sectors can be combined with the irrigation rafts. At the time of the opening of the Duba Dam, every time I succumbed to a spoonful, I was so arrogant that I had many people, and it was difficult to make a decision. The good guys flow from the profit, the battle between the rats and the mice, the struggle with the savage, and the good. And it's really bad. Imitated the rules of the old day, because the grain is water, it is painted as a pattern, indicating the original amount of grain, watering time, smashing the order of the scales, the dispute is known, the water can be divorced, and the lawsuit is from Decline. It is not consistent with the law that the ancients decided to build dikes.

The grass lake is divided into 13 dams. The water resources should be separated from each other, and the remaining dams should be three seasons and six rounds. Water conservancy and Dongle. Press for thirty-two days and nights. The Shandan Caohu Dam is divided into nineteen nights. Dongle is divided into water and eleven nights. Since the Qingming Day, the first dam will be completed, the dam will be closed, and the second sedge will be watered, and the week will start again, from the bottom up. Only the grass lake four dams, there are military horse parks in the city, three points of water, there are three channels through the city water hole. The early morning of freezing is the spring water of the first round, and the seven rounds of winter water do not open the gate. The rest of the dams are opened and closed with the same opening and closing.

The warm spring canal is a spring canal. The dam originates from the Baishi Cliff. It is divided into three dams, and the lower and warm springs are divided into five dams. Every year, three seasons and six rounds of water conservancy should be made, for a total of 216 days and nights. From the time of Qingming to the winter solstice, the amount is small, and the river is average. In the first two or two rounds of rehearsal, the five gates of plumbing should make the whole river water twenty-five nights, and the rivers of the rivers and rivers should be kept for two nights. The

upper three dams should make the whole river water five nights, the first two or two rounds, the seedlings and water warming five gates, should make the whole river water twenty-eight nights, Runhe pool water two nights. On the upper three dams, the first round of seedlings should be watered for six nights. The second round of seedling water should make the whole river water five nights. The first two or two rounds of winter plumbing and five gates should make the whole river water thirty-three nights and nights. Shangsanba, the first round of winter water, should make the whole (175 pages of river water six nights. The second round of winter water, should make the whole river water five nights. Warm head brakes, granules, five hundred and six stones, two buckets, five liters, three spoons. The water is fixed, the mouth is seven feet and eight inches wide. The warm two gates are 530 grains, four buckets and five liters. According to the grain, the water gates are widened by eight feet and two inches. The warm three gates are for five hundred and sixteen stones. Fighting eight liters and four joints, according to the grain are fixed, the mouth is seven feet and nine inches wide. The warm four gates of the grain 530 stone one bucket nine liters and eight joints, according to the grain, the mouth is eight feet two inches five points Warm five gates of grain, Shiliudou, Liusheng, three spoons, three spoons, according to the grain, the water is wide, the mouth is seven feet and eight inches. The side of the mountain small ditch sub-grain forty-four stone six buckets, the public increase opening, wide one The size is one inch, and the depth is still two inches and five points. The old rules are one stone per grain, and the six rounds make time water. At four o'clock, seven minutes, the river is up and down, the upper and lower dams, and each round goes to the whole river for five or six days and nights. The next five gates are reduced in time and size, and the water is transferred to each stone. In addition to the next hundred households, Runhe Dianchi. When the water is six rounds, the water should be made at 3:6, according to the uniform water conservancy, one grain per grain, head two The water is planted with five inches of incense. The first two or two rounds of winter water are exercised with seven inches of incense. From the bottom up, the ice water rises from the start to the Qingming, and the three dams should make the whole river water. Staying up late. The next five gates should make the whole river water twenty-five nights and nights to the original amount. From the bottom to the top of the week, there is a temple and a sanctuary, and the second is the spring water dam, which relies on the snow in the pine forest and melts into the spring. Irrigation funds, sourced from the mountain, so that the water conservancy, according to the average grain watering)

Tongzi Canal, which is a mountainous water dam, originates from the Nanshan Biandukou and is divided into 18 gates. The annual water supply should be from Qingming to winter, and the dams should be irrigated according to the amount of grain. There is a righteousness, no two channels, and it is also a mountain dam. The source is the innocent mountain pass, which allows the water to be poured into the 18th gate.

There is no source of water in Muhua Canal, which depends on mountains and rivers. The mountains and rivers come from Nanshan, and most of them are hemp and small, and they are divided into ten. Each year, three seasons and six rounds should be made. The water conservancy will be watered from the Qingming Day to the beginning of the winter.

From the records of these canals, it can be seen how the water is used in this area. Since the region is arid, the use of water is a very important issue, so there are records of various disputes over water in the water conservancy. Because of this, the rules for water use have been established.

First of all, each channel is three seasons and six rounds of water, and the water use time is from Qingming to Lidong. The time for each round is 32 days and nights.

Second, use bottom-up water rules. Such water use laws are more common in the arid and semi-arid regions of the Northwest.

For example, in the Blackwater City Unearthed Document No. F116: W66, the local water use is "Example of bottom-up water" [11]. The so-called "example" should be the convention and the common law, that is, the usual water law, the rule of which is "bottom up and down the water." Another article numbered Y1: W66, containing "the lawsuit is sloppy from the bottom up" [12]. This shows that the Yuan Dynasty also sets the road to follow the bottom-up water rules.

According to Jiajing "Ningxia Xinzhì" Volume 1 "Ningxia Town • Water Conservancy"

contains this water use rule [13]:

The method of sub-irrigation, from the bottom up, the official for the ban, the repair is less than the law, then the water is not good, the Tian and the people are embarrassed, public and private.

It can be seen that the water use method is used downstream after being used downstream, and the government has unified management of the opening and closing. This water method not only ensures smooth irrigation of the downstream farmland, but also enables upstream irrigation in time. Although the water law of Ji Nai Road is not so detailed, it is also the use of bottom-up water rules. Regarding the record of "sealing" water conservancy, Qianlong's "Ningxia Fuzhi" is recorded as such [14]:

Every year, the water is opened in summer, and the official seals the water, and the upper branch of the upper channel is closed, and the water is forced to a little. Take a little water for the people, the knot is the test, the name is sealed. At the time of sealing the water, the water in the big branch should be kept at two or three points. Later, from the bottom up, the first open water, the second water and the winter water are all the same. However, due to discretionary inspections, only in the matter. If you follow the example, you will only be elected. Then the ills of stealing water and selling water are born.

Although this document is the law of sealing water conservancy in Ningxia Prefecture in the Qing Dynasty, it was formed on the basis of the principle of sealing the water conservancy of Yuanming.

According to "Chang'an Zhitu", the "Water Use Case" is contained in [15]:

Where water is used, the squadron will be ordered by the squadron to make a bid. In the old case, he slammed up and down the door, and pre-formed the squad to distribute the peasant to the seedlings, and went to the canal to inform the water limit, to apply for the post, and to open the battle. The upper and lower buckets are sub-watered at the moment. If the water is broken, the person who violates the water will be dismissed. Waterproofed summer field on October 1st, poured white and white in March, and poured a color of Ma Ma in April. The old case of the current canal is poured in autumn in May, 30 mu per day. At this time, Ma Zheng is poured, and the autumn seedlings are also thirsty. The people of Lishui are interested in it, and the hemp seedlings will pour water. The water department is not in a single color, and it is inconvenient to break it. It is said that the individual's water is limited to the internal use, but it is limited. Although it is not a one-color crop, it will be beneficial to the people. And the old example of the inspection and pouring wheat seedlings and autumn hectares, the smell of drought can be poured, can not make water, do not need to water but make the water, so watering, hinder the inconvenience, the future will be poured into acre, such as the number of yuan From the people will make water. Chad has thus poured more, such as breaking the penalty.

Although this document is an example of the use of water in Chang'an "drainage channel", it can be used to see the water use in the Yuan Dynasty. Before opening the gate to release water, the fight must first "sue to the official" to the official government, and the official permission is allowed to open the floodgate. The content of the "shenzhen" should be written as "the buckets of the households to plant the crops, and go to the canal." The water supply limit is limited, and it is necessary to give the tenants equal water use time before they can open the brakes; in addition, there are provisions for the time of watering, what kind of field should be watered, and the amount of water per day. The land area is also based on the bottom-up method of water use. This is the same as that of Yiji Nai Road. The article "Water Use Cases" in Chang'an Zhitu is contained in [15] 229:

In the old case, each bucket must be watered and slid from time to time. At any time, we can deliver the above points, and there is no need to violate the time, and let the water and the people go to the field from the bottom up.

The "Water Use Case" contained in "Chang'an Zhitu" is basically the same as Jiajing's "Ningxia Xinzhi" and Qianlong's "Ningxia Fuzhi". It also shows that this bottom-up water law has been continued, which is the drought in the northwest. Widely used in semi-arid areas.

The water used in each channel contained in "Shandan County Records" is similar.

Third, the amount of water used is given according to how much food is paid. This is the case in Shandan County, which contains “watering by grain.”

4. The Number of Irrigated Fields

According to the "Shandan County", the number of acres of irrigation fields in Shandan County (as shown in Table 1) [17].

Table 1 Number of acres of irrigation fields in Shandan County

The name of Canal	position	Number of dams	Field acres / are
Nancaohu Canal	South of the city	13	400
Xicaohu Canal	west of the City		40
Warm spring	South of the city	5	170
Dongzhongba Canal	South of the city		30
Xishan Dam	South of the city		56
Cliff spring	South of the city		8
New open spring channel	South of the city		7
Yidequ	South of the city		38
Innocent mountain pass	South of the city		19
Red cliff channel	South of the city		20
Duanquanqu	South of the city		10
Tongzisi Temple Ditch	South of the city		37
Tongzisi East Canal	South of the city		34
Tongzi Temple West Canal	South of the city		94
Dahuangshan Dam Canal	Southeast of the city		90
Duquan Canal	Southeast of the city		27
Weifang wooden ditch	Southeast of the city		56
Baishiya canal	Southeast of the city		38
Da Muhua Dongqu	Southwest of the city		82
Damuhua West Canal	west of the City		60
Xiao Muhua Shangba	Southwest of the city		20
Xiao Muhua dam	Southwest of the city		27

It can be seen from Table 1 that the canals in Shandan County are mainly concentrated in the south of the city. There are also a small number of distributions in the southeast of the city and the southwest of the city. There are no water channels in the west, east, and north of the city. It can be inferred that there may be few channels in the west, east, and north of the city. From the southern edge of the desert, the north, the west, and the east of the city should be not far from the desert, so there are few channels in the area.

It can be seen from the number of irrigated fields that the Nancaohu Canal is the largest canal in Shandan County, and the irrigated field has more than 400 hectares. Followed by the warm spring canal, the irrigation field is more than 170 hectares. The newly opened Duquan Canal with the least

number of irrigated fields has only 7 hectares. The total number of acres of irrigation in the above-mentioned canals is 1,363 hectares, or 136,300 mu.

How much cultivated land does Shandan County have? According to the data published by Shandan County Government [18]:

Land resources: The total land area of Shandan County is 5,402 square kilometers, equivalent to 8,013,600 mu. The arable land is 857,100 mu, the grassland and wasteland are 3,658,300 mu, and the cultivated land and grassland account for 80.59%, which provides favorable conditions for the development of agricultural and livestock production. The wasteland is rich in resources, with an area of 945,000 mu. If there is water irrigation, the development potential is great.

According to the above published data, there are 857,100 mu of arable land on the upper line. In the 25-year period of Daoguang County, Shandan County's irrigation canal irrigation area reached 136,300 mu, which is 16% of the arable land available today. Therefore, the amount of irrigated land contained in Daoguang for 25 years is very impressive.

In short, due to its location on the edge of the desert, Shandan County relies mainly on irrigation of river water, canals or well water, and has corresponding water rules. In the 25 years of Qing Daoguang, the area of land irrigated in the area reached 136,300 mu, which shows that the water conservancy facilities at that time played a huge role.

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