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## Research on Water Resource Types in Rural Communities and Conscious Water Source Governance in Mountain Areas in China

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### Abstract

Over many years, academia has engaged in extensive dialogue about topics such as rivers, water resources, crises, and human civilization. This has resulted in numerous significant scholarly contributions. However, these aspects have received only limited research on water resource types in rural communities and conscious water source governance in mountain areas in China. This research investigates the agricultural practices and living conditions of farming communities in the Wuling Mountains of China. It offers insight into water resource dynamics. This study examines various factors from a multidimensional viewpoint, such as time, space, ethnicity, and society. It provides insight into the current state of rural water storage, drinking water resource availability, and usage patterns emerging through spatial interactions between people, water, and land. The analysis explores the underlying logic and wisdom of these communities' survival strategies when faced with ecological and spatial transformations. This study seeks to provide ethnographic case studies that apply traditional agricultural civilization principles to modern issues related to water resource security, crises, utilization, and governance. This program addresses the critical needs of mountainous farming populations.

**Keywords:** *Agricultural population, Water resources, Water use type, Government, Wuling mountains*

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## 1. Introduction

Water, an essential resource in both production and daily life, has long attracted the academic community, both domestically and internationally. This applies to examining trickling streams or massive rivers. Research on rivers, lakes, mountains, springs, and streams generally focuses on urban water use (Zhao Xia, 2022), while rural supply and conscious management have received less consideration (Zhang Liang, 2018). Under globalization and China's modernization processes, alongside rural revitalization efforts, drinking water for rural populations has become an urgent priority in China (Tian Xuebin, 2022). Researchers are closely studying the water crisis afflicting rural communities and mountain water supply systems. Mountain sources, village

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settlements, and local populations all play an integral part in creating interlinked living spaces; water, like land, is not just labor but an indispensable natural resource with productivity classifications (Xinglong, 2023). Rural societies rely heavily on features like gullies, streams, depressions, ponds, floods, and caves as a watershed that ensures human survival. Watershed anthropology is a new way of studying anthropology that uses broad, integrated, and holistic theories and methods. It focuses on cross-basin comparative research to look at how people interact with nature, with people of different ethnicities who live in watersheds, and with communities of people of different ethnicities within watersheds (Tian Qian, 2018). This field examines the social and cultural spaces created by local populations around a body of flowing water (Shi Feng, 2015), where human activity plays an integral part in shaping both society and culture (Marx, Engels, 2012). Engels noted that human history's development laws expose a simple truth long obscured by ideologies: meeting basic needs such as food, water, shelter, and clothing before engaging in politics, science, art, or religion (Ge Jianxiong, 2021). This article uses L village in the Wuling Mountain area as a case study to address water use issues in rural settings. Before installing a tap water system, this study examines issues such as selecting, storing, using, and managing local communities' water sources. From different angles—time, space, ethnicity, and social relationships—this study offers insight into the complex relationships among water systems, forms, uses, and local agricultural communities in their interactions with humans, land, and water. Furthermore, it emphasizes the significance of rural water resource management strategies. It provides clear pathways towards conscious resource use, as well as rural communities' wisdom when adapting their approaches in response to ecological or spatial shifts. The Wuling Mountain area is abundant in water resources, thanks to the forest's mountainous terrain and misty barrier. The exquisite natural landscape has nurtured generations of farmers who have been cultivating and exploring this region. The people have a deep and intimate connection to nature. For these farmers, access to drinking water is a primary consideration when choosing where to settle. "In ancient times, there were eight households in a nine-acre well field, living in and around the surrounding area. Each person utilized one acre, and one acre of trees and vegetables was dug into a well, which the eight households collectively used" (Du Mu, 2009). As water resources were established, the number of residents gradually increased, and expanded settlements saw residents classify and utilize water resources more systematically.

### **1.1. Open Well Water**

Changzi Well is a naturally formed, irregularly shaped well resembling a "mouth," embedded in the mountains or on the edge of old ridges in farmland. It creates a natural ecological landscape of mountains, water, and farmland. Walking along the winding paths of L village or by the old ridges of the land, one can see various circulating water wells hidden deep in the mountains and many wide wells naturally embedded in the terrain. The open well in L village is one of the most common water resource ecosystems. These wells, easily accessible, depend on water flow and mountain topography. Often, where there is water, there are households, and villages and settlements are determined by this water availability. Each natural group in L village has its independent open well or a shared one within the village. A private open well usually meets the water needs of a single family and is located very close to their house. In contrast, public open wells are relatively far from the village and serve the exclusive or communal needs of the villagers. Regardless of ownership, these open water wells are public water resources. Preliminary statistics indicate that this rugged mountain village has over 20 open wells of varying shapes and depths. These naturally formed wells are frequently visited by L village villagers, with mountain water quietly flowing into them. The water stored in these wells has long nourished the people of L village. The traditional saying, "Never forget the well digger when drinking water," remains ingrained in their culture. Even in today's era of tap water, these original ecological open wells hold the deepest emotional attachment for mountain ethnic groups to their source of life.

### **1.2. Wadang Water**

Shuidang, as long as there is water in low-lying areas, is a naturally formed water storage pit made of original stones and soil without the processing of artificial cement and rock cover plates. The locals refer to these as "sidings," and they can be circular, square, or irregularly polygonal. The main function of Shuidang is to

provide daily washing and drinking water for nearby farmers and villagers. With the restoration of ecological forests, the water quality in the mountains has improved, and the water in Shuidang has become clearer. Besides using buckets to fetch water, the villagers have also renovated water pipes to divert water directly from nearby ponds. The permanent household YZQ in Group 1 of L village is located near the old ridge of the road. There is a small water pond next to the field ridge in the backyard below it, known locally as the "old ridge water pond." Lao Kan Shuidang has an exceptional water source and outlet, ensuring a consistent water supply throughout the year. During flood season, the water flow in this pond increases significantly. Nearby villagers use a thick water pipe to divert water from the pond. They use a valve to split it into two pipes, one thick and one thin, to supply water for both the fish pond and nearby household reserves. Shuidang is ubiquitous in the Wuling mountainous area. The unique geographical and ecological environment meets the water resource needs of the local people. At the edge of the silkworm mulberry field on the small road opposite YHQ's house in L village, there is a well bay water pond. YHQ took us on a field trip to see the place where more than ten households used to fetch water. YHQ said, "In the past, Shuijingwan served as a water pit for over ten nearby households. Farmers worked on this sloping land, growing crops such as corn, potatoes, and sweet potatoes. When they were thirsty, they would find large hemp leaves rolled into 'green leaf cups' to drink water." Some people would sit by the water gate and form a dragon gate formation. Reported by YHQ, a male, 53 years old, from Group 5 of L Village, on October 15, 2022, at 15:10, at Shuitaibian in Wanwan. Nowadays, YHQ's old house is being reclaimed for ecological restoration, and he has moved to live in town. This watergate still exists and remains in the memory of a generation. Talking about fetching water during busy farming or holding a small water bottle to quench thirst at any time is a true portrayal of the normalization of people's lives with water. The natural ecosystem's water platform does not require people to search everywhere, as there may be a water platform available at the foot of a mountain, by the roadside, or by the edge of a field. Some of these small water ponds in the Wuling Mountain area discharge water long-term, some short-term, and some circulate water from the ponds. These small water ponds nourish the people in the mountains and are an essential component of the village's household water resource structure. Therefore, the people of L Village in the Wuling Mountain area are well-acquainted with Shuidang. Each team in the village has different water storage tanks with various shapes, sizes, and names to distinguish their geographical locations. Similarly, in L Village, there are water ponds such as Bendoutian, Bendihu, and Ziguanmen.

### **1.3. Yatang Water**

Adapting to local conditions and maximizing the collection of water resources such as surface water, groundwater, and rainfall for agricultural production is a testament to the wisdom of the local people. By storing these supplementary water resources in dams and ponds, the water in these ponds becomes another crucial type of resource. A place situated in the groove between two mountains, high on both sides and low in the middle, is called a "ya." A "tang" is a large natural water storage tank excavated at the mountain pass. Villagers build both large and small ponds based on their water storage needs and dependence on water for production. Yatang water can only be used for production purposes and typically cannot be used for domestic consumption. However, a small well connected to the same water system as Yatang can be used for daily life. For instance, Xiaoyatang in L Village is located in the Shanwan depression, about 100 meters below Xiaoyatang, where there is a mountain water source for drinking. The locals call it "Xiaoyatang Well." The water source of this well originates from Xiaoyatang but flows through the rocky terrain of the mountain and is naturally filtered. This well is recognized by the villagers as potable "mountain spring water" and has been supplying water to the people in the mountainous area for years.

### **1.4. Drip Water from Tunnel Rock**

The various methods of finding and utilizing water in L Village fully reflect the villagers' deep connection to and wisdom about water. Villagers also use the drip points of natural tunnels for detection and excavation, expanding these drip collection points to create tunnel outlets for multiple people to drink from. The Lao Gua Wo water tank in Group 6 of L Village, at an altitude of 849 meters, is one such water intake point. Villagers expanded it by using the dragon bone stones in the mountain as carriers and relying on the drip points of the

mountain spring. There is a consensus among the villagers that “wherever there is dragon bone stone, there is mountain spring water.” Therefore, they excavated tunnels in areas with dragon bone stones, storing mountain water sources in these tunnels for drinking, which locals call “tunnel water.” “The water source point of the trough tunnel has existed for several generations. A small hole was blasted in the area where the dragon bone stone had watermarks, and then it was cleaned and expanded into a water intake point for the tunnel,” said HZM. Regardless of the season, the water flowing through the rocks above the tunnel continuously infiltrates the smooth keel stones and flows into the excavated tunnel, providing a continuous water supply for the villagers. The government is also very concerned and regularly reminds villagers to carry out dredging work in an orderly manner, manage large-scale water leakage, and install water diversion pipelines to support long-distance water source transportation.

### **1.5. Large and Small Karst Cave Water**

“The bright moon shining among the pine trees, and the clear spring flowing up the rocks” is an apt depiction of the water flow in karst caves, particularly in the karst landscapes of the Wuling Mountains, where such caves are the most common natural formations. For instance, L Village in Qianjiang is one of the villages with numerous karst caves. Most of the six village groups have karst caves within their territory, and some groups have more than one. These karst cave waters are the most convenient and crucial source of drinking water for the villagers. The water from large and small karst caves in mountain streams is the primary source of drinking water for the people. According to the locals, karst cave water is surface water that has seeped into the mountain’s dragon bone stone karst cave. After being filtered by rock minerals, the water quality is enriched with natural minerals, commonly known as mountain spring water. Flowing through rocks, forests, and soil, the mountain spring water absorbs natural minerals, becoming the main source of drinking water in rural areas. This pure mountain spring water is a source of pride for the locals.

## **2. Modes of Rural Water Storage in the Wuling Mountains**

The Wuling Mountain area’s rich water resource system is closely tied to its abundant forest resources, which play a crucial role in water conservation and purification (Ma *et al.*, 2021). This is consistent with findings in other mountainous regions, where natural forests have been shown to provide higher ecosystem services, including water purification (Ma *et al.*, 2021). The value of water resources conserved by forests has been quantified in the Hani Rice Terraces System, emphasizing the importance of forest conservation for sustainable development (Li *et al.*, 2016). The economic and ecological benefits of water conservation through forest ecosystems have also been highlighted, further underscoring the significance of forest resources in water management (Gao-di, 2002). Traditional knowledge, particularly in forest practices, is a key factor in forest resource conservation, further emphasizing the importance of local customs and practices in maintaining the water resource system (Shan, 2011). The presence of karst landforms in South China’s mountainous regions significantly impacts the distribution and availability of water resources, leading to challenges for rural farmers (Jian, 2001). This is particularly evident in the Guizhou Province, where economic and social factors, such as rural residents’ income and impoverishment, play a critical role in rural water security (Zhou *et al.*, 2021). The unique water and soil loss processes in these regions are influenced by factors such as rainfall erosion, topographic relief, and soil types (Yue-min, 2011). Despite the high annual precipitation in Guizhou, the water resource carrying capacity is lower than in non-karst areas, highlighting the need for improved water use efficiency (Hong, 2006). There is an old saying among the elderly in mountainous areas: “The choice of marriage depends on whether the other person’s home is convenient.” This saying highlights the importance of abundant water sources in the marriage considerations of the older generation, emphasizing the interdependence and inseparable natural relationship between water and mountain people. The adage “Groundwater, rolling flow; surface water, precious as oil” indicates that surface water, primarily used for drinking, is essential for solving the water supply problems in rural settlements. Based on on-site investigations in L village and studies of multiple ethnic groups in the Wuling mountainous area, the main water storage conditions can be summarized into four modes: single-family water storage, family collective water storage, kinship group water storage, and neighborhood mutual aid water storage.

1. Single-Family Water Storage: This mode involves a household searching for a drinking water source in a specific mountain area, constructing a cement pool at an appropriate location, and introducing the water

pipe from the source into the pool for the sole use of one household (Taghavijeloudar *et al.*, 2013; Ning *et al.*, 2022). The humanistic wisdom of single-family water storage lies in the independence of finding water sources, which greatly reduces disputes over water use. The family bears the responsibility for managing, dredging, and dealing with drought and flood disasters related to the water source, maintaining a relatively independent system (Vaidya, 2015).

2. **Family Collective Water Storage:** In this mode, families with the same surname in a village collaborate to find mountain streams and springs and build a large water pool near the source. Only participating family members can enjoy these water resources (Chun, 2007). The risks and costs of water source issues, such as pipe ruptures, droughts, floods, and leaks, are jointly borne by the family members. After the pool is built, family members collectively discuss water resource management and verbally select a leader to manage the water source (Kumar, 2011).
3. **Kinship-Based Group Water Storage:** This mode involves a small group of relatives with different surnames in a village, who collectively search for water sources and build pools. Unlike the previous two modes, this system relies on kinship rather than family ties (Manceron, 2006). Therefore, the public space occupied by the pools must be collectively discussed and compensated to the landowner through labor or economic means. Water source managers receive allowances and compensation for labor time losses but are responsible for all aspects of water source management. This type of water storage can lead to more frequent conflicts and disputes over water resources due to uneven distribution and usage (Korbéogo, 2020).
4. **Neighborhood Mutual Aid Water Storage:** This mode involves several neighboring households with good relationships sharing a water source. It is not linked to economic compensation, and any issues with the water source are jointly addressed by the households. This system is based on the concept of harmonious humanistic ecology, requiring joint resolution of water supply issues without disputes. The allocation of water resources is based on the most economical use, preventing arbitrary waste. This mode reflects the growth of needs and new social relationships, as population growth generates new demands. According to Marx's anthropological theory (Yu Pei, 2015), "water conservation and shared use are basic requirements" in Eastern societies. This principle is most evident in neighborhood mutual aid water storage, where conserving water and jointly solving water resource issues are paramount.

The people of the Wuling Mountain area understand the importance of water resources in their production and life, and they store water in different ways according to local conditions and needs. These various types of water storage reflect the local people's wisdom in interacting with water and the development of social relationships.

### 3. Building a Local Social Mutual Aid System

The conscious governance of water sources represents an effective construction of a new comprehensive governance system (Liyun, 2022). This system considers the organic connections between the water environment, water ecology, water resources, water safety, water culture, and coastline. It is a spontaneous public behavior and a comprehensive management plan for the water resources, environment, safety, ecology, and culture that humans rely on for survival. This plan operates under the scientific understanding of the symbiosis of mountains, rivers, forests, fields, lakes, and grasses, the interaction of various pollutants, and the cross-border pollution of water, air, and soil (Qiao *et al.*, 2021). Our on-site investigations in the mountainous rural areas of Wuling Mountain show that both official and private authorities place great importance on the source of water resources and the development of water conservancy. In the Wuling area, the entire village is regarded as a whole, with water resources provided to villagers as public resources. It is precisely because of this water source system that the local social interaction system of the entire village is constructed (Zheng and Zhuang, 2021).

#### 3.1. Private Spontaneous Organization to Manage Water Sources

Regardless of the season—spring, summer, autumn, or winter—the water-carrying duties of mountain villagers have never ceased before the establishment of an individual water supply system. Women, children, and men in their homes take on the task of carrying water and arranging household chores in an orderly manner. The routine of carrying water has become an essential part of their daily lives. The water tank in their home is never

empty, as the water flows from the tank to the stove or teapot. Each pot of water eventually becomes a meal or a cup of tea, providing nourishment and enjoyment. Additionally, a tank of water is used for cleaning the entire family from head to toe. Water plays a crucial role in the production and life of rural residents, leading to the formation of a social system around its governance, use, and management (Reddy, 2004). The village group leader is responsible for managing water resources, distributing them as public resources within the village, and organizing collective activities among the villagers. The effective governance and protection of water sources by grassroots rural organizations reflect their governance capabilities. The leadership of village organizations in managing public resources such as water has established a favorable rural moral value system, and the water source structure reflects the village's community nature (Xu et al., 2022). Villagers collaborate and discuss scientific water use issues. The leader of L Village is recommended and elected annually by the village committee through voting in the village representative assembly, consisting mostly of local elites or knowledgeable individuals. For example, LKH, a retired teacher from Group 5 of the village, is such a leader. Group 5, located between two mountains and a trough with relatively flat terrain, often faces water shortages during the dry season. Encouraged and supported by the government, LKH has long gathered villagers to devise solutions for accessing water sources. In 2014, with partial government funding to address drinking water difficulties, LKH convened five groups from the entire village to contribute labor. He even called back his son from university during the summer to help. Once the water pipe was repaired, the team members recommended that LKH manage the allocation and use of water sources. Upon accepting the role, he took charge of managing water issues for the entire team and intervened in local social disputes caused by water sources, providing necessary support for resolution. Team members, in turn, supported LKH in obtaining convenient water resources. Thus, the control of water sources is held collectively by villagers, with individuals having only management and distribution rights. As a social community, the collective protection and maintenance of public property in villages are evident. In Group 5 of L Village, villagers have spontaneously organized activities to maintain public water intake equipment. When the water pipes were damaged by passing vehicles, villagers LKH, LB, and HGQ took the initiative to purchase repair materials and fix the pipes, ensuring water resources were redistributed to homes. Water resources in L Village are allocated according to need, with villagers voluntarily solving allocation difficulties and adhering to rules and regulations regarding water use. Drought is the most significant cause of water scarcity, depleting multiple water sources in rural areas. In 2022, the driest year L Village had encountered in 60 years, villagers united to cope with the drought. Facing water source difficulties, they worked together to clear existing sources and formed a "folk water search team" to find new ones. Unlike the 1960s and 1970s, when water disputes were common, today's spontaneous organization of water search, protection, and supply systems has reduced such conflicts. Even a small well can supply dozens of households with alternating water intake during severe droughts. During the 2022 drought, Gouyitou Kaizi Well in Group 3 of L Village provided water for residents from Groups 4 and 5, helping solve their water supply problems. The water source in Group 6 had been in disrepair, reducing its storage capacity. Villagers collectively contributed to repairing the original well. Every household showed a positive attitude towards protecting and improving water sources, exemplifying rural community collaboration. LQS explained, "The sewage pipe of this pool is made of wood, and if it rots, it cannot shut off the water. Today, our main purpose is to clean the sewage pipe, replace it, install a switch, and remove sediment from the pool." In their free time, villagers intensify water source protection. They often have a keen observation ability to detect tiny streams in nature, pooling their efforts to manage water resources. For example, on a rainy day, LKS and his children discovered a stream trickling out of a small cave near the mountain's foot. LKS believed such water sources could serve the villagers, leading the team to inspect and utilize the water source for the community's needs (Calzada et al., 2017).

### **3.2. Water Use and Water-Saving in "Big House and Small Things"**

"Big house small things" is a rural custom that encapsulates the natural laws and phenomena village people must follow in life, such as birth ceremonies, weddings, and funerals. In the rural areas of Wuling Mountain, it is customary for families to help each other with these events. This rural society, linked by acquaintances, relies on mutual assistance, which binds people together emotionally. For example, if someone helps fix a dustpan, they might be invited for a meal; if a family is busy, neighbors might help carry water, and in return, receive help with pouring tea when needed. In rural society, red and white celebrations at home are the most concentrated times for water use, testing the supply capacity of water resources. When people move and settle,

they consider water availability as a crucial factor, demonstrating their survival wisdom. For example, the YKZ family in L village held a “food and wine delivery” ceremony when adding a new member. “Sending rice and wine” is a birth ceremony custom in the Wuling area. When a new member joins the family, relatives gather to celebrate, and the host family holds a banquet (Zhou *et al.*, 2022).

The “Sending Rice and Wine” banquet typically follows a three-day schedule. On the first day, preparations are made, including inviting guests, buying groceries, and setting up the banquet. The second day is the formal banquet for family and friends, and on the third day, the family entertains the close relatives who stay overnight. Without a water supply system, fetching water was a priority, usually with the help of young men from the family and neighbors (Oxfeld, 2018).

In the 1960s and 1970s, the YKZ family organized a “food and wine delivery” service. On the first day, at least six young adults would help carry water for the banquet, fetching it from nearby sources and filling multiple storage containers. This water was used for brewing tea, cooking rice, washing rice, vegetables, meat, dishes, and chopsticks. On the day of the banquet, 13 to 14 young and middle-aged laborers took turns carrying water non-stop. The more guests there were, the busier the helpers became. YKZ, a villager from L village, recalled, “Our generation always carried water to host banquets. It was like killing a pig before inviting guests. The process of preparing pork for a banquet required several loads of water, and the amount of water used was substantial.” Today, thanks to government efforts, L village has installed water pipes. Now if there is a “big house small matter,” there is no need to ask for help fetching water. The water can be directly connected to the pipe, significantly reducing labor and time costs. While the practice of asking people to help carry water has faded, the memory of it lingers in the minds of the villagers. It is a nostalgic reminder of an era, an important life experience, and a lesson in the value of water resources and conservation.

### **3.3. Stories and Legends: Another Effective Way to Consciously Control Water Source Cleanliness**

“Clean and pollution-free” is a human concept of ecological water resources. Durkheim’s understanding of the essence of the social system is as follows: if we want to correctly understand the essence of society, it is necessary to jointly maintain a shared value system and collective consciousness (Mary Douglas, 2008). As a public resource for people, water sources form a local social system with common values based on the needs of water resources. Water is inherently pure, possessing its spiritual energy, and it must remain uncontaminated. The story of a clean water source that becomes polluted and stops flowing has been reinforced and elaborated in L Village. In the 1970s and 1980s, there was a water source near the dustpan field in Group 5 of the village. This source, known as “Yangliushugou,” was named after a large willow tree by the well. During heavy rain, the low terrain caused the water to converge into a small ditch, hence the name. This water source, known as Diqin water, flowed out of the mountain stream year-round and never ran dry. The villagers couldn’t explain why such clear spring water flowed there, consistently supplying the daily production and living water for the surrounding villagers. A well-known story about the depletion of this water source circulates in the village: villager LKL recounted that there was a large well on the old ridge of Yangliugou at the intersection of Group 5 of the village. The well had a diameter of 1.5 feet and a depth of up to 5 meters. An ancient willow tree, with a diameter of about 3 feet, stood by the ditch. At the bottom of the well was a surface water source outlet, about the size of a bowl. In the scorching summer, people would draw cold water from this well to drink. Agricultural workers used bamboo slips or leaves to fetch water and drink. It is said that one day, a villager, in urgent need during farming work, urinated in the well. Since then, the water in the well stopped flowing, and it gradually dried up into mud pits. The villagers believed he had offended the good god, causing the water to be polluted and the spiritual energy to dissipate. This story illustrates that the drying up of certain water wells in the village is attributed to cleanliness and pollution. The well, which originally provided flowing water, was contaminated by the indecent behavior of a villager, leading to the depletion of the water source. Clean water and water conservation are common practices in the mature natural ecology of the Wuling Mountain area. However, unclean behavior attracts criticism and resentment, which helps protect the cleanliness of water sources and the balance of the ecosystem. Out of reverence for water, the legend of a dragon inhabiting the well spread throughout the village. The story of dragons and water wells is well-known in Group 6 of the village. The elderly LXS told us this story and insisted he had seen aquatic creatures resembling dragons to emphasize its authenticity. He said, “There is a dragon in the big well, with a transparent dragon head and a

red dragon body, but it is only as long as chopsticks. Its body is small yet powerful. It has been hidden in the well for a long time and occasionally enters the cave. Legend has it that when it emerges, its tail swings, causing the earth to shake and rocks to fall. Therefore, it is necessary to seal the dragon, leaving only a small water outlet, which is the current water outlet. No unclean items are allowed at the outlet, and there are very few aquatic plants, keeping it very clean." LXS believes he has seen such a dragon in a well near his home, so he has always maintained a reverence for the well and is very cautious in using water resources. He actively participates in the expansion and repair of the well. Villagers growing in mountainous areas are very sensitive and proactive in managing water sources. This demonstrates that rural water resources are the lifeline of village people. Through the interaction with water sources, local social relationships are intertwined. Villagers gather around water sources to address the village's water use issues collectively, viewing the entire village as a community. From the interests of the village community, villagers voluntarily safeguard the community's interests and rights, benefiting all water users.

#### 4. Conclusion

Throughout history, humans have lived by water, and civilization has emerged alongside it. Water is the source of life, essential for our survival and development. We need to strengthen water source protection, effectively prevent and control water pollution, and maintain ecosystem stability. Through field investigations into the local water resource system operation in L Village, Wuling Mountain area, various types of water resource systems in the mountain area were classified. This classification intuitively reflects the wisdom of harmonious coexistence between humans and nature in the mountain area and the utilization of water resources. By using water as a medium, we construct an ecological system that integrates human and natural systems. Folk legends and stories about water wells further illustrate the wisdom of this harmonious coexistence. Based on the interactive practice between rural water sources and human survival in the Wuling Mountains, this article proposes a case of harmonious coexistence between humans and nature. It aims to deeply understand the operational logic of ecological civilization in rural China and further explain the relationship between ecological civilization construction and humanistic ethics, encapsulated in the saying "Green waters and green mountains are golden mountains and silver mountains." Realizing human-water harmony and promoting ecological civilization construction are practices that enhance the happiness and safety of the people.

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