Spring Inventory and Mapping

A Report of Baruwa Watershed, Triyuga, Udhyapur, Nepal

GOVERNMENT OF NEPAL

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DEPARTMENT OF FORESTS AND SOIL CONSERVATION

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Foreword

Spring is a place where water moving underground finds an opening to the land surface and emerges. Most of the water supply schemes are directly dependent on the springs. There is increasing evidence that most springs are drying up or their discharge is reducing gradually. This situation exerts pressure on the water supply. Before two decades, we had plenty of water supply and no need to know how and from where water was being supplied. Nowadays, due to climate change and other adverse factors, the number of springs and water discharges has gradually decreased. People start to feel the pressure of water both in quality and quantity. This situation slowly teaches us to work on spring levels for their protection and improvement, and we have to assess the amount, quality, and condition of water springs.

Improvement of water yield is also a prime objective of BMC, Koshi. For that, springs are also a working unit. So, we have to assess the number and conditions of springs found in this basin. In this regard, we tried to determine the spring of the Baruwa Sub-watershed of the Udayapur District. This study develops a to-do list for water yield improvement in the study area. This report helps to conduct climate change adaptation/resilience programs to address the effects of climate change on water resources.

This report has synthesized the information based on different available studies and directly added data from the field. The 54 springs included in this report are spread at Triyuga Municipality.

I want to congratulate the expert for bringing out such a highly comprehensive and timely report on the spring inventory. I want to thank all the concerned local communities, organizations, individuals, and the BMC Koshi team for their valuable input and support in preparing this report.

I sincerely believe this report would serve as a valuable baseline for designing and implementing policies and programs.

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CHAPTER 1: INTRODUCTION

1.1 Background

Water is essential to human survival, so every effort is made to check its availability, accessibility, and quality to ensure the survival of life. Although our planet is covered 70% by water, it is the most critically stressed resource globally (Ogunbode and Ifabiyi 2017). The amount of water resources found on the planet is constant, but the growth of the human population and their increasing living standard have caused to increase in demand for water resources. The prominent people of some water-rich countries have no access to fresh water and sanitation, while countries like Kuwait, Qatar, Emirates, or the vast Los Angeles agglomeration situated in dry regions with high living standards benefit from outstanding water services (Jemmali and Sullivan 2014).

The Himalayan region is blessed with adequate rainfall. However, an overwhelmingly high proportion of it is restricted to the monsoon season, and a large portion of it is lost as surface runoff. Groundwater in the form of mountain springs ensures water security for most rural populations. Hundreds of springs develop a variety of landscapes and geological formations throughout the Nepal Himalaya. These springs have historically been, and remain, the only source of clean drinking water for the majority of the population living in the Himalayan Mountains of Nepal and surrounding countries.

In Nepal, tap/piped water is the primary source of drinking water, with 47.78% of households using it, tubewell/hand pump for 35% of the total family, 5.74% of households using spout, 4.71% of households using uncovered well/kuwa and 2.45% of household using covered well or kuwa (Kathmandu 2014). The term 'groundwater potential' denotes the amount of groundwater available in an area, and it is a function of several hydrologic and hydrogeological factors (Jha et al. 2010).

Spring flows may be immeasurably small compared to rivers and lakes, yet they play a leading role in the hydrological cycle. They also produce some of the most pristine fresh water and are thus highly valued. Springs serve as indicators of groundwater quality and quantity supplementary to monitoring wells or water wells. Springwater usually has a high natural quality. However, the quantity and quality of spring water depend on many factors, such as geology, climate variability, land use, and urbanization. More and more once-reliable springs are drying up, presenting rural communities and women with new challenges. It is crucial to

increase our understanding of the spring hydrology of the Himalayan region and protect and conserve the springs as essential resources for current and future generations.

The occurrence and movement of groundwater in an area are governed by several layers such as topography, geology, geomorphology, structure, land use, soil, rainfall, drainage density, groundwater depth, and the interrelationship between these layers (Jaiswal et al. 2003).

Spring inventory is a fundamental element of ecosystem stewardship, providing essential data on the distribution and status of spring resources, processes, values, and aquatic wetland, riparian, and upland linkages. Systematic spring inventory precedes a structured resource management strategy's assessment, planning, action implementation, and monitoring. A Spring/ water source inventory aims to generate reliable information to provide a sound scientific basis for informing discussion and fostering dialogue on these precious resources that have become increasingly important to sustainable development in an era of growing demand and dwindling supply. The spring inventory is aimed at a broad readership of experts from water- and environment-related sectors, including decision-makers, government representatives, academia, donors, specialized agencies, and international and non-governmental organizations. Hence spring inventories are a vital component of efforts to protect, conserve, and manage and sustainability of springs.

The study area focused on Baruwa Khola of Udhyapur district, Eastern Nepal. Udayapur district is surrounded by Mahabharat hills from the north and Siwalik from the south, whereas both hills meet together in the west, which forms the region a valley Udayapur valley. Udayapur valley is about 30 km (19 mi) long, and from 2 to 4 km (1.2 to 2.5 mi) wide, it is drained by the Triyuga river flowing east to join the Koshi river.

1.2 The rationale of the study

Springs are the only dependable source of water supply in the villages as not all villages have access to an improved water supply system. In the past, springs provided sufficient water for their basic requirements. Local people observed that the rainfall was not as much as it used to be two to three decades ago. However, in recent years, villagers have been facing a water shortage. Their springs are not producing sufficient water for their day-to-day activities. The underlying causes of water scarcity include population pressure, land-use changes, infrastructure development, increased water demand, the introduction of modern technology, and the negative impacts of climate change. Haphazard hill road construction, which is currently happening on every hill/mountain slope, has brought recurrent landslides and blocked

many spring sources. In some areas, permanent springs have transformed into seasonal, while some of the seasonal springs have dried up. The acute water shortage compels villagers to migrate from their villages.

Understanding socio-economic aspects and identifying proper recharge areas of the studied Water Sources complement each other in reviving drying springs and watershed management. Identification of recharge zones is crucial for managing watersheds in mountainous regions.

Our study combines the science of hydrogeology and the social science of community action to understand and document nature and the functioning of springs and ways of reviving springs in the Baruwa Watershed that are facing the threat of drying up. This up-to-date data and information are geared towards generating robust and on Baruwa springs using a replicable methodology. But again, the exact nature of change is challenging to understand due to a dearth of studies. Nature challenging is another essential knowledge gap that needs to be filled. The drying of Water Sources, which comes with its consequences, is a national phenomenon. A few local and national organizations have started scientific studies and policy advocacy on Water Sources, but more needs to be done, especially given the extent of the problem and its regional and local dimensions. In this context, Basin Management Center (BMC), Koshi has initiated work on understanding the physical, social, and governance issues related to Water Sources inventory, mapping, and management and uses this knowledge to influence policymaking in the region.

Conservation of water resources and implementing climate change adaptation/resilience programs to address the effects of climate change on watershed resources are some of the goals of Basin Management Center, Koshi Udayapur Gaighat. There is inadequate documentation of Water Sources on which rural and urban communities rely for their drinking, domestic, and agricultural water needs. Inventory and mapping of the Water Sources are required to revive Water Sources. It is essential to document the Water Sources at the Basin level to effectively support water resource conservation programs' policy formulation and implementation.

The information on the distribution of springs and the current status of their resources are essential for the assessment, monitoring, and management of scarce water resources in the context of Nepal. The generated data will provide information on the dependency of the population and the amount of water that needs to be provided. The interdisciplinary nature of the inventory data aids the process of improving the understanding of springs ecosystem ecology, distribution, status, and restoration. There could be poor or haphazard management

without a comprehensive springs inventory, so proper survey and study are necessary. Hence to fulfil this gap Basin management center, Koshi has taken the initiation to survey and list of springs of the Baruwa Watershed Udhyapur. This study will be a pilot assessment useful for BMC, DoFSC, SCWMO, and relevant stakeholders with a primary database. Further, this study will provide an updated database regarding live springs for sound monitoring, protection, conservation, and managing spring/water sources in the Udhyapur District.

1.3 Location

Udayapur District is one of the 14 districts of Province No. 1 of Eastern Nepal. The district covers an area of 2,300.34 Km. Geographically Udhyapur district lies between 260 39'0''N to 270 1'10''N and 860 0'9''E to 870 1'0''E, extending from East to West. In the East of the section the Koshi River. The Udhyapur district is neighbouring Saptari and Siraha districts in the South and Sindhuli and Dhanusha districts in the West. The Study area was focused on the Triyuga Municipality of Udhyapur District (Figure 1.1). The Baruwa watershed covers an area of 329.647 Square Kilometres.

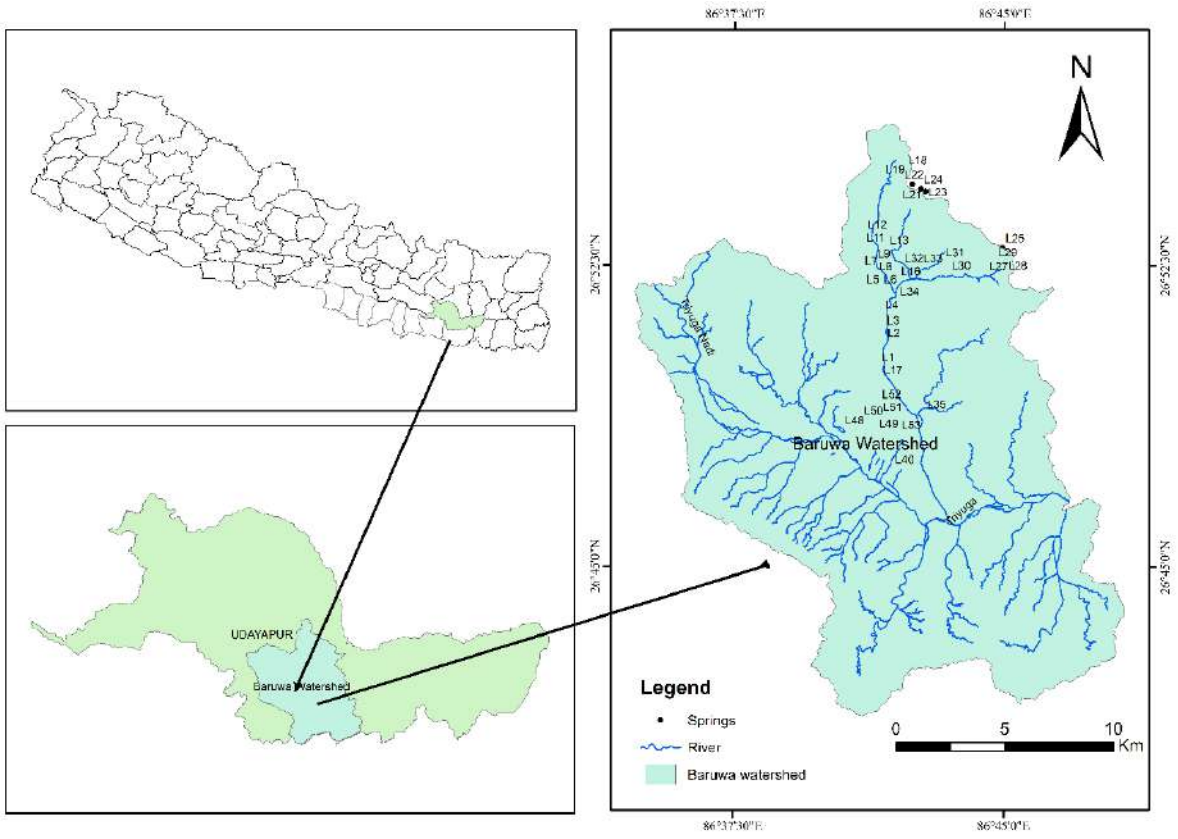

Figure 1.1: The Study area shows the map of the Baruwa watershed , Udhyapyr District Nepal. The, L1, L2, L3 are the location of the spring.

1.4 Climate and Vegetation

The geographical position and geological features, as well as physiographic characteristics, characterized the climate and vegetation of any area. The Trijuga valley is Dune valley its weather and climate depend on the location and elevation of the area. The climate of the Udayapur district is subtropical (1,000 to 2,000 m) to tropical (below 1 000 m) . The cold climate begins from October to the January and the rest of months are warm. The months April, May, Jun are the hottest months in these months' maximum temperature ranges from 33° to 38° C. The annual precipitation of Gaighat area is 1023 mm and about 20° C is the average temperature. After August the weather gently turn to colder; November, December, January is the coldest months, in these months the minimum temperature ranges from 3° to 7° C. The Sal tree (Shorea Robusta) is the most abundant tree in Trijuga valley. There are mainly two types of climatic division Upper tropical (500-1000 m) and lower tropical zone (below 500 m) in Trijuga valley. Based on the Climatic zone, the valley consists of an Upper tropical zone forest and lower tropical zone forest. The lower tropical zone forest consists of Sal (Shorea robusta), Sisau (Dalbergia sissoo). The upper tropical zone forest consists of Sal (Shorea robusta), Thakal (Phoenix humilis), Saj (Terminalia alata), Barro (Terminalia bellarica), Alstonia scholaris, Bombax ceiba, Cassia fistula, Dillenia indica.

1.5 Objectives of the study

To survey and inventory and prepare a profile of spring/water sources in Baruwa Watershed Triyuga Municipality ward no. 9,10,11, 14,15,16,17 of Udhyapur district. The specific objectives are:

1. To identify, Location of the springs.
2. To prepare the detailed spring profile with updated information.
3. To prepare the spring distribution on maps.
4. To calculate discharge, condition of spring and total population using the spring.

1.6 Scope and limitation of the study

This study is expected to build a common understanding among the local community to give sustainable development of the spring of Baruwa watershed. Preparation of spring profile and mapping provide to local bodies for formulating is the plan and policies is the crucial task of this study. Some limitations are:

1. The study area focused spatially on a small regional area.

2. Difficult to collect all the information, especially the spring's social-economic data, due to the spring location being far from the hamlet.
3. The data were collected for only one season, and the spring may show fluctuation during the monsoon and dry seasons.
4. The lack of Rainfall data and outflow data to calculate the total infiltration of water in that region

1.7 Material and Method

The present study was conducted in March-April, and data were collected through fieldwork. The instruments used for collecting data were a geological hammer, burton compass, GPS (Garmin 64s), dilute hydrochloric acid (HCL), and other field material. The Different field methodologies used are (Figure 1.2):

1.7.1 Desk Study

In this preliminary stage thesis related to the present study, published and unpublished reports, topographic maps, Google Earth images, photographs, literature, journals, and bulletins were collected from different sources as secondary data and reviewed thoroughly. Sources on the internet were also used for required data and related information and provided ideas to conduct fieldwork efficiently and systematically.

1.7.2 Field visit

Field visits observations and primary data were collected from the study area. During the field visit, the interaction was done with concerned stakeholders, including communities and local government and central government.

1.7.3 Key Informant Interview

Key Informant Interview was conducted through the local leaders, senior citizens, officials of the concerned organizations, and other relevant personnel.

1.7.4 Focused Group Discussion

Focused group discussions were held with the locals, communities, and especially senior citizens who know the prevalence, history, frequency, and intensity of various natural disasters and the condition of springs. Directly communicate with local people and extract more information about spring.

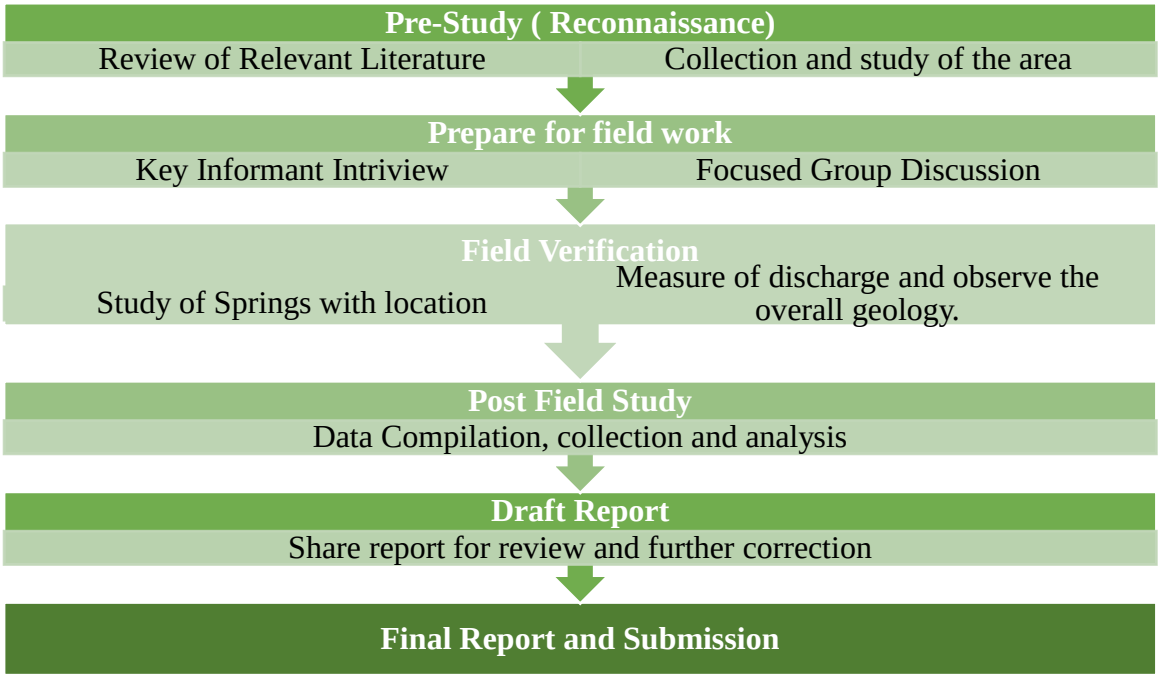

Figure 1.2: Study methodology flow chart. The flow chart shows the steps in the Analysis of Spring inventory composites, including the testing carried out with the final report Submission.

CHAPTER 2: LITERATURE REVIEW

Spring is a dynamic flow in response to changes in climate, topography, geology, and geomorphology (Pitts and Alfaro 2001; Mays and Todd 2005). Spring occurs in many shapes and sizes, which are direct influences by aquifer boundary conditions and geology. The springs are governed by Morphology, discharge rates, precipitation, and vegetation pattern (Hynes and Hynes 1970; Garside and Schilling 1979).

In complex rock areas occurrence of spring is closely related to geology (Pacheco and Alencoão 2002). While in the case of the Himalayas, spring occurrence is controlled by topography, rainfall, and land use/land cover type (Agarwal et al. 2012; Mahamuni and Kulkarni 2012; Tambe et al. 2012). (Tiwari and Joshi 2013) study in the Nainital district in Uttarakhand, India, showed that the dry and seasonal springs are higher in lower altitudes (below 1000 m) compared to mid-altitude (1500 – 2500 m) and high altitudes (above 2500 m). Studies from the Koshi River basin of Nepal in the central Himalayas revealed that springs at higher altitudes are impacted by steep slopes, limited recharge area, and decreased winter rainfall (Dixit 2009; Eriksson et al. 2009). Natural springs are the primary source for drinking, irrigation, and livestock feeding in the mid-hills region of Nepal. A survey carried out in the Melamchi area shows 93% of spring being natural, one-fourth of it having slight discharge but used for multiple purposes such as drinking, livestock, irrigation, and household purposes (Chapagain et al. 2016). In this study, two-thirds of springs are located in mid-elevation of 120-500 m.

In the mountainous area of Nepal, spring water is the primary source of water for local inhabitants. For many people, springs are the direct source of water. In this condition, it is important to assess groundwater in the area for better planning to avoid water scarcity problems. Hydrogeological parameters like geology, slope, aspect, land use, rock and soil distribution, geomorphology, etc. are widely used to identify groundwater occurrence. The study area has been carried out in the lower reaches of the Baruwa River in the parts of Triyuga Municipality

There is increasing evidence that springs are drying up or their discharge is reducing throughout Nepal Himalayas, stretching from Makhali in the West to Mechi in the East. Erratic rainfall, seismic activity, and ecological degradation associated with land-use change for infrastructural development are impacting mountain aquifer systems. It is reported that half of the perennial springs have either already dried up or become seasonal, resulting in acute water shortages

across thousands of Nepali Villagers' villages. There are also concerns about the quality of spring water. There is a dearth of scientific studies that estimate the contribution of springs to the base flow of large Himalayan rivers. Springs contribute a large share of base flow and possibly more than glaciers, ice, and snow.

At present, water resources are severely stressed and particularly scarce in the central mountain region of Nepal (Wester et al. 2019). In many villages of the area, the water shortage has been a growing barrier to local livelihoods and poverty alleviation. Activities like discharging domestic sewage and sludge without treatment, agricultural chemicals and solid wastes and encroaching upon riverbanks for illegal extraction of riverbed materials have polluted the existing surface water (Gurung et al. 2019a). Similarly, water availability has worsened with increasing variability and uncertainty in seasonal and annual precipitation. Furthermore, the earthquake of 2015 disrupted the groundwater water table in the central Nepal Himalayas as villagers explained that many spring sources were dried up after the incident. Along with the increasing population, water demand is increasing, and the water supply is challenged when the water availability remains the same or decreases at the source.

For the same reason, some economically active households have out migrated to areas with adequate water supply. Only protecting and conserving spring sources combined with efficient use of water are options available to address the issue of water shortage. For example, the alteration of physical characteristics of freshwater systems through infrastructure developments, e.g., road networks, deforestation, and over-extraction of river resources, greatly influences land use, wetland, hydrology, and geomorphology (Alcamo et al. 2008; Du Plessis 2017). In Nepal, groundwater study is limited and hence little known, both in the Terai plain or hilly mountain areas. Until recently, very little study work has been done to map spring sources in the middle mountain areas of Nepal. To address the issue related to water availability, water supply, and distribution, having a longer-term impact database would be required inclusive of geology and structure, geomorphology, and groundwater and hydrology.

Spring flows may vary considerably throughout the year, mainly when originating from an unconfined aquifer. The different types of spring water are:

2.1 Depression Spring:

Depression springs are formed at topographic lows when the water table reaches the surface due to topographic undulations Figure 2.1. A local flow system is created, and spring is formed at the local discharge zone.

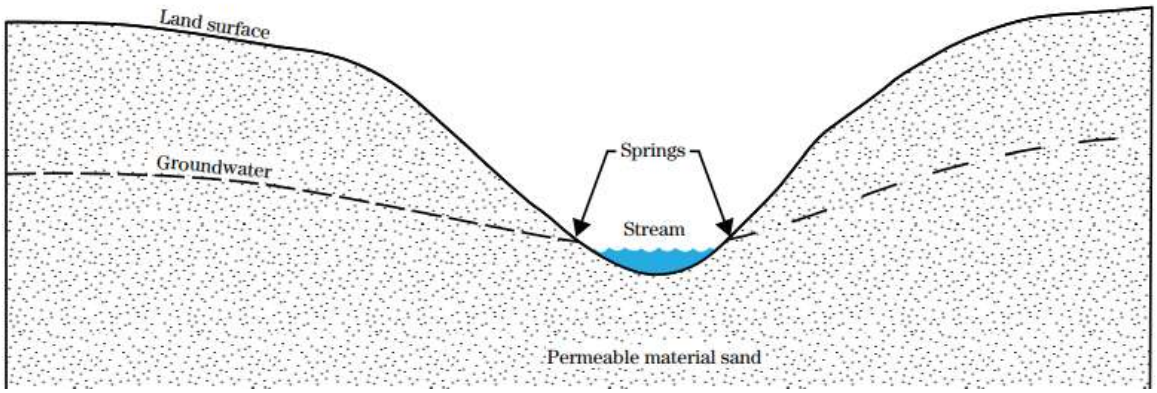

Figure 2.1: The Figure shows the depression spring flowing like a stream when the groundwater reaches to surface under influence of gravity.

2.2 Contact Spring:

Contact springs are formed where relatively permeable rocks overlie rocks of low permeability Figure 2.2. A lithological contact is usually marked by a line of springs, and such springs are generally associated with perched aquifers in the mountains.

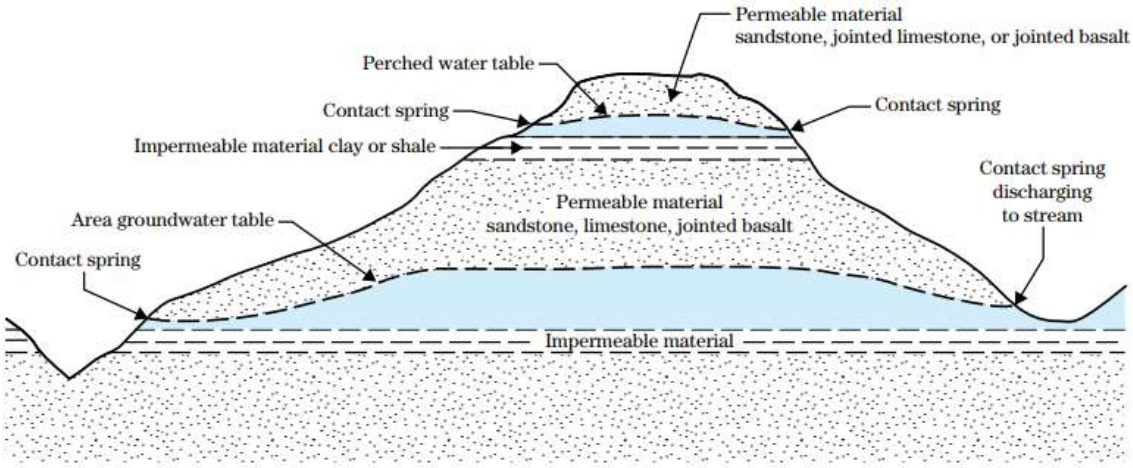

Figure 2.2 The figure shows the Contact spring and it form when an impermeable layer of clay layer blocks the subsurface movement of water and reaches out from a permeable layer like sandstone and limestone.

2.3 Fault Spring

Fault springs are formed when faulting gives rise to conditions favourable for spring formation as groundwater (at depth) under hydrostatic pressure (such as in confined aquifers) can move up along such faults Figure 2.3. An impermeable rock unit may be brought in contact with an unconfined aquifer due to faulting.

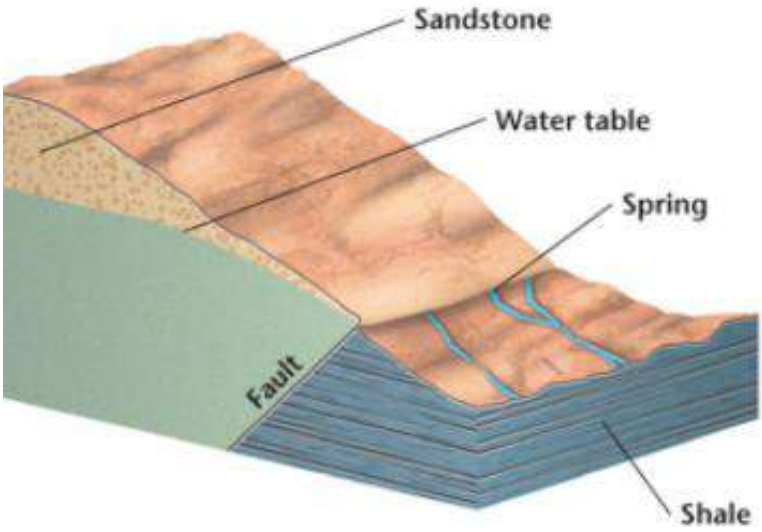

Figure 2.3: The figure shows the fault spring . Faulting may also give rise to conditions in which groundwater (at depth) under hydrostatic pressure (in confined aquifers) can move up along such fault openings to form a spring.

2.4 Fracture/Joint spring:

Joint/Fracture springs occur due to jointed or permeable fracture zones in low permeability rocks Figure 2.4. The groundwater movement is mainly through fractures that may tap shallow and deep aquifers. Springs are formed where these fractures intersect the land surface.

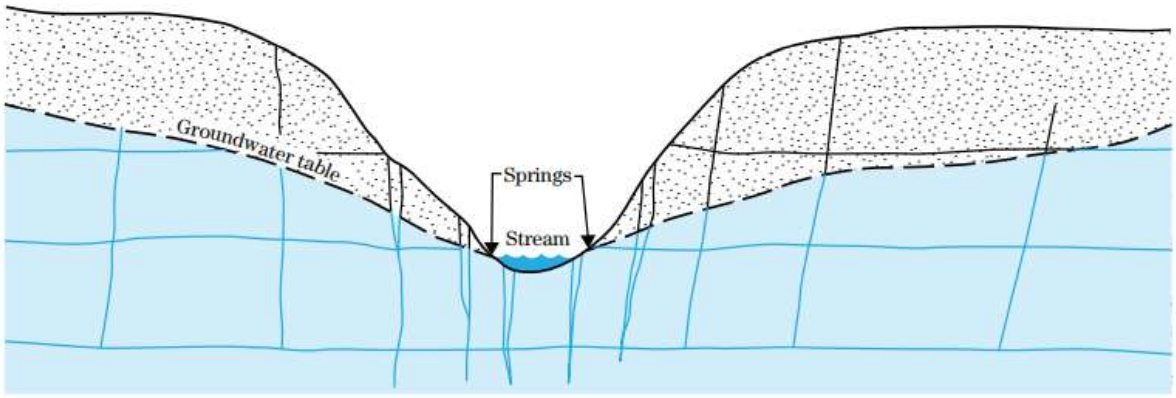

Figure 2.4: The figure shows Fracture/joint springs. Fracture springs occur due to permeable fracture zones in low permeability rocks. The groundwater movement is mainly through fractures that constitute the porosity and permeability of aquifers, and Springs are formed where these fractures intersect the ground surface.

2.5 Karst springs

Limestones host many springs. Springs in limestone terrains are interconnected to topographic depressions caused by sinkholes - depressions in the ground surface caused due to the dissolving of limestones below Figure 2.5. Large quantities of water move through the cavities, channels, conduits, and other openings developed in limestones.

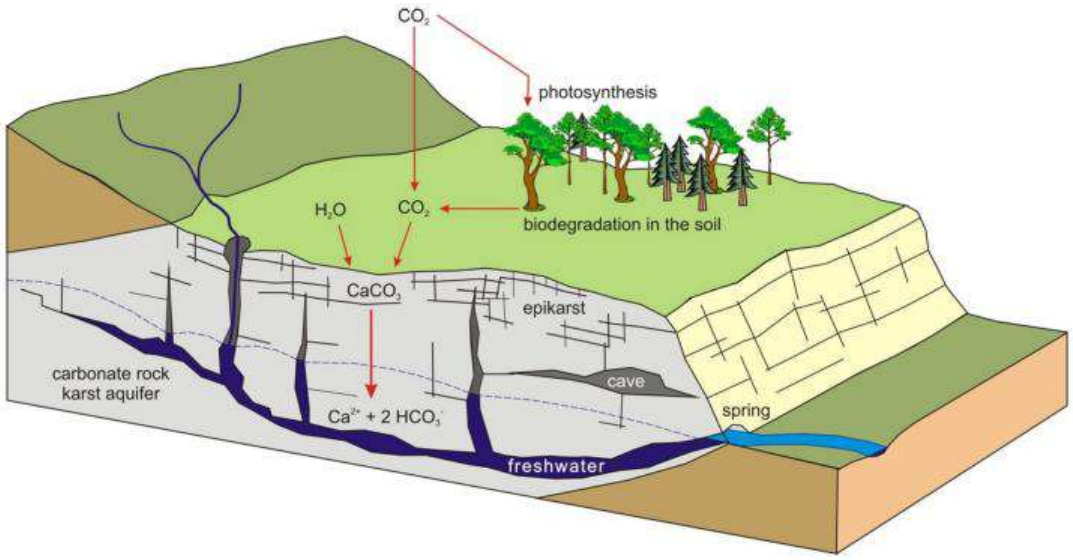

Figure 2.5: The figure shows Krast spring. Cavities are formed in carbonates rocks (limestones, dolomites, etc.) due to the dissolution of rock material by chemical reaction. Water moves through these cavities and openings to form a spring or a system of springs.

CHAPTER 3: GENERAL FEATURE OF THE STUDY AREA

3.1 Geology

Geology is the primary factor in groundwater occurrence and movements, depending on the formation of porosity and permeability. The infiltration capacity of the surface or near-surface layer is controlled by the erosion and weathering conditions of rocks and types of lithology, joint and fracture conditions, rock hardness, and orientation of rock strata. The geology of the study area dominantly comprises the Siwalik, Lesser Himalaya, and Higher Himalaya (Dhital 2015). The Lower Siwaliks cropping out in this area are predominantly of interbedded red, purple, green, brown, and orange mudstones and grey, greenish grey, and purple sandstones (Dhital 2015). The Recent Deposits consist of unconsolidated gravels to fine sand and silt particles, and pore spaces between the grains easily allowed water to infiltrate subsurface strata. These recent deposits were found on the river terrace of Baruwa Khola.

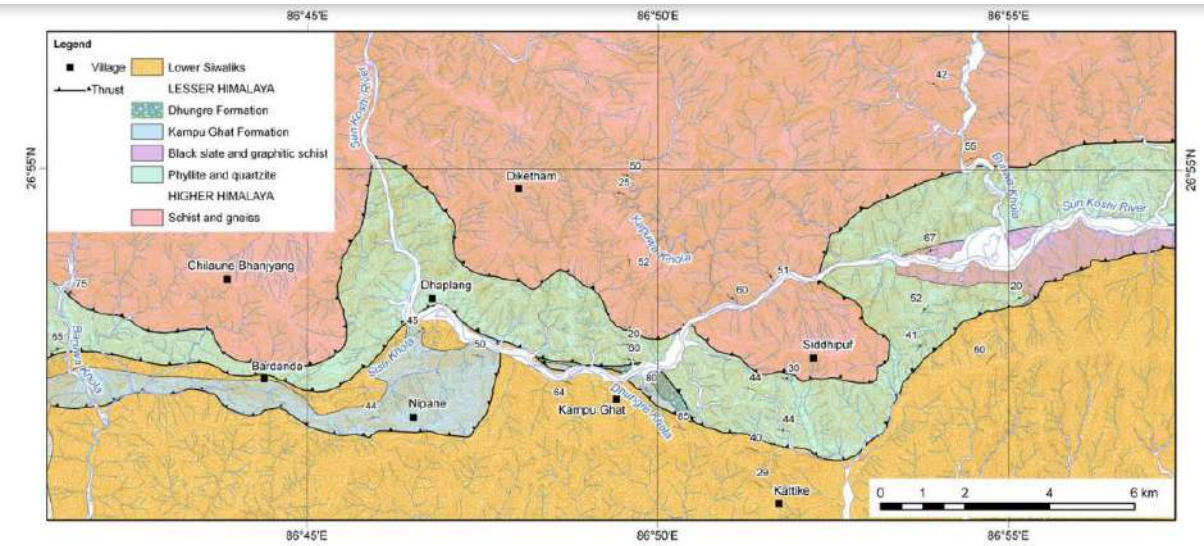

Figure 3.1: Geological map of the Kampu Ghat area showing the distribution of Gondwanas (Dhital 2015). The Lesser Himalayan metasedimentary rocks are represented by bluish and greenish-gray phyllites and light grey quartzites, consisting of muscovite, biotite, and quartz. They are thrust over other Lesser Himalayan sedimentary rocks and Siwaliks (Figure 3.1). The higher Himalayan consists of the garnet-bearing schist and banded coarse-grained gneiss.

3.2 Topography and Physiography

Udayapur district incorporates Middle Mountain, Siwalik, and Tarai physiography regions. Mahabharat hills surround Udayapur valley from the north and Siwalik from the south. In addition, the Trijuga valley in the Udayapur district represents the Dun Valley within the

Siwalik region. The study area Baruwa watershed (Figure 1.1) of physiographically divided into Siwalik and Inner Mountain.

3.3 Elevation

The aerial captured DEM used to calculate coverage by the various elevation classes has been analysed and it was observed that only 0.30% of the total district area is covered by the high elevation class (1500-1888m), while the maximum extent (55.49%) is covered by the elevation class of (65-200m) (Figure 3.2).

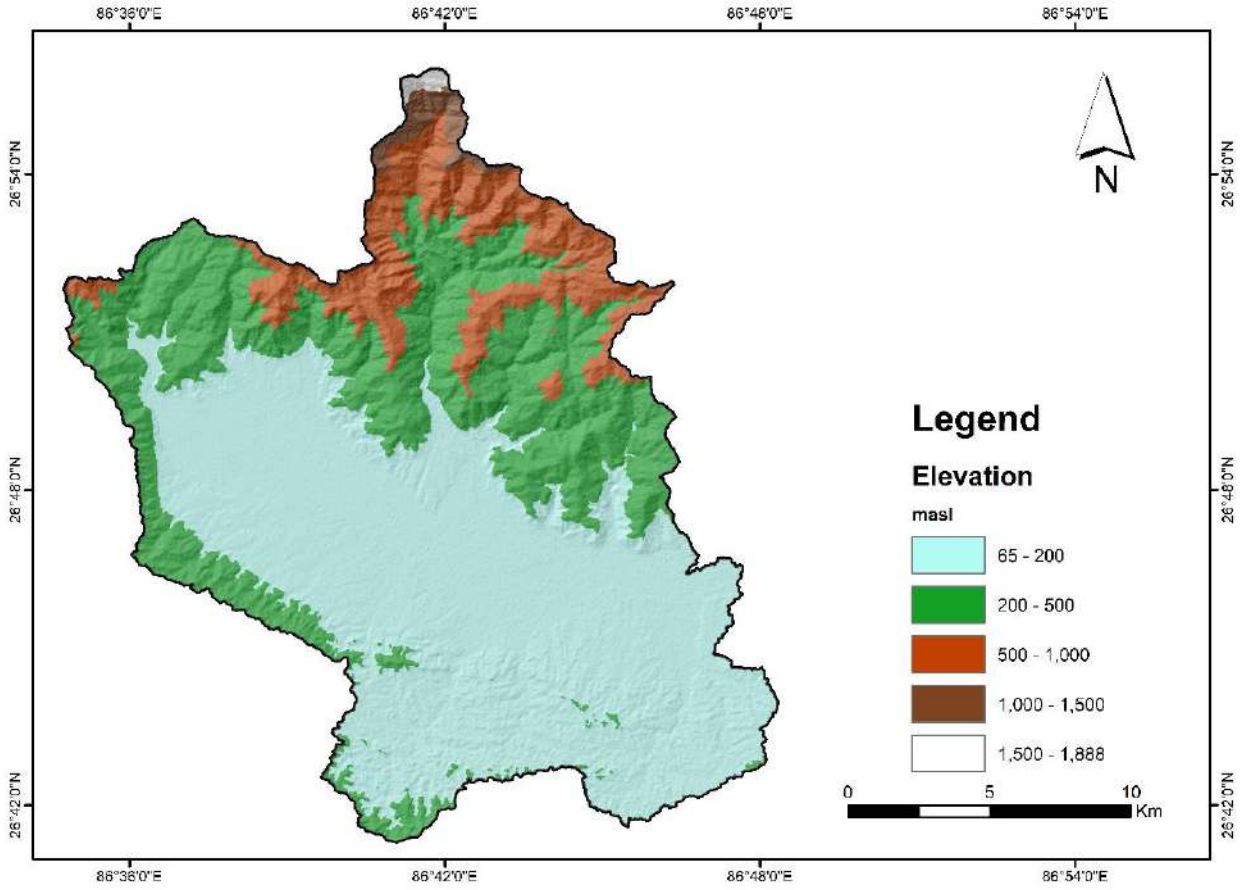

Figure 3.2: Distribution of different elevation classes within the Baruwa watershed.

Similarly, by elevation class of 200-500m (30.97%), elevation class 500-1000m (4.71%), and elevation class 1000-1500m (0.51 %) (Table 3-1).

Table 3-1: coverage by different elevation classes within Baruwa Watershed

Elevation class (m)	**Area(km^2)**	**Area Percentage**
65-200	21.94854	55.49
200-500	12.25277	30.97
500-1000	4.713206	11.91
1000-1500	0.518663	1.31
1500-1888	0.120844	0.30

3.4 Slope

The slope of Baruwa Watershed Dominantly shows Gentle slope. Most of the upper part shows high and steep elevation, and the lower (south) shows Gentle slope Figure 3.3. The aerial coverage of various slope classes was analysed and found that about 79.67% area is covered by Gentle slope, a Very Steep slope covers around 0.004% area, 0.937% is surrounded by steep slope, 19.38% area is covered by a Moderate vertical slope Table 3-2.

Table 3-2: Arial coverage of different slope classes.

Slope	**Area (km^2)**	**Area (%)**
0-20	262.6067188	79.670
20-40	63.90578125	19.388
40-60	3.09015625	0.937
60-71	0.01421875	0.004

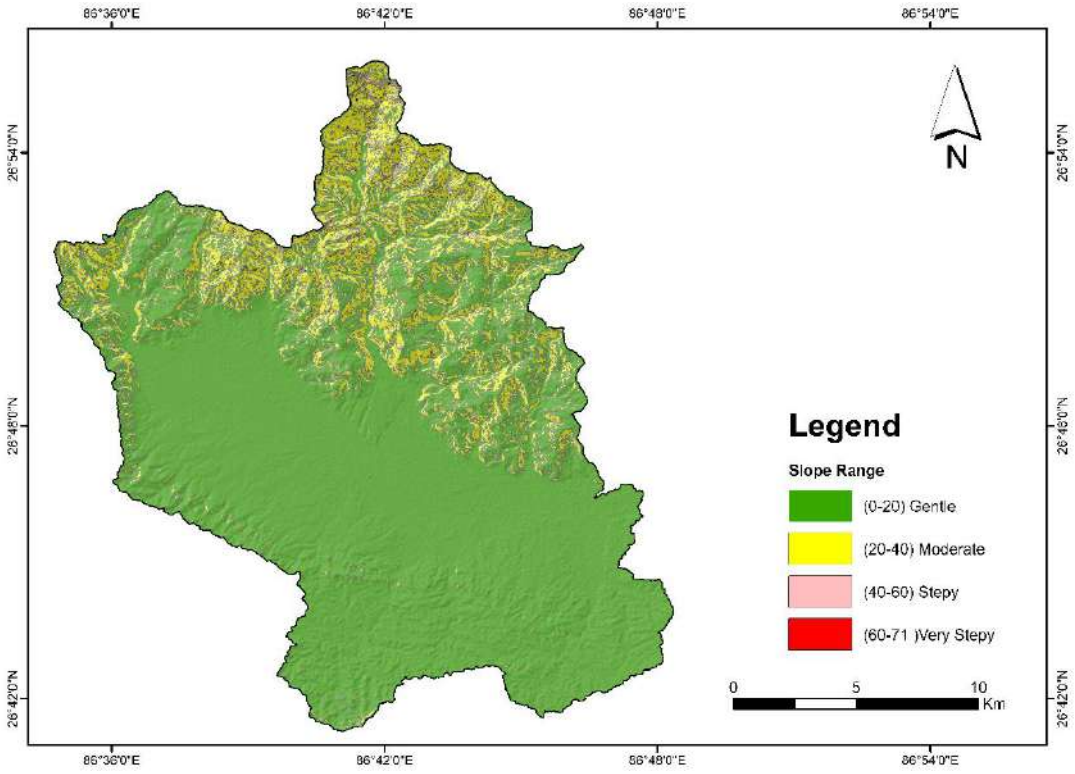

Figure 3.3: Arial coverage of slope of Baruwa Watershed

3.5 Aspect

The concept of an aspect map is simple to understand. Aspect values indicate the directions the physical slopes face. The majority of slopes facing are East, Southeast, South, and northeast (Figure 3.4, Table 3-3).

Table 3-3: Slope aspect of Baruwa Watershed

Aspect	**Area km^2**	**Area (%)**
Flat	8.169844	2.478588
North	21.40891	6.495088
Northeast	36.76078	11.15258
East	43.70766	13.26014
Southeast	49.275	14.94917
South	39.31328	11.92696
Southwest	40.39234	12.25433
West	37.71125	11.44093
Northwest	39.02094	11.83827
North	13.85688	4.203934

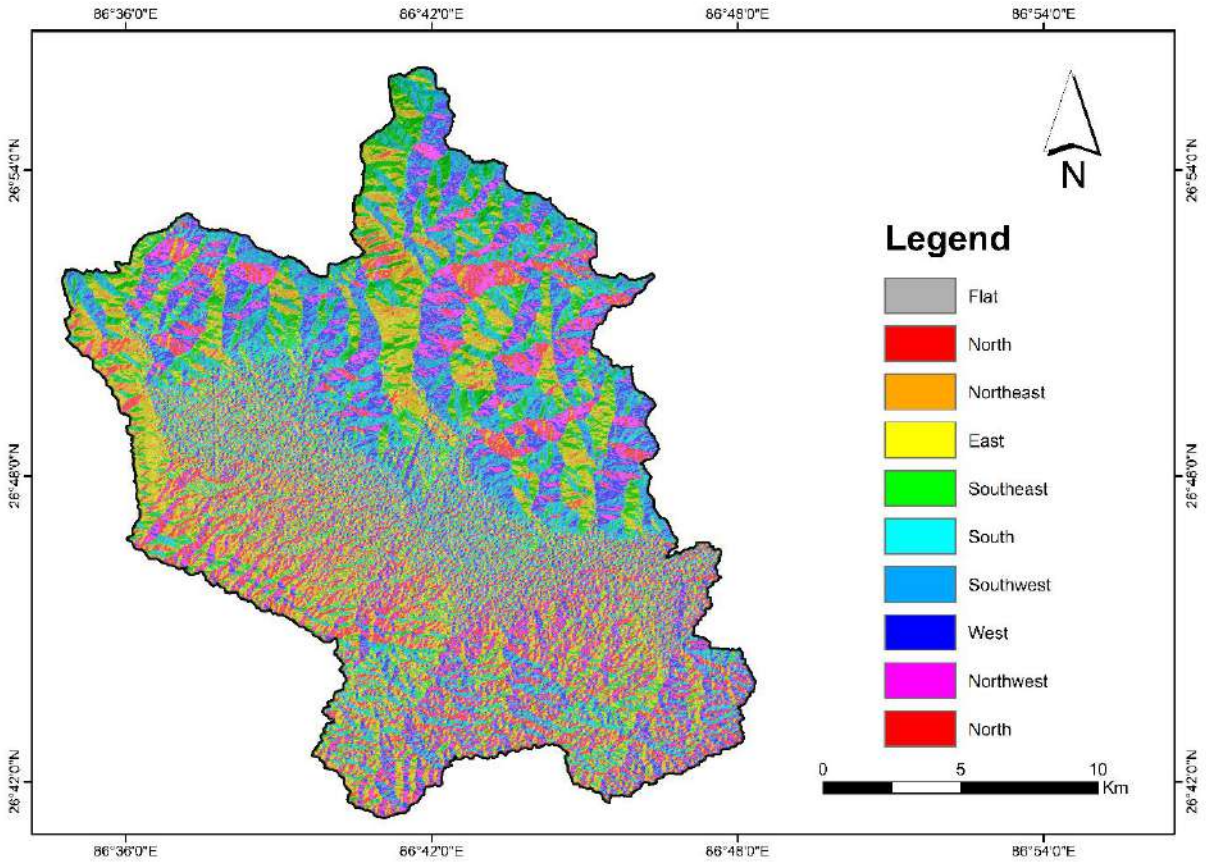

Figure 3.4: Slope aspect map of Baruwa watershed.

3.6 Drainage Network

Udayapur district drains enormous rivers and streams. The major river within the district is the Sunkhoshi River, which flows through the district's Northern border and flows West to East direction. The Kamala River, which flows through the South-West border of the district and flows North to South, Saptakoshi River which flows through the North-East edge of the district and flows North to South, the Triyuga River, the Baruwa Khola, the Tawa Khola, the Baidyanath Khola, the Kakur Khola, the Bahadur Khola, the Surung Khola, the Yari Khola, the Rasuwa Khola, Rakuli Khola, and the Adheri Khola.

The Study area contains the Baruwa and Triyuga river, which is the main drainage of Baruwa Watershed. Other tributaries join this major river and meet to finally Join the Saptakoshi River in the east (Figure 3.5: Drainage Map of Baruwa Watershed

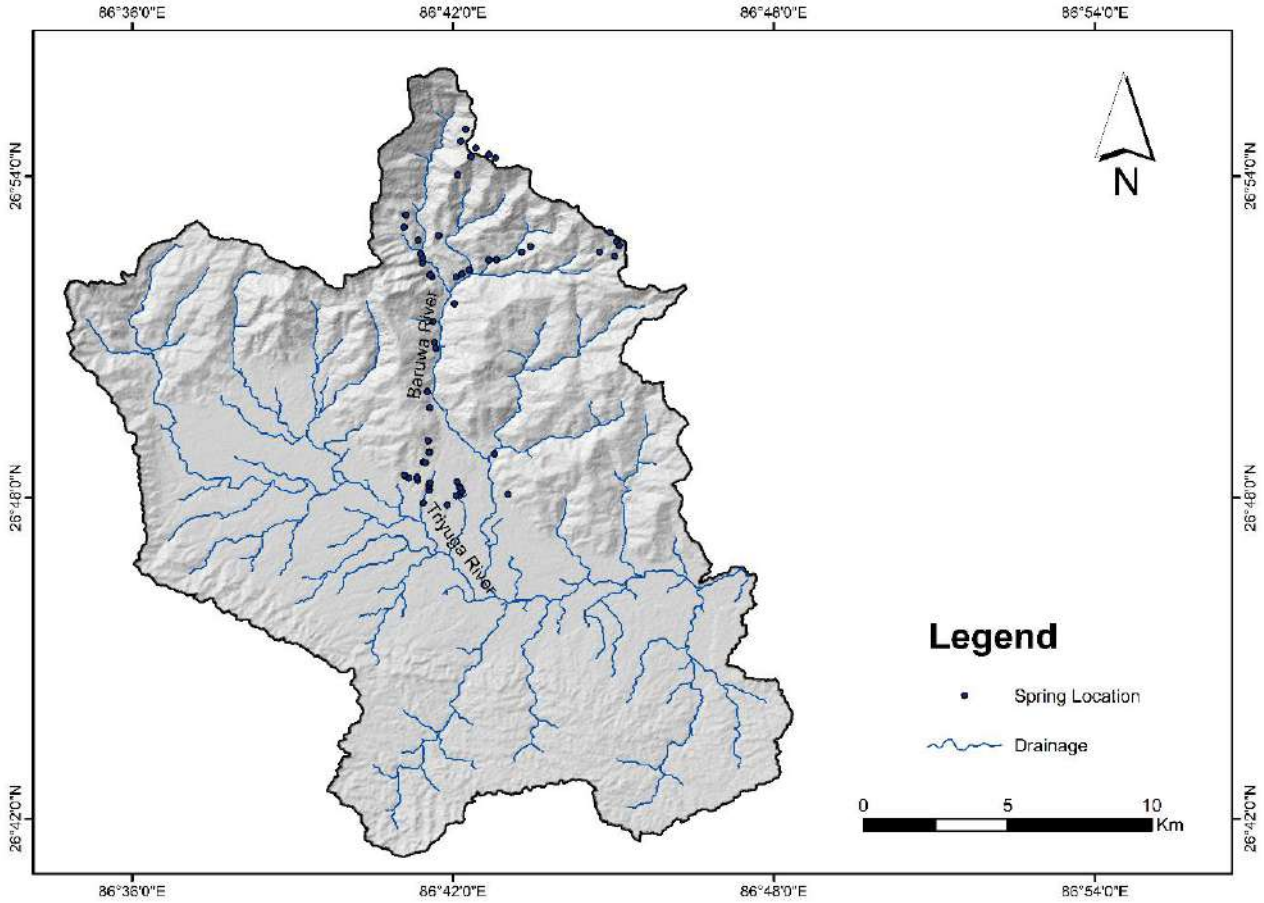

Figure 3.5: Drainage Map of Baruwa Watershed

3.7 Landuse

The Overall landuse of the Baruwa watershed is divided into seven classes (Figure 3.6). The land cover map of the province shows that forest and agriculture area are the primary landuse class, where forest occupies about 69.5% area, and agriculture area occupies about 22.7% of the total area of the Watershed.

Table 3-4: Coverage of different land use classes within Baruwa Watershed

Laduse	**Area (Km^2)**	**Percentage (%)**
Forest	229.6602	69.5
Agriculture	74.1051	22.7
Grassland	4.6242	1.4
Shrubland	2.4156	0.7
Waterboody	2.0367	0.6
Built up area	4.2498	1.3
Barren land	13.1445	4.0

Besides, there are exits of grassland, shrubland, barren land, built-up, and water body where grassland covers around 1.4%, barren land 4.0%, Built-Up area 1.3%, and Waterbody and Shrubland area are less than 1% coverage (Table 3-4).

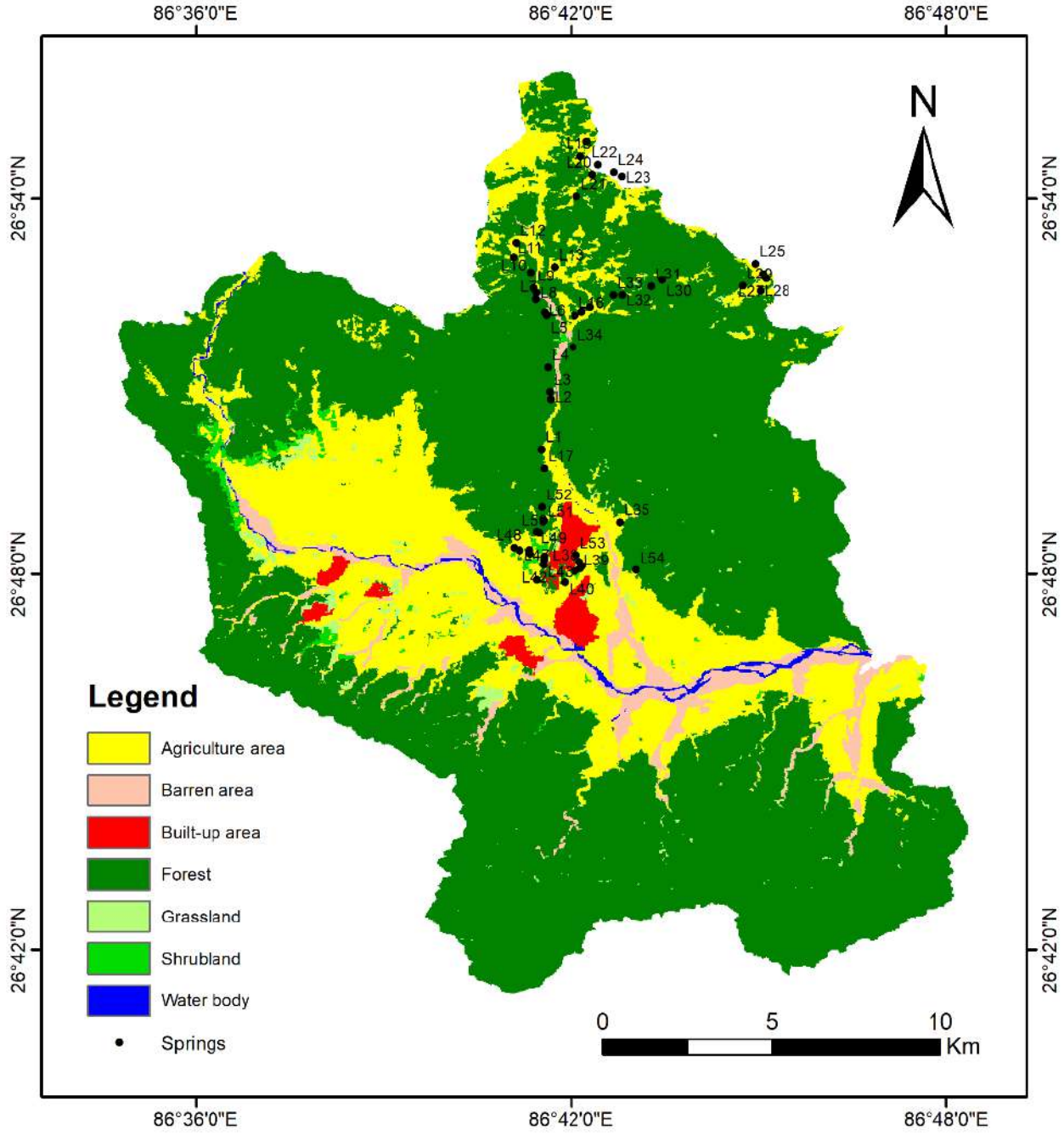

Figure 3.6: Digital image showing the location of spring at different landsue.

CHAPTER 4: RESULT AND DISCUSSION

This study assessed the current water availability, uses, and impacts on watershed hydrology in Baruwa watersheds. The primary focus of the study was to locate and map existing spring sources and their status in terms of water discharge, uses, and discharge trends. A total number of 54 springs were spotted in Baruwa watersheds.

4.1 Rock and Soil distribution

The climate plays a vital role in soil formation from rock, and soils differ widely from one primary climatic zone to another. All the spring inventory data is kept as Annex. The rock and soil types distribution in that study area is occupied mainly by rock and Residual deposits (33%), Alluvium, and Rock. The Residual type of deposit occurs most prominently in warm tropical regions subjected to high rainfall. Among the study, 30% of springs are located in rock, 6% of springs are situated in colluvium, and 31% of springs are observed in Alluvium deposits (Figure 4.1).

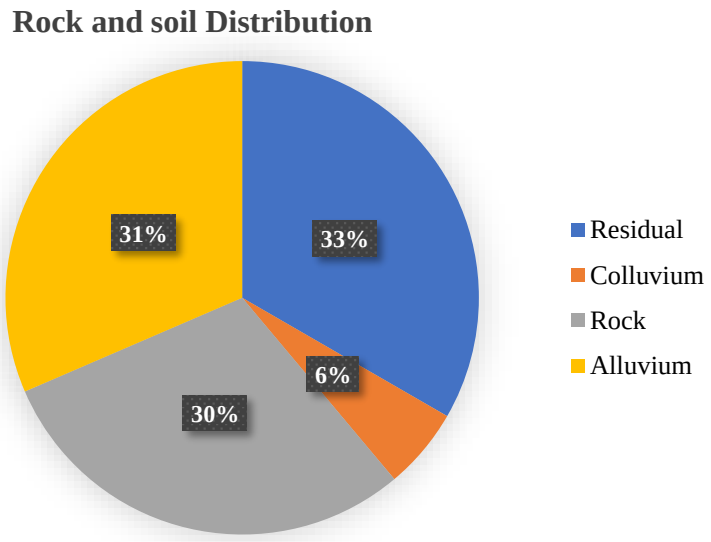

Figure 4.1 The Pie Diagram shows the rock and soil distribution at springs.

The rock and soil distribution of springs generally depend upon precipitation, permeability (Permeability refers to how connected pore spaces are to one another), and porosity (In soil or rock the space exists between the grains of minerals. In a material like gravel, the grains are large and there is lots of space between them since they don't fit together very well). Colluvium accumulates as gently sloping aprons or fans, either at the base of or within gullies and hollows within hillslopes. Colluvium terrain means a relatively impermeable groundwater surface, limiting infiltration because of soil type heterogeneity. Rock has been found in fracture, joint,

and fault in which the maximum chance of groundwater occurrence and emerge water as fracture spring. The alluvial deposit is the material deposited by rivers. It consists of silt, sand, clay, gravel, and much organic matter and contains a high capacity for water storage and percolating.

4.2 Types of Spring

Spring results from an aquifer being filled to the point that the water overflows onto the land surface. They range in size from intermittent seeps, which flow only after much rain, to huge pools flowing hundreds of millions of gallons daily. A total of 54 springs were mapped in the study area. Most of the springs in that study area flow annually through the Baruwa River, while few are dry periodically. Based on spring classification of (Bryan 1919), 70% are depression springs, 24% are fracture springs, and 6% are Karst springs (Figure 4.2). The depression types of springs are distributed chiefly in the alluvial deposits, consisting of gravel to sand particles overlying the bedrocks. The jointed and bedding plane of impervious rocks is represented by a fractured spring. The karst spring could be in limestone and dolomite terrain when the movement water dissolves and carry away. They form where the water table reaches the surface.

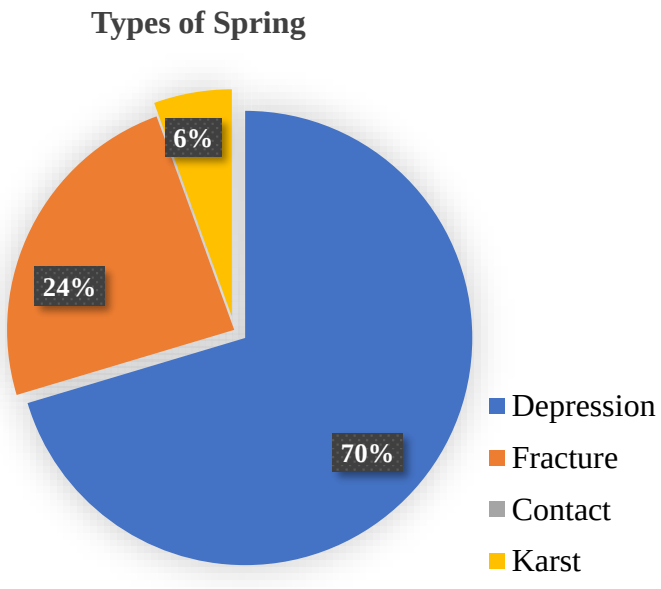

Figure 4.2: The figure shows the different types of spring with a percentage value.

4.3 Landuse

The landuse map prepared from the DEM produced by the Department of Survey. Seven landuse classes have been identified in that area: agriculture land, forest, grassland, shrubland, built-up area, water body, and barren land. A total of 52% of spring is located in the forest, 39% in Agriculture land, 4% in grassland, and 5% in Shrubland (Figure 4.3).

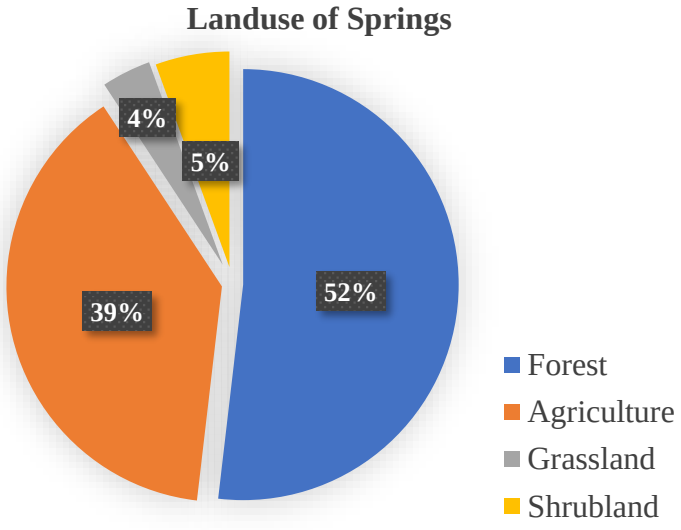

Figure 4.3: Pie diagram showing the percentage covered by Forest, Agriculture, Grassland, and Shrubland in the study area.

The majority of the area is comprised of forest and agricultural land. The cultivation lands are an excellent site for groundwater percolation due to porous soil, but it depends on soil type. Forest and grassland are classified under good groundwater prospects keeping in mind that these areas are generally water percolation through loose soil due to the primary root zone on the soil.

4.4 Discharge of Spring

The discharge of spring also called its flow, is the volume of water passing a certain point during a specific time. Measuring spring flow is another way of characterizing a spring's overall condition. Typically, groundwater flows out of a spring, down a spring run, into a river, and eventually ends up in the ocean.

The rate of water flow from the spring will vary with the seasons. It is necessary to measure the spring's flow at the end of the dry season to determine its potential reliable yield. A flow above 0.1 litres per second is sufficient to fill a 20-litre container in just three minutes, an

acceptable waiting time. A good daily yield of about 3000 litres can be expected from such a spring, enough water for about 150 people. If the flow is only 0.05 litres per second, water storage tank of one cubic meter should be made to supply the same capacity populations. This enables the spring's flow over 24 hours to be stored, allowing enough water to be provided at peak demands and throughout the day to meet intermittent needs utilizing a tap in the structure. If the flow is 0.5 liters per second or more, the source would be suitable to supply multiple outlets or a piped gravity scheme.

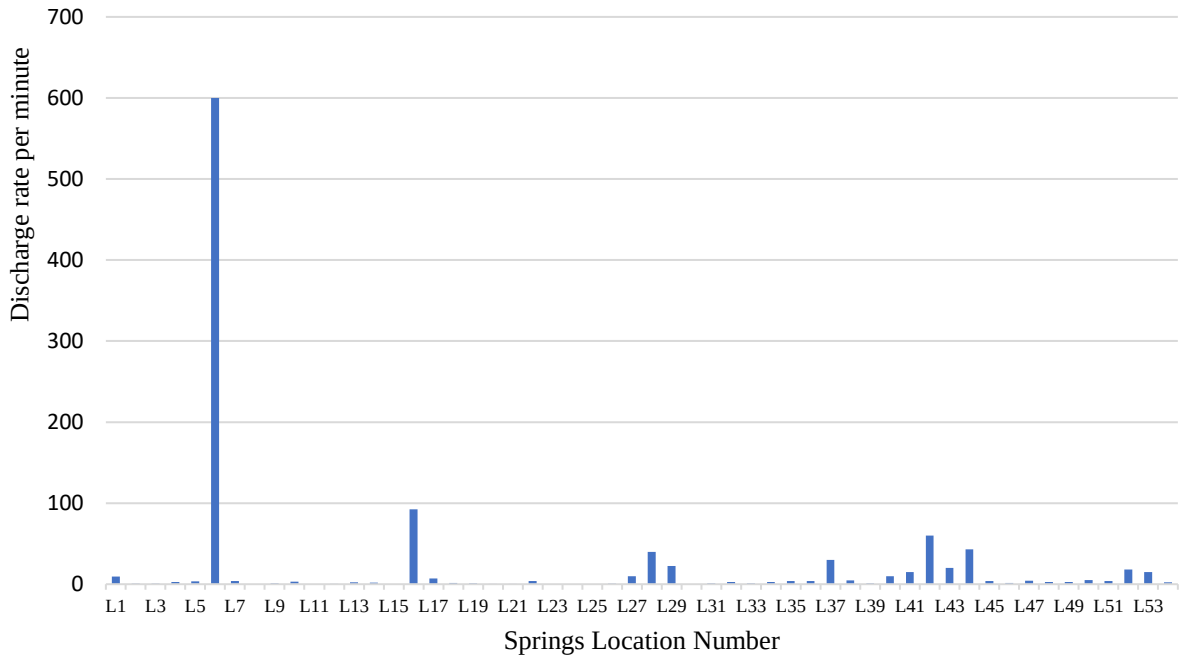

Figure 4.4: Calculation of discharge of the springs

The spring's discharge is difficult to estimate because the spring is tiny, shallow, and broadly water, and unevenly spread out a vast area with moving water is often very limited. In the given area total discharge measured is 49 out of 54 springs, and five springs discharge cannot be calculated. The measured maximum discharge is 600 litres per minute, and the minimum discharge is 0.53 litres per minute Figure 4.4. The Highest release of 600 L/m can be an excellent water source for the future growing population in Triyuga Municipality. There is other few springs whose discharge is greater than 50 liters per minute. Managing this Spring can solve the problem of water for the growing population.

The spring discharge is the effect of geology, soil, vegetation, and soil. The area calculation of 54 discharges is very low and possible for small communities, and precipitation is the significant recharge in this study area.

The community people say that the water level is decreasing day by day. Since the springs are not sufficient to meet local demand, villagers explore other options to meet their water demand. Some of the initiatives that villagers are employing include piped water from distant spring sources, and they are using it. In some areas, the problem of water has become so acute that people use turbid river water to meet their water needs.

4.5 Condition of Springs

The condition of the spring at the source was analysed in Figure 4.5. About 43% of the springs are open springs, 37% are concrete tanks, 11% are Spring boxes, 7% are stone spouts, and 2% are wells. Generally, capturing water from an open spring is the most common and inexpensive process used since ancient times in the mountain areas, but the available spring can be polluted with waste products, bacteria, and soon. However, in recent years, villagers have constructed concrete structures or tanks to store spring water.

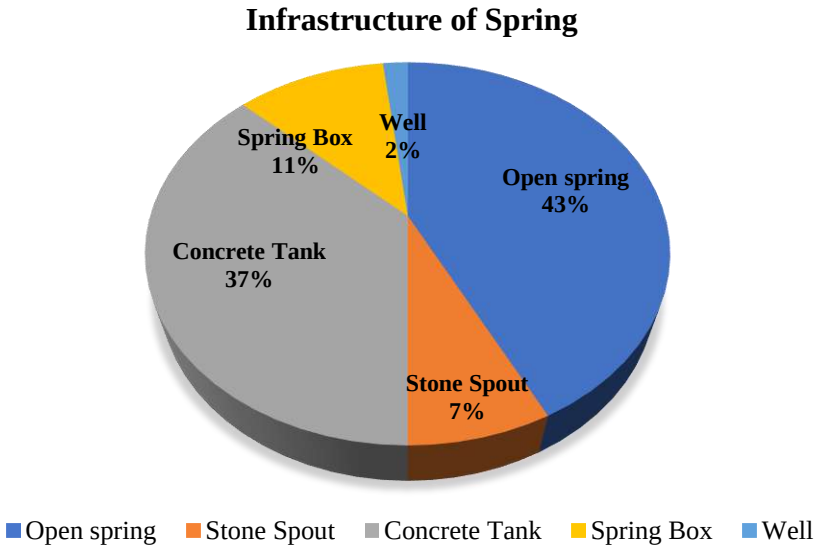

Figure 4.5: Conditions of the mapping springs in the watersheds

Springs are the only dependable source of water supply in the villages as not all villages have access to an improved water supply system. In the past, springs provided sufficient water for their basic requirements, and local people observed that the rainfall was not as much as it used to be two to three decades ago. However, in recent years, villagers have been facing a water shortage, and their springs are not producing sufficient water for their day-to-day activities. The underlying causes of water scarcity include population pressure, landuse changes, infrastructure development, increased water demand, the introduction of modern technology, and the negative impacts of climate change.

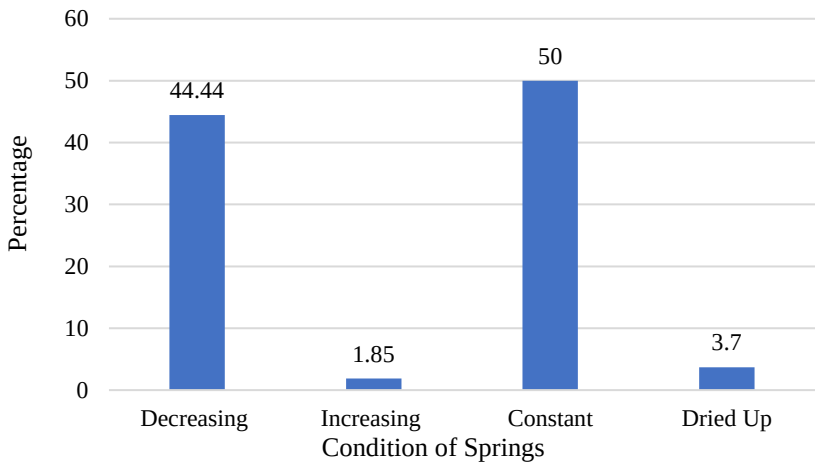

Figure 4.6: Historical trend of Spring in the Baruwa watershed

As depicted in Figure 4.6, the flow from many springs has lessened. The findings revealed that the flow from approximately 44.44% of springs has reduced. 3.7% are completely dried, 50% remain constant, and 1.85% increase.

Similarly, Due to increasing transportation facilities, people made it an easy method to use water. They had to travel a long distance to bring water previously, but the people of this area made water storage concrete tanks and collected water using pipes from the distant river and distributed it to all the Hamlet. Figure 4.7 shows that about 28% of springs are not used today, and other remaining 72% of people don't depend entirely spring water.

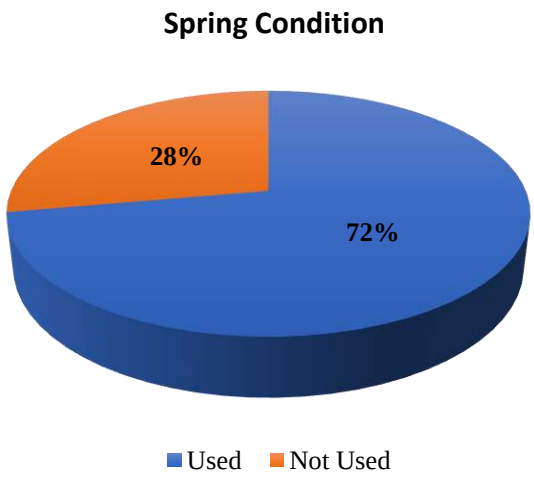

Figure 4.7: Condition of spring water used in the village.

The people don't manage the waste, and no proper sanitation was used to keep Springs clean because of the availability of water tap at the house. It doesn't say all the people don't have the problem of water in this area.

Table 4-1:List of Water sources at Baruwa Watershed and the inventory data were kept in Annex

Spring ID	Coordinate		Watershed Name	Location	Tole	Status	Types	Discharge (L/M)
	Latitude	Longutude						
L1	26.83296	86.69204	Madi Khahare	Triyuga Municipality-10	Bokshe	Used	Depression	9.6
L2	26.84641	86.69456	Bokshe Kuwa	Triyuga Municipality-10	Bokshe	Not used	Depression	0.55
L3	26.84832	86.69423	Not Available	Triyuga Municipality-10	Bokshe	Not used	Depression	0.6
L4	26.85478	86.69376	Not Available	Triyuga Municipality-10	Bokshe	Not used	Depression	2.61
L5	26.86874	86.69338	Saraswoti Kuwa	Triyuga Municipality-10	Saraswoti	Not used	Fracture	3.53
L6	26.8694	86.69286	Saraswoti Kholchha	Triyuga Municipality-17	Saraswoti	used	Krast	600
L7	26.87291	86.69051	Mahadev Jharna	Triyuga Municipality-17	Saraswoti	Used	Krast	4
L8	26.87462	86.69066	Not Available	Triyuga Municipality- 10	Saraswoti	Used	Depression	0.00
L9	26.87592	86.68992	Not Available	Triyuga Municipality- 10	Bokshe	Not used	Fracture	1.00
L10	26.88005	86.6892	Not Available	Triyuga Municipality- 10	Bokshe	Not used	Depression	3.16
L11	26.8841	86.68478	Sahune Padhero	Triyuga Municipality-16	Damar	Used	Fracture	Cannot measured
L12	26.88794	86.68536	Budhe Khola	Triyuga Municipality-16	Phokisngtar	Used	Fracture	0.36
L13	26.88151	86.69554	Padhre Kholcha	Triyuga Municipality-16	Sidhre	Used	Fracture	2.33
L14	26.87085	86.70503	Sidhre Kuwa	Triyuga Municipality-16	Sidhre	Used	Depression	1.8
L15	26.86953	86.70277	Not Available	Triyuga Municipality-16	Sidhre	Not used	Depression	Cannot measured
L16	26.86864	86.70095	Padhere Khola	Triyuga Municipality-10	Jate	Used	Depression	92.31
L17	26.82799	86.69278	Not Available	Triyuga Municipality-10	Bokshe	Used	Depression	7.2
L18	26.91468	86.70397	Dhikure Kuwa	Triyuga Municipality-15	Sirjan	Used	Fracture	1.71
L19	26.91092	86.70241	Dahar Khola	Triyuga Municipality-15	Sirjan	Used	Depression	1.2
L20	26.90604	86.70563	Jharjhare	Triyuga Municipality-15	Sirjan	Used	Fracture	0.5

L21	26.9004	86.70148	Aamale Siran	Triyuga Municipality-15	Harra Bote	Used	Fracture	0.53
L22	26.90874	86.70708	Bashe Kholchha	Triyuga Municipality-15	Hubash	Used	Depression	4
L23	26.90566	86.71335	Padhere Khet	Triyuga Municipality-15	Hubash	Used	Depression	Cannot Measure
L24	26.90673	86.71124	Kavre Kuwa	Triyuga Municipality-15	Hubash	Not used	Depression	Cannot measured
L25	26.88244	86.74907	Gachi Mul	Triyuga Municipality-14	Sahune	Used	Depression	Cannot measured
L26	26.87969	86.75104						0
L27	26.87847	86.75183	Lashune Khola	Triyuga Municipality-14	Sahune	Used	Depression	10
L28	26.87511	86.75036	Bange Khola Muhan	Triyuga Municipality-14	Bar Bhanjyang	Used	Depression	40
L29	26.87643	86.74568	Dhara Kholcha	Triyuga Municipality-14	Sahune	Used	Fracture	22.5
L30	26.87814	86.72419	Not Available	Triyuga Municipality-14	Torke	Not used	Depression	Cannot Measured
L31	26.87641	86.7214	Kichkiche Gairi	Triyuga Municipality-14	Kichkiche	Used	Depression	1.13
L32	26.87403	86.71353	Not Available	Triyuga Municipality-14	Kirkiche	Not used	Krast	2.61
L33	26.874	86.71116	Not Available	Triyuga Municipality-14	Kirkiche Fedi	Used	Depression	1.13
L34	26.86026	86.70047	Tintale Kuwa	Triyuga Municipality-16	Belduwan	Used	Fracture	2.61
L35	26.81357	86.71293	Chhapan Kuwa	Triyuga Municipality- 11	Chappan	Used	Depression	3.75
L36	26.80138	86.70243	Namuna Dhara	Triyuga Municipality- 11	Namuna School	Used	Depression	3.75
L37	26.80057	86.70096	Not Available	Triyuga Municipality- 11	Shivalaya	Used	Depression	30
L38	26.80191	86.70287	Not Available	Triyuga Municipality- 11	Shivalaya	Used	Depression	4.62
L39	26.80304	86.70222	Not Available	Triyuga Municipality- 10	Aadarsha	Used	Depression	1.2
L40	26.79768	86.69827	Jaljala Spring	Triyuga Municipality- 11	Jaljala Tole	Used	Depression	9.64

L41	26.79831	86.6908	Kali Khola Mul	Triyuga Municipality- 9	Sugam	Used	Depression	15
L42	26.80229	86.69254	Kali khola mul-2	Triyuga Municipality- 9	Sugam	Used	Depression	60
L43	26.80362	86.69262	Kali Khola 1	Triyuga Municipality- 9	Sugam	Used	Depression	20
L44	26.80461	86.69284	Kali Khola 3	Triyuga Municipality- 9	Khabardar	Used	Depression	44
L45	26.80529	86.68899	Jiyamire Mul	Triyuga Municipality- 9	Ratamate	Used	Depression	3.75
L46	26.80633	86.68879	Jymari-2	Triyuga Municipality- 9	Ratamate	Used	Depression	1.71
L47	26.8061	86.68629	Lampate Kuwa	Triyuga Municipality- 9	Ratamate	Used	Depression	4.29
L48	26.80691	86.68493	School danda Muhan	Triyuga Municipality- 9	Ratamate	Used	Depression	2.86
L49	26.81108	86.69078	Not Available	Triyuga Municipality- 9	Ratamate	Used	Depression	2.73
L50	26.81084	86.69139	Devi Than Dhara	Triyuga Municipality- 9	Ratamate	Used	Depression	5.00
L51	26.81403	86.69263	Not Available	Triyuga Municipality- 9	Ratamate	Used	Depression	4.00
L52	26.81767	86.69222	Kholshe	Triyuga Municipality- 9	Ratamate	Used	Depression	18.00
L53	26.80488	86.70124	Basthari Mul	Triyuga Municipality- 9	Ratamate	Used	Depression	15.00
L54	26.80095	86.71715	Bhusune Khahare	Triyuga Municipality- 9	Bhusune	Used	Depression	2.40

CHAPTER 5: CONCLUSION AND RECOMMENDATION

The study mapped a total number of 54 springs in Triyuga Municipality. About 43% of the spring sources were found in natural conditions, i.e., open springs. 11 % of the spring source is ponds. 37% of the spring source is directly collected into concrete structures or tanks. Only 2% of the spring source is wells. As discussed earlier, water resources are becoming increasingly scarce in the study area. The shortage of water for drinking and other domestic purposes, especially during the dry periods, is of particular concern, but not for the monsoon season. In 44.44 % of the springs, water flow is decreasing. According to the local people, the water flow has reduced significantly as compared to 10 years ago, and about 3.7% of the spring sources have dried up in the watersheds. The decreasing tendency of rainfall amount complemented people's perceptions and, most importantly, the significant year-to-year variation of rainfall affects the spring sources every year at a different severity. Besides the variation of rain, other potential factors like excessive unplanned road construction, vanishing of traditional ponds, lakes, and wallows tectonic movement, and concreting and piping of sources also contributed to the drying springs (Gurung et al. 2019b).

Despite the rapid drying of springs, the study found that in some parts, villagers access spring water without implementing adequate protection measures. The Springwater is very unhealthy and doesn't use the action of sanitation, and there is a lack of proper awareness about the use of water. The current water resources management strategy must be reviewed at the watershed scale to prevent this mass exodus from the villages and improve their water quality.

Similarly, the study shows that people stop using the spring water in many parts of the study area because of adequate and easy transport of water using the pipe. They made water storage tanks and distributed them to all the villagers. About 28% of the spring of this study area was not being used. In 72%, the people don't depend entirely on spring water because water availability through the pipe. A location such as Ratamate, Khabu of Triyuga Municipality, faces quite a scarcity of water problems.

Most of the springs are located in depressed topography, and elevation ranges from 100-200 masl with the flat-gentle slope in the spring inventory. The spring of that area considered in the present study shows that the spring is fed by precipitation from a mountain range to valley floors and the base of mountains. The present study represents the field condition of groundwater occurrence, and it can be used for detailed exploration of groundwater, which

meets the demand for water in that area. Based on the current findings, the following future activities are recommended:

a. Immediate need for a watershed-level springs' restoration program with a participatory approach focusing on local communities, local government, and other stakeholders for the sustainability and upscale of good practices.

b. Building capacity of local communities, local governments, and other stakeholders to understand the multiple values of springs and the protection of watersheds.

c. Local government and communities should consider the values of watersheds before construction of any liner infrastructure.

d. The need to develop and mainstream the watershed management plan at the local developmental government plan.

e. Traditional lakes, ponds, and wallows are excellent ecological services for rechanging the downstream springs, and so on. Therefore, protecting such lakes, ponds, and wallows is crucial.

f. The spring protection measured has not been practised in some springs. A protective structure providing stability and may be made of concrete or masonry with a seal to prevent surface water from leaking is necessary.

g. A ditch, known as the interceptor drain, diverts surface water away from the spring box and prevents contamination due to infiltration from the surface, and the fence keeps animals out of the spring area.

h. Improve the spring yield, Clean the spring eye or source bed of debris, remove blockages to water flow into the spring, and remove overgrowth of vegetation. Simple improvements up-slope from the spring eye, such as surface drains or berms placed to slow the movement of runoff waters, permitting more rainwater to seep into the soil, can improve the aquifer that feeds a spring, thus improving spring yield.

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Annex

1. Name of Respondent

Name: Maha Bir Rai	Mailing address: Triyuga Municipality, Bokshe.
Profession: No	Gender: Male
Location: Gaighat	Local Level name: Triyuga Municipality-10
Tole: Bokshe	

2. Geo-Spatial Location

Spring ID: L1	Slope: >30
Latitude: N26.83296	Spring Size: 2*3m
Longitude: E86.69204	Distance from Hamlet: 50
Height: 226m	Sanitation: Sometimes but not good.
Shape: Rectangle	

3. Social Status

Name of Spring: Madi Khahare
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth) √
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 25	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			

Discharge		9.6 L/M			
Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Residual			
Related Hazard		No			
Possible Useful		Drinking for small community.			
Outlet of Spring		From a flowing stream.			

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation (Sal forest)

   Downslope: Hamlets

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds good storage capacity for the small community. The surrounding area is hazard less. Water Awareness programs can be conducted for the community for their good water preservation. Water Boundary and storage tank should be made to sound water and good water quality.

Photograph of Spring

1. Name of Respondent

Name: Maha Bir Rai	Mailing address: Triyuga Municipality, Bokshe.
Profession: Not worked	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Bokshe	

2. Geo-Spatial Location

Spring ID: L2	Slope: >30 (Gentle)
Latitude: N26.84641	Spring Size: 1*1
Longitude: E86.69456	Distance from Hamlet: 500m
Height: 226m	Sanitation: No
Shape: Oval	

3. Social Status

Name of Spring: Bokshe Kuwa
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge l/m		0.55			

Spring Located	Ridge and Gulley:	Rocky terrain: √	Agriculture land:	Forest:	River Bank:
Types of Rock		Sedimentary Rock (Sandstone and Mudstone)			
Related Hazard		Landslides can occur, due to the presence of Mudstone and stone. Generally, Mudstone is soft and Sandstone is hard. As Seepage finds its way, the mudstone crumbles and erodes easily and Failure can occur.			
Possible Useful		Discharge is very low and cannot be used.			
Outlet of Spring		Spring Box			

6. Land use Surrounding in the spring.

   Upslope: Dense Vegetation (Community Forest of Sal)

   Downslope: Sparse Vegetation (Sal)

7. Other Details

   c. Details of any damage to the Spring: Road Construction led to a damaged Spring.

   d. Local-level/ local people use the the procedure to conserved Spring. Not used any measured.

8. Conservation Measure

The Spring Doesn't hold good storage capacity. The surrounding area is hazard less. Local-level Water Awareness programs can be conducted for the community for their good water preservation.

Photograph of Spring

1. Name of Respondent

Name: Arjun Kumar Magar	Mailing address: Triyuga Municipality, Saraswoti
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Saraswoti	

2. Geo-Spatial Location

Spring ID: L5	Slope: <30
Latitude: N26.86874	Spring Size: 2*2
Longitude: E86.69338	Distance from Hamlet:
Height: 378m	Sanitation status: Not cleaned.
Shape: Rectangular	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House: 2	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge: l\m		3.53			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Rock		Mudstone and sandstone. (Strike: 112/46NW)			
Related Hazard		Landslide and Debris failure			
Possible Useful		Drinking, agriculture and farming.			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Sparse forest (Bamboo, Dande kath)

   Downslope: Steep slope (Fadin, and other Shrubs)

7. Other Details

   e. Details of any damage to the Spring: Road Construction led to a damaged Spring.

   f. Local-level/ local people use the procedure to conserved Spring. Not used any measured.

8. Conservation Measure

The Spring hold good storage capacity for small community. Water Awareness programs can be conducted for the community for their good water preservation. Water Boundary and storage tank should be made to sound water and good water quality.

Photograph of Spring

1. Name of Respondent

Name: Arjun Kumar Magar	Mailing address: Triyuga Municipality 17
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-17
Tole: Saraswoti	

2. Geo-Spatial Location

Spring ID: L6	Slope: 30-40°
Latitude: N26.86940	Spring Size:
Longitude: E86.69286	Distance from Hamlet: 200m
Height: 378m	Sanitation status: No
Shape: Narrow	

3. Social Status

Name of Spring: Saraswoti Kholchha
Ownership of the Spring:Private (Arjun Kumar Magar)
Status of tenure: Public
Spring management Committee: Saraswoti Khane pani

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 30	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture:	Fault:	Karst: √
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Built Storage tank and supplied water to villagers			
Discharge: L/M		600			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Rock:	Dolomite
Related Hazard:	Subsidence can occur, sinkholes can develop, and landslide
Possible Useful:	Good possible resource of water for a big community. Agriculture and drinking farming can be used.
Outlet of Spring:	From a flowing stream

6. Land use Surrounding in the spring.

   Upslope: Sub tropical forest. (Saal Bambo,Fadin)

   Downslope: (Sal Bambo, Fadin)

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring: They made water storage tanks to Store water.
8. Conservation Measure

The area is composed of Dolomitic terrain. The Spring contains a very good storage capacity for a large community. Water Awareness programs can be conducted for the community for their good water preservation. Water Boundary and storage tank should be made to sound water and good water quality.

Photograph of Spring

1. Name of Respondent

Name: Yenjal Rana Magar	Mailing address: Triyuga Municipality-17
Profession: Student	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality- 17
Tole: Mahadev	

2. Geo-Spatial Location

Spring ID: L7	Slope: >60°
Latitude: N26.87291	Spring Size: 2*5m
Longitude: E86.69051	Distance from Hamlet: 500m
Height: 406m	Sanitation status: No
Shape: Narrow and long	

3. Social Status

Name of Spring: Mahadev Jharna
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: Not used by a nearby house	Tradition related to Spring: They Worship Mahadev as there is a cave-like Haleshi Mahadev.

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture:	Fault:	Karst: √
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried √:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		4			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Rock	Dolomite. Strike 70°/30°NW
Related Hazard	Sink hole and subsidence
Possible Useful	Drinking, agriculture and farming
Outlet of Spring	From a flowing stream

6. Land use Surrounding in the spring.

   Upslope: Dense Forest

   Downslope: River Nearby, River terrace.

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure and useful

The Spring holds a good storage capacity for the small community. Clear vegetation above the head of the spring. Local-level Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Bikram Magar	Mailing address: Triyuga-16 Phokishing Tar
Profession: Foreign Employee	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 16
Tole: Damar	

2. Geo-Spatial Location

Spring ID: L11	Slope: <30°
Latitude: N26.88410	Spring Size: 1*1
Longitude: E86.68478	Distance from Hamlet: 200m
Height: 570m	Sanitation status: No
Shape: Circular	

3. Social Status

Name of Spring: Sahune Padhero
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth); √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 15	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually:	6 months:		3 months: √
Current Condition:		Flowing:	Drying up:		Dried Up: √
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		-			

Spring Located	Ridge and Gulley: √	Rocky terrain: √	Agriculture land:	Forest:	River Bank:

Types of Rock	Light grey Strongly foliated phyllite Strike 195/5°NW
Related Hazard	No
Possible Useful	Drinking only 3 months
Outlet of Spring	Not flowing

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation with agricultural land

   Downslope: Sparse vegetation

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure and use

There are Problems related to water in this village. They travel Some distance to collect water. They brought water using a tube but that was not sufficient. The water from this spring can provide only for three months during the monsoon. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make it bacteria-free.

Photograph of Spring

1. Name of Respondent

Name: Kiran Magar	Mailing address: Triyuga -16 Phokisngtar
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 10
Tole: Phokshingtar	

2. Geo-Spatial Location

Spring ID: L12	Slope: 40-45°
Latitude: N26.88794	Spring Size: E86.68536
Longitude: E86.68536	Distance from Hamlet:
Height: 564m	Sanitation status: No
Shape: Circle	

3. Social Status

Name of Spring: Budhe Khola
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 25	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		0.36			

Spring Located	Ridge and Gulley: √	Rocky terrain: √	Agriculture land:	Forest:	River Bank:

Types of Rock	Strongly foliated wavy light grey Phyllite (80/30NW). Mudcracks. The opening is very tight
Related Hazard	Landslide
Possible Useful	Drinking
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Dense Forest (Patpate, Sindhure, Guyalo)

   Downslope: Khiro, Bas

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring storage capacity is very low. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Water boundaries and water collection tanks can be a useful measure to store good water.

Photograph of Spring

1. Name of Respondent

Name: Keshar Kumar Shrestha	Mailing address: Triyuga -16 Sidhre
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Detar (Sidhre)	

2. Geo-Spatial Location

Spring ID: L13	Slope: <30
Latitude: N26.88151	Spring Size: 1*1m
Longitude: E86.69554	Distance from Hamlet: 50m
Height: 483	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Padhre Kholcha
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 10	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		2.33			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Rock		Black-Grey Phyllite Strike (285/15SW) Joint J1: 345/42NE, Joint J2: 218/54SE			
Related Hazard		Landslide. Water Pollution hazard is very High, they farm domestic animals 30m enclose.			
Possible Useful		Drinking, farming			
Outlet of Spring		Spring Box and flowing through spring box			

6. Land use Surrounding in the spring.

   Upslope: Residential area

   Downslope: Agriculture land and road

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. They use the tube for the collection of water.
8. Conservation Measure

The Spring can hold storage capacity for a small community. Important water Awareness programs can be conducted for the community for their good water preservation and waste management. Fence the area around the spring tank to prevent pollution by children or livestock. Rock Slope stability measures to be applied to conserved water.

Photograph of Spring

1. Name of Respondent

Name: Tilak Narayan Shrestha	Mailing address: Triyuga -16 Sidhre
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-16
Tole: Sidhre	

2. Geo-Spatial Location

Spring ID: L14	Slope: <30
Latitude: N26.87085	Spring Size: 1*2
Longitude: E86.70503	Distance from Hamlet: 200m
Height: 395m	Sanitation status: No
Shape: Narrow	

3. Social Status

Name of Spring: - Sidhre Kuwa
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House: 3-4	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.80			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Colluvium Deposit.			
Related Hazard		No			
Possible Useful		Drinking for a small community			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Sparse vegetation cover

   Downslope: Cultivation of land

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. A Water Storage tank is necessary to collect the water.

Photograph of Spring

1. Name of Respondent

Name: Tilak Narayan Shrestha	Mailing address: Triyuga -16 Sidhre
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-16
Tole: Sidhre	

2. Geo-Spatial Location

Spring ID: L15	Slope: <30
Latitude: N26.86953	Spring Size: 1*2m
Longitude: E86.70277	Distance from Hamlet: 1km
Height: 346m	Sanitation status: No
Shape: oval	

3. Social Status

Name of Spring:
Ownership of the Spring:
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		Cannot measured			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Residual Deposit
Related Hazard	No
Possible Useful	No
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Vegetation cover

   Downslope: Cultivation of land

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Tila Thapa Magar	Mailing address: Triyuga Municipality-10 Jate
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-10 Jate
Tole: Jate	

2. Geo-Spatial Location

Spring ID: L16	Slope: <30
Latitude: N26.86864	Spring Size:
Longitude: E86.70095	Distance from Hamlet: 200m
Height: 320m	Sanitation status: No
Shape: Rectangular	

3. Social Status

Name of Spring: Padhere Khola
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth) √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		92.31			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Residual deposit. (Cobble . pebble, gravel sand).			
Related Hazard		No			
Possible Useful		Drinking, Irrigation, Cultivation			
Outlet of Spring		From a flowing			

6. Land use Surrounding in the spring.

   Upslope: Dense Vegetation

   Downslope: River Terrace, Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. They made a small storage tank to collect the water.
8. Conservation Measure

The Spring holds a very good storage capacity for a large community. Clear vegetation above the head of the spring to make it bacteria-free. Many other communities use water using the tube from storage. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Bimala Rokka	Mailing address: Triyuga Municipality-10 Bokshe
Profession: Bussiness	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Bokshe	

2. Geo-Spatial Location

Spring ID: L17	Slope: <30°
Latitude: N26.82799	Spring Size:
Longitude: E86.69278	Distance from Hamlet:
Height: 231m	Sanitation status:
Shape: Circle	

3. Social Status

Name of Spring:-
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth) √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		7.20			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:

Types of Deposit	Alluvium Deposit
Related Hazard	No
Possible Useful	Drinking Irrigation
Outlet of Spring	From a flowing a stream

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation

   Downslope: Sparse Vegetation

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity for a large communities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make it bacteria-free.

Photograph of Spring

1. Name of Respondent

Name: Gopal Rai	Mailing address: Triyuga -15 Sirjan Tole
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-15
Tole: Sirjan	

2. Geo-Spatial Location

Spring ID: L18	Slope: >30
Latitude: N26.91468	Spring Size: 1*1
Longitude: E86.70397	Distance from Hamlet: 100m
Height: 1147m	Sanitation status: No
Shape: Rectangular	

3. Social Status

Name of Spring: Dhikure Kuwa
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 15	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.71			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Rock		Coarse-grained banded gneiss. The geology of this area is very complex. Step rise in hill (presence of Banded Gneiss and Schist).			
Related Hazard		Landslide			
Possible Useful		Drinking			
Outlet of Spring		Spring box			

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation (Barren Land)

   Downslope: Barren land

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring hold good storage capacity for small community. Water Awareness programs can be conducted for the community for their excellent water preservation. Fence the area around the spring tank and cover the tank from up to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make bacteria free.

Photograph of Spring

1. Name of Respondent

Name: Gopal Rai	Mailing address: Triyuga Municipality-15
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 15
Tole: Triyuga	

2. Geo-Spatial Location

Spring ID: L19	Slope: <30
Latitude: N26.91092	Spring Size: 1*1
Longitude: E86.70241	Distance from Hamlet: 200m
Height: 1178m	Sanitation status: No
Shape: Oval	

3. Social Status

Name of Spring: Dahar Khola
Ownership of the Spring: Oublic
Status of tenure: Public
Spring management Committee: Sirjana Tole Bikash Sansthan.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.20			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Colluvium Deposit. Contain Boulder, cobble pebble of Gneiss and slate.			
Related Hazard		No			
Possible Useful		Drinking, Cattle Drinking			
Outlet of Spring		Spring Box			

6. Land use Surrounding in the spring.

   Upslope: Agriculture land with Sparse vegetation.

   Downslope: Agriculture Land

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured. Use some stone pavement to boundary Spring.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make it bacteria-free.

Photograph of Spring

1. Name of Respondent

Name: Gopal Rai	Mailing address: Triyuga Municipality-15
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Triyuga	

2. Geo-Spatial Location

Spring ID: L20	Slope: <30
Latitude: N26.90604	Spring Size: 1*2
Longitude: E86.70563	Distance from Hamlet: 500m
Height: 1146	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Jharjhare
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture:√	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Water storage tank			
Discharge L/M		0.5			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Rock	White-grey coarse grained Banded Gneiss.				
Related Hazard	No				
Possible Useful	Drinking and cleaning				
Outlet of Spring	Spring Box				

6. Land use Surrounding in the spring.

   Upslope: Forest vegetation.

   Downslope: Forest of Sal Chilaune.

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure and use

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. They use a water boundary tank to collect water and supplied to the house using the tube.

Photograph of Spring

1. Name of Respondent

Name: Tej Kumar Rai	Mailing address: Triyuga -15
Profession: Teacher	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Harra Bote	

2. Geo-Spatial Location

Spring ID: L21	Slope: <30
Latitude: N26.90040	Spring Size: 1*2
Longitude: E86.70148	Distance from Hamlet: 500m
Height: 928m	Sanitation status: No
Shape: Oval to circle	

3. Social Status

Name of Spring: Aamale Siran
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Bange Khane Pani Samuha.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Not Built			
Discharge L/M		0.53			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Rock	Banded Gneiss
Related Hazard	Landslide
Possible Useful	Drinking and cleaning for small family
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Barren Land (Vegetation covered with trees and Bushes)

   Downslope: Barren Land (Forest)

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring can supply storage capacity for small community for current time. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Construct the water storage tank to collect and supply using tube.

Photograph of Spring

1. Name of Respondent

Name: Bir Bahadur Rai	Mailing address: Triyuga -15 Hubash
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Hubash	

2. Geo-Spatial Location

Spring ID: L22	Slope: <30
Latitude: N26.90874	Spring Size: 1*1
Longitude: E86.70708	Distance from Hamlet: 200m
Height: 1152m	Sanitation status: Yes, sometimes, but not good enough.
Shape: Rectangle	

3. Social Status

Name of Spring: Bashe Kholchha
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 3	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Small Storage Tank			
Discharge L/M		4.00			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Residual Deposit (Sand, Gravel and clay with silt). The Thickness of sediment about 10-15m.
Related Hazard	No
Possible Useful	Drinking and Irrigation
Outlet of Spring	From a flowing stream.

6. Land use Surrounding in the spring.

   Upslope: Road and Vegetation cover.

   Downslope: Sparse forest (Bambo, Chilaune).

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring recharge zone.
   b. Local-level/ local people use the procedure to conserved Spring. Construct small storage tank.
8. Conservation Measure

The Spring holds a good storage capacity for the small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Cover the tank to make free from any impurities.

Photograph of Spring

1. Name of Respondent

Name: Bir Bahadur Rai	Mailing address: Triyuga- 15 Hubash
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Hubash	

2. Geo-Spatial Location

Spring ID: L23	Slope: <30
Latitude: N26.90566	Spring Size: 2*2
Longitude: E86.71335	Distance from Hamlet: 200m
Height: 1135	Sanitation status: Not (good) Waste are directly thrown near to Spring which make pollutant.
Shape: Narrow and long	

3. Social Status

Name of Spring: Padhere Khet
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Not Built			
Discharge L/M		Cannot Measure			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Residual Deposit (Gravel sand and clay)
Related Hazard	Water Pollution from Cattle grazing
Possible Useful	Drinking and Irrigation
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Cultivation land

   Downslope: Cultivation land

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. They use some Pond to collect water and cover them using bamboo.
8. Conservation Measure

The Spring hold a good storage capacity for the small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Cover the tank to make it free from any impurities.

Photograph of Spring

1. Name of Respondent

Name: Bir Bahadur Rai	Mailing address: Triyuga-15 Harbash
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-15
Tole: Harbash	

2. Geo-Spatial Location

Spring ID: L24	Slope: <30
Latitude: N26.90673	Spring Size:
Longitude: E86.71124	Distance from Hamlet: 200m
Height: 1188m	Sanitation status: The water is extreme pollution.
Shape: Oval	

3. Social Status

Name of Spring: Kavre Kuwa
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Not Built			
Discharge L/M		Cannot Measured			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Residual Deposit
Related Hazard	No (Water Pollution)
Possible Useful	Drinking
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Cultivation land

   Downslope: Cultivation land

7. Other Details
   a. Details of any damage to the Spring:No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring water contain high impurities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Water preservation and collection tank should be made.

Photograph of Spring

1. Name of Respondent

Name: Ashok Rai	Mailing address: Triyuga -14 Sahune
Profession: Service Man	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-14
Tole: Bar Gachi	

2. Geo-Spatial Location

Spring ID: L25	Slope: <30
Latitude: N26.88244	Spring Size: 1*1
Longitude: E86.74907	Distance from Hamlet: 100m
Height: 810m	Sanitation status: No
Shape: Narrow	

3. Social Status

Name of Spring: Bar Gachi Mul
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.√
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 20-25	Tradition related to Spring: This is a very old spring in this locality. But due to the construction of Blacked topped road, the spring gets burry, and discharge stops.

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up:		Dried Up:√
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			

Discharge L/M		-			
Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Residual Deposit			
Related Hazard		No			
Possible Useful		No			
Outlet of Spring		No			

6. Land use Surrounding in the spring.

   Upslope: Road

   Downslope: Sparse vegetation

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring 6 years ago and now no water flow from this spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring hold good storage capacity for a small community but it is dried now

Photograph of Spring

1. Name of Respondent

Name: Arjun Kumar Basnet	Mailing address: Triyuga Municipality-14
Profession: Teacher	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Saahune	

2. Geo-Spatial Location

Spring ID: L27	Slope: <30
Latitude: N26.87847	Spring Size: 2*2
Longitude: E86.75183	Distance from Hamlet: 1km
Height: 645m	Sanitation status: Good concrete tank and good water cover
Shape: Long and Wide	

3. Social Status

Name of Spring: Lashune Khola
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation: √	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 30	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Built Concrete Tank			
Discharge L/M		10.00			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Colluvium Deposits
Related Hazard	Landslide and Flood
Possible Useful	Drinking, agriculture.
Outlet of Spring	From a flowing Stream.

6. Land use Surrounding in the spring.

   Upslope: Dense Vegetation (Saal Utis)

   Downslope: Dense Vegetation (Saal Utis)

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. They made storage tanks to collect water.
8. Conservation Measure

The Spring holds a good storage capacity for Large communities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Sagar Thapa Magar	Mailing address: Triyuga Municipality-14 Sahune
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Bar Bhanjyang	

2. Geo-Spatial Location

Spring ID: L28	Slope: <30
Latitude: N26.87511	Spring Size: 3*3
Longitude: E86.75036	Distance from Hamlet: 200m
Height: 592m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Bange Khola Muhan
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Bar Bhanjyang Sameti

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 80	Tradition related to Spring: Sometimes Snake appear at spring, and people worship as Naag Deuta.

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Small Water Boundary tank			

Discharge L/M		40.00			
Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest:	River Bank: √
Types of Deposit		Colluvium Deposit, Proportion of sand and gravel is very high.			
Related Hazard		Flood during Monsoon			
Possible Useful		Drinking, Irrigation, Cultivation.			
Outlet of Spring		From a flowing stream.			

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation

   Downslope: Sparse vegetation

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity of water for the small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Uma B.K	Mailing address: Triyuga Municipality-Saune
Profession: Farmer	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-14
Tole: Sahune	

2. Geo-Spatial Location

Spring ID: L29	Slope: <30
Latitude: N26.87643	Spring Size:
Longitude: E86.74568	Distance from Hamlet: 100m
Height: 601m	Sanitation status: Yes
Shape: Narrow	

3. Social Status

Name of Spring: Dhara Kholcha
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 31	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not concrete structure but, built Bambo tube to flow water.			
Discharge L/M		22.50			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Rock	The area composed of deformed garnet bearing schist.
Related Hazard	No
Possible Useful	Drinking, irrigation, cultivation
Outlet of Spring	Using Bamboo/ Pipe

6. Land use Surrounding in the spring.

   Upslope: Katus, Utis (Vegetation cover)

   Downslope: River bankVegetation (cover)

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity of water for the community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear small shrubs and grass to clear water and make it free of pollutants.

Photograph of Spring

1. Name of Respondent

Name: Anjana Basnet	Mailing address: Triyuga Municipality-14 Torke
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality- 14
Tole: Torke	

2. Geo-Spatial Location

Spring ID: L30	Slope: <30
Latitude: N26.87814	Spring Size: 1*1
Longitude: E86.72419	Distance from Hamlet: 500m
Height: 567m	Sanitation status: no
Shape: Oval	

3. Social Status

Name of Spring: -
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Gabion Boundary Was made earlier but no other structure is built.			
Discharge L/M		Cannot Measured			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:
Types of Deposit		Residual Deposits. The overall geology shows steep valleys and steep slopes. The rock observed is quartzite and garnet schist. Sediment Deposits 5m.			
Related Hazard		No			
Possible Useful		No			
Outlet of Spring		From a flowing stream.			

6. Land use Surrounding in the spring.

   Upslope: Banana Farmland

   Downslope: Cultivation of land and sparse vegetation.

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity for a small communities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Padam Bahadur Basnet	Mailing address: Triyuga Municipality-14
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Kichkiche	

2. Geo-Spatial Location

Spring ID: L31	Slope: <30
Latitude: N26.87641	Spring Size: 0.5*0.5
Longitude: E86.72140	Distance from Hamlet: 200
Height: 500	Sanitation status: Yes
Shape: Narrow	

3. Social Status

Name of Spring: Kichkiche Gairi
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 2	Tradition related to Spring: Yes

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.13			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:

Types of Deposit	Residual Deposit
Related Hazard	No
Possible Useful	Drinking
Outlet of Spring	From a flowing spring

6. Land use Surrounding in the spring.

   Upslope: Bamboo, Khiroo (Densely Vegetation cover).

   Downslope: Bamboo, Khiro

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Alisha Magar	Mailing address: Triyuga Municipality-14
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-14
Tole: Kirkiche	

2. Geo-Spatial Location

Spring ID: L32	Slope: <30
Latitude: N26.87403	Spring Size: 1*2
Longitude: E86.71353	Distance from Hamlet: 1km
Height: 345m	Sanitation status: No
Shape: Narrow and long	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture:	Fault:	Karst: √
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		2.61			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest:	River Bank: √

Types of Rock	Deformed and weathered Dolomite.
Related Hazard	No
Possible Useful	Drinking and agriculture
Outlet of Spring	From a flowing stream

6. Land use Surrounding the spring

   Upslope: Sal, Khirro (Sparsely Vegetated)

   Downslope: River terrace, Agriculture land

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. A water storage tank is very useful to collect the water.

Photograph of Spring

1. Name of Respondent

Name: Khilaraj Basnet	Mailing address: Triyuga Municipality-14
Profession: Teacher	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-14
Tole: Kirkiche Fedi	

2. Geo-Spatial Location

Spring ID: L33	Slope: <30
Latitude: N26.87400	Spring Size: 1*1
Longitude: E86.71116	Distance from Hamlet: 300m
Height: 344m	Sanitation status: Yes
Shape: Oval	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 3	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:√	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.13			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Colluvium Deposit
Related Hazard	No
Possible Useful	Drinking for small community.
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Vegetation Cover

   Downslope: Vegetation Cover

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds the good storage capacity for a small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Mahesh Shah	Mailing address: Triyuga Municipality-16
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-16
Tole: Belduwan	

2. Geo-Spatial Location

Spring ID: L34	Slope: <30
Latitude: N26.86026	Spring Size: 2*2
Longitude: E86.70047	Distance from Hamlet: 200m
Height: 388m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Tintale Kuwa
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Built water storage tank			
Discharge L/M		2.61			

Spring Located	Ridge and Gulley: √	Rocky terrain: √	Agriculture land:	Forest:	River Bank:

Types of Rock	Sandstone (Strike: 20/15°NW Joint J1: 43/69SE Joint J2: 295/70°NE
Related Hazard	Landslide and flood (During monsoon)
Possible Useful	Drinking
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Densely Vegetated, Sindhure Kalikath.

   Downslope: Vegetation cover

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. They made water storage tanks one for collection and another for filtration.
8. Conservation Measure

The Spring is a good storage capacity of water for small communities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Sabin Dulal	Mailing address: Triyuga Municipality
Profession: Construction Person	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 11
Tole: Chappan	

2. Geo-Spatial Location

Spring ID: L35	Slope: <30
Latitude: N26.81357	Spring Size: 1*1
Longitude: E86.71293	Distance from Hamlet: 200m
Height: 173m	Sanitation status: Yes, sometimes
Shape: Circle	

3. Social Status

Name of Spring: Chhapan Kuwa
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 25	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		3.75			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Residual Deposits
Related Hazard	No
Possible Useful	Drinking and Farming
Outlet of Spring	From a flowing river

6. Land use Surrounding in the spring.

   Upslope: Agriculture land

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Man bal Rai	Mailing address: Triyuga Municipality-11
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-11
Tole: Namuna School	

2. Geo-Spatial Location

Spring ID: L36	Slope: <30
Latitude: N26.80138	Spring Size: 1*2
Longitude: E86.70243	Distance from Hamlet: 50m
Height: 153m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Namuna Dhara
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Water Storage Tank			
Discharge L/M		3.75			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Residual
Related Hazard	No
Possible Useful	Drinking, cultivation.
Outlet of Spring	From a flowing stream

6. Land use Surrounding in the spring.

   Upslope: Agriculture land

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

A protective structure provides stability and may be made of concrete or masonry. A seal to prevent surface water from leaking in is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Man Bal Rai	Mailing address: Triyuga Municipality-11
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 11
Tole: Shivalaya	

2. Geo-Spatial Location

Spring ID: L37	Slope: <30
Latitude: N26.80057	Spring Size: 3*3
Longitude: E86.70096	Distance from Hamlet: 200m
Height: 141	Sanitation status: Yes Good
Shape: Rectangle	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 30	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Construct storage tank			
Discharge L/M		30.00			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Alluvium Deposit
Related Hazard	No
Possible Useful	Drinking, irrigation, Small homemade Industries.
Outlet of Spring	From a flowing Stream

6. Land use Surrounding in the spring.

   Upslope: Agriculture land

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. They construct a water storage tank.
8. Conservation Measure

The Spring hold good storage capacity for large community. A seal to prevent surface water from leaking in and is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Man Bal Rai	Mailing address: Triyuga Municipality-11
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 11
Tole: Shivalaya	

2. Geo-Spatial Location

Spring ID: L38	Slope: <30
Latitude: N26.80191	Spring Size: -
Longitude: E86.70287	Distance from Hamlet: 50m
Height: 144m	Sanitation status: Yes, Closed.
Shape: -	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House:	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		A seal to prevent surface water from leaking			
Discharge L/M		4.62			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank: √
Types of Deposit		Alluvium Deposit This is the type of Aquifer recharge directly from the river. The area is the Previous Flood plain and now settlement is growing on this terrace.			
Related Hazard		No			
Possible Useful		Drinking			
Outlet of Spring		Using Plastic tube.			

6. Land use Surrounding in the spring.

   Upslope: Road, Agriculture Land

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. A seal to prevent surface water from leaking.
8. Conservation Measure

A seal to prevent surface water from leaking in, and is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Dilliram Pariyar	Mailing address: Triyuga Municipality-10
Profession: Farmer	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Aadarsha	

2. Geo-Spatial Location

Spring ID: L39	Slope: <30
Latitude: N26.80304	Spring Size: 1*1
Longitude: E86.70222	Distance from Hamlet: 100m
Height: 156m	Sanitation status: No
Shape: Circle	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1.20			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Alluvium Deposits (Gravel dominated area).
Related Hazard	No
Possible Useful	Drinking and irrigation
Outlet of Spring	From a flowing stream

6. Land use Surrounding in the spring.

   Upslope: Agriculture land, Bamboo

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring:
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds good storage capacity for small communities. A protective structure provides stability and may be made of concrete or masonry. A seal to prevent surface water from leaking is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Mira Niraula	Mailing address: Triyuga Municipality-11
Profession: Housewife	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-11
Tole: Jaljala Tole	

2. Geo-Spatial Location

Spring ID: L40	Slope: <30
Latitude: N26.79768	Spring Size: 3*2
Longitude: E86.69827	Distance from Hamlet: 20m
Height: 160m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Jaljala Spring
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Jaljala Khane Pani Bikash.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 100-120	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Storage tank			
Discharge L/M		9.64			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:
Types of Deposit		Residual Deposits			
Related Hazard		No			
Possible Useful		Drinking and cultivation			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Residential

   Downslope: Residential

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Concrete Storage tank.
8. Conservation Measure

The Spring hold very good discharge capacity. A seal to prevent surface water from leaking in and is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation.

Photograph of Spring

1. Name of Respondent

Name: Kumar Dhakal	Mailing address: Triyuga Municipality-9
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Sugam	

2. Geo-Spatial Location

Spring ID:	Slope: <30
Latitude: N26.79831	Spring Size: 2*3
Longitude: E86.69080	Distance from Hamlet: 200m
Height: 149m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Kali Khola Mul
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Tank			
Discharge L/M		15.00			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Residual Deposits. The area composed of Gravel dominant with sand and clay.			
Related Hazard		No			
Possible Useful		Drinking, irrigation.			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Vegetation (Bamboo)

   Downslope: Agriculture land.

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. A protective structure provides stability and is made of concrete or masonry.
8. Conservation Measure

The Spring has good water discharge. A seal to prevent surface water from leaking is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock

Photograph of Spring

1. Name of Respondent

Name: Lucky B.K	Mailing address: Triyuga Municipality-10
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 10
Tole: Khardar	

2. Geo-Spatial Location

Spring ID: L42	Slope: <30
Latitude: N26.80229	Spring Size: 1*1
Longitude: E86.69254	Distance from Hamlet: 50m
Height: 155m	Sanitation status: No
Shape: Long and narrow	

3. Social Status

Name of Spring: Kali khola-2
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		A bamboo tube was constructed as a bridge to transfer water to cultivation land.			
Discharge L/M		60			

Spring Located	Ridge and Gulley:	Rocky terrain:	Agriculture land:	Forest:	River Bank: √

Types of Deposit	Alluvium Deposit
Related Hazard	No. (Water Pollution from sanitary landfill upslope of Spring from the village)
Possible Useful	Drinking, irrigation
Outlet of Spring	From a flowing spring

6. Land use Surrounding in the spring.

   Upslope: Residential area

   Downslope: River and cultivation land

7. Other Details
   c. Details of any damage to the Spring:
   d. Local-level/ local people use the procedure to conserved Spring. Construct a bamboo tune to bridge the water from the spring to agricultural land.
8. Conservation Measure

The Spring holds good discharge capacity for the community. A protective structure provides stability and may be made of concrete or masonry. A seal to prevent surface water from leaking is usually made of puddle clay and sometimes plastic. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Lucky B.K	Mailing address: Triyuga Municipality-10
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Khabardar	

2. Geo-Spatial Location

Spring ID: L43	Slope: <20
Latitude: N26.80362	Spring Size:
Longitude: E86.69262	Distance from Hamlet: 200m
Height: 152m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Kali Khola 1
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Construct a water storage tank			
Discharge L/M		20			

Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:

Types of Deposit	Alluvium Deposit (Gravel cobble sand) deposits
Related Hazard	No
Possible Useful	Drinking and agriculture
Outlet of Spring	Spring Box

6. Land use Surrounding in the spring.

   Upslope: Pipal (Sparse Vegetation)

   Downslope: Agriculture land

7. Other Details

   g. Details of any damage to the Spring: No

   h. Local-level/ local people use the procedure to conserved Spring. Construction tank

8. Conservation Measure

The Spring holds good storage capacity and discharges water for the community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Stop Sanitary landfills near the spring, which pollutes the water.

Photograph of Spring

1. Name of Respondent

Name: Shyam Magar	Mailing address: Triyuga Municipality- 10
Profession: Agriculture	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 10
Tole: Khabardar	

2. Geo-Spatial Location

Spring ID: L44	Slope: <30
Latitude: N26.80461	Spring Size: 8*2
Longitude: E86.69284	Distance from Hamlet: 200m
Height: 155m	Sanitation status: Yes
Shape: Recctangle	

3. Social Status

Name of Spring: Kali Khola 3
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 60	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Storage tank and cover.			

Discharge L/M		44			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest:	River Bank:√
Types of Deposit		Alluvium Deposits			
Related Hazard		No			
Possible Useful		Drinking and agriculture			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Pipal Bar (Residential area)

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity of water for a small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Shova Pokhrel	Mailing address: Triyuga Municipality-9
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratamate	

2. Geo-Spatial Location

Spring ID: L45	Slope: <30
Latitude: N26.80529	Spring Size: 3*1
Longitude: E86.68899	Distance from Hamlet: 200m
Height: 166m	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Jiyamire Mul
Ownership of the Spring:
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 15	Tradition related to Spring: no

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing: √	Constant:		Decreasing:
Infrastructure to conserved Spring		Tank			

Discharge L/M		3.75			
Spring Located	Ridge: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Alluvium Deposit (Gravel, sand and clay)			
Related Hazard		Flood			
Possible Useful		Drinking and agriculture			
Outlet of Spring		Using bamboo			

6. Land use Surrounding in the spring.

   Upslope: Kutmiro, Bamboo, Agriculture

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Construct tank but it is damaged.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Ramesh Puri	Mailing address: Triyuga Municipality-9
Profession: Student	Gender: male
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratemate	

2. Geo-Spatial Location

Spring ID: L46	Slope: <30
Latitude: N26.80633	Spring Size: 3*3
Longitude: E86.68879	Distance from Hamlet: 500m
Height: 158m	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Jymari-2
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 10	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Tank			

Discharge L/M		1.71			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest: √	River Bank: √
Types of Deposit		Residual Deposits			
Related Hazard		No			
Possible Useful		Drinking			
Outlet of Spring		Spring Box			

6. Land use Surrounding in the spring.

   Upslope: Kutmiro, Dumri (Sparse Vegetation)

   Downslope: Sparse vegetation cover and some agriculture land

7. Other Details
   a. Details of any damage to the Spring: Flood can occur
   b. Local-level/ local people use the procedure to conserved Spring. Construction of Water reservoir.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Stop Sanitary landfills near the spring, which pollutes the water.

Photograph of Spring

1. Name of Respondent

Name: Udhav Adhikari	Mailing address: Triyuga Municipality-9
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 9
Tole: Pallo Ratemate	

2. Geo-Spatial Location

Spring ID: L47	Slope: <30
Latitude: N26.80610	Spring Size: 2*2
Longitude: E86.68629	Distance from Hamlet: 300m
Height: 159	Sanitation status: Yes
Shape:	

3. Social Status

Name of Spring: Lampate Kuwa
Ownership of the Spring: Private
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		They construct the well and water Handpump to operate the electric centrifugal pump.			
Discharge L/M		4.29			

Spring Located	Ridge:	Rocky terrain:	Agriculture land: √	Forest:	River Bank:

Types of Deposit	Residual Deposits. Sediment thickness 5-6m
Related Hazard	No
Possible Useful	Drinking, Agriculture
Outlet of Spring	Spring Box, Using pipe

6. Land use Surrounding in the spring.

   Upslope: Agriculture land

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: no.
   b. Local-level/ local people use the procedure to conserved Spring. They construct the well and water Handpump to operate the electric centrifugal pump.
8. Conservation Measure and use

The Spring holds a good storage capacity for a small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Udhav Adhikari	Mailing address: Triyuga Municipality-9
Profession: Business	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality- 9
Tole: Pallo Ratemate	

2. Geo-Spatial Location

Spring ID: L48	Slope: <30
Latitude: N26.80691	Spring Size: 1*2
Longitude: E86.68493	Distance from Hamlet: 50m
Height: 160m	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: School danda Muhan
Ownership of the Spring: Pubic
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			

Discharge L/M		2.86			
Spring Located	Ridge: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Residual Deposit			
Related Hazard		No			
Possible Useful		Drinking, Agriculture			
Outlet of Spring		Using Pipe			

6. Land use Surrounding in the spring.

   Upslope: Sparse Vegetation, Agriculture land

   Downslope: Agriculture Land

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring hold good storage capacity for small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Devi maya Bhujel	Mailing address: Triyuga Municipality- 9
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratamate	

2. Geo-Spatial Location

Spring ID: L49	Slope: <30
Latitude: N26.81108	Spring Size: 2*2
Longitude: E86.69078	Distance from Hamlet:50m
Height: 206m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: -
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 20	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Construction of Tank			

Discharge L/M		2.73			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Residual Deposits			
Related Hazard		No			
Possible Useful		Drinking purpose			
Outlet of Spring		Using pipe			

6. Land use Surrounding in the spring.

   Upslope: Densely covered Vegetation (Sal Forest)

   Downslope: Densely covered Vegetation (Sal Forest)

7. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Fence the area around the spring tank to prevent pollution by children or livestock. Stop Sanitary landfills near to the spring, which pollutes the water.

Photograph of Spring

1. Name of Respondent

Name: Manju Khadka	Mailing address: Triyuga Municipality-9
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratamate	

2. Geo-Spatial Location

Spring ID: L50	Slope: <30
Latitude: N26.81084	Spring Size: 1.5*1.5
Longitude: E86.69139	Distance from Hamlet: 50m
Height: 211m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Devi Than Dhara
Ownership of the Spring: Pubic
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation: √	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 40	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Newly construct tank			

Discharge L/M		5.00			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Residual deposits			
Related Hazard		No			
Possible Useful		Drinking			
Outlet of Spring		Using pipe			

6. Land use Surrounding in the spring.

   Upslope: Densely covered vegetation (Sal Forest)

   Downslope: Agriculture land

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Rewat Kumar Shrestha	Mailing address: Triyuga Municipalit-9
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratmate	

2. Geo-Spatial Location

Spring ID: L51	Slope: <30
Latitude: N26.81403	Spring Size: 1*1
Longitude: E86.69263	Distance from Hamlet: 1km
Height: 253m	Sanitation status: No, Poor.
Shape: -	

3. Social Status

Name of Spring:
Ownership of the Spring: Pubic
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 5	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing: √
Infrastructure to conserved Spring		Not Built			

Discharge L/M		4.00			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Lower Siwalik (Residual Deposits)			
Related Hazard		Sanitary Landfill from police station.			
Possible Useful		No			
Outlet of Spring		From a spring box			

6. Land use Surrounding in the spring.

   Upslope: Vegetation cover (Sal Forest)

   Downslope: Vegetation cover (Sal Forest)

7. Other Details
   a. Details of any damage to the Spring:No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The spring is located in Forest and the water is very high in the pollution of waste and landfills from the police station. This spring they use it only for cattle drinking and they had the problem of drinking water. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock.

Photograph of Spring

1. Name of Respondent

Name: Santa Khadka	Mailing address: Triyuga Municipalit-9
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-9
Tole: Ratmate	

2. Geo-Spatial Location

Spring ID: L52	Slope: <30
Latitude: N26.81767	Spring Size: 1*1
Longitude: E86.69222	Distance from Hamlet: 500m
Height: 239m	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Kholshe
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 7	Tradition related to Spring: No

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Small Storage tank			

Discharge L/M		18.00			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Residual Deposits			
Related Hazard		No			
Possible Useful		Drinking, Agriculture			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Vegetation cover (Sal Forest)

   Downslope: Vegetation cover (Sal Forest)

7. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Construct tank and supply water from the tube.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. A protective structure provides stability and may be made of concrete or masonry. A seal to prevent surface water from leaking in is usually made of puddle clay and sometimes plastic. Fence the area around the spring tank to prevent pollution by children or livestock

Photograph of Spring

1. Name of Respondent

Name: Roshan Rai	Mailing address: Triyuga Municipality-10
Profession: Masson	Gender: Male
Location: Gaighat	Local-level name: Triyuga Municipality-10
Tole: Nayabasti	

2. Geo-Spatial Location

Spring ID: L53	Slope: <30
Latitude: N26.80488	Spring Size: 1*1
Longitude: E86.70124	Distance from Hamlet: Around 150m
Height: 172m	Sanitation status: Yes
Shape: Rectangle	

3. Social Status

Name of Spring: Basthari Mul
Ownership of the Spring:
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation: √	Cattle drinking purpose. √
Drinking + irrigation: √	Not used:
Drinking + Cleaning: √	Others:
Beneficiaries House: 10	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually:	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Yes, Tank Built			

Discharge L/M		15			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest:	River Bank:√
Types of Deposit		Alluvium Deposit			
Related Hazard		No			
Possible Useful		Drinking and agriculture			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Agriculture land, Residential area, and Pig firm.

   Downslope: River terrace, Agriculture land

7. Other Details
   a. Details of any damage to the Spring: Waste product from the Pig and human landfill near to 30m area of spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Control sanitation landfills and waste products near to spring.

Photograph of Spring

1. Name of Respondent

Name: Bishunu Rai	Mailing address: Triyuga Municipality
Profession: Agriculture	Gender: Female
Location: Gaighat	Local-level name: Triyuga Municipality-
Tole: Bhusune	

2. Geo-Spatial Location

Spring ID: L54	Slope: <30
Latitude: N26.80095	Spring Size: 1*1
Longitude: E86.71715	Distance from Hamlet: around 300m
Height: 176m	Sanitation status: No
Shape: Rectangle	

3. Social Status

Name of Spring: Bhusune Khahare
Ownership of the Spring: Pubic
Status of tenure: Public
Spring management Committee: Not formed.

4. Spring Useful Condition

Drinking: √	Cleaning (Taking Bath/ Washing Cloth): √
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House: 3	Tradition related to Spring:

5. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:√
Infrastructure to conserved Spring		Check dam was built to collect the water			

Discharge L/M		2.40			
Spring Located	Ridge:	Rocky terrain:	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Alluvium Deposit			
Related Hazard		No. Water pollution from forest leaves and other activities			
Possible Useful		Drinking for small community			
Outlet of Spring		From a flowing stream			

6. Land use Surrounding in the spring.

   Upslope: Densely covered forest

   Downslope: Forest cover and agricultural land

7. Other Details
   a. Details of any damage to the Spring: No
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
8. Conservation Measure

The Spring holds a good storage capacity for a small community. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Control waste products and cleanliness required in Spring for good water.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L4	Slope: >30
Latitude: N26.85478	Spring Size: 2*2
Longitude: E86.69376	Distance from Hamlet: 500m
Height: 297m	Sanitation:
Shape: Narrow and long	

2. Social Status

Name of Spring: -
Ownership of the Spring: -
Status of tenure: Public: -
Spring management Committee: -

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

4. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge l/m		2.61			
Spring Located	Ridge and Gulley:	Rocky terrain:√	Agriculture land:	Forest:	River Bank:
Types of Deposit		Alluvium Deposit (Boulder, cobble gravel, sand silt)			
Related Hazard		No			
Possible Useful		Drinking for small Community			
Outlet of Spring		From a flowing stream.			

5. Land use Surrounding in the spring.

   Upslope: Forest (forest Sal, Neem, Chilaune)

   Downslope: Forest (forest Sal, Neem, Chilaune)

6. Other Details

   i. Details of any damage to the Spring: No

   j. Local-level/ local people use the procedure to conserved Spring. Not used any measured.

7. Conservation Measure

The Spring capacity for small Households. The surrounding area is free of hazards. Important water Awareness programs can be conducted in the community for their good water preservation. Water is open, bacteria growth can harm if taken directly. Water Boundary and storage tank should be made to sound water and good water quality.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L8	Slope: <45°
Latitude: N26.87462	Spring Size: 2*1
Longitude: E86.69066	Distance from Hamlet: 1km
Height: 399	Sanitation status: No
Shape: Rectangular	

2. Social Status

Name of Spring: -
Ownership of the Spring: -
Status of tenure:-
Spring management Committee: -

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used:
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

4. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		Cannot measured			
Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Deposit		Residual Deposits (Boulder, cobble, Pebble, sand)			
Sediment Thickness		10m			
Related Hazard		Landslide and flooding can occur.			
Possible Useful		Drinking			
Outlet of Spring		Spring Box			

5. Land use Surrounding in the spring.

   Upslope: Vegetation cover

   Downslope: River Terrace.

6. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
7. Conservation Measure and use

The Spring can be used for small communities. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make it bacteria-free.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L9	Slope: 70-80°
Latitude: N26.87592	Spring Size:
Longitude: E86.68992	Distance from Hamlet:
Height: 380	Sanitation status:
Shape: Circle	

2. Social Status

Name of Spring: -
Ownership of the Spring:-
Status of tenure: -
Spring management Committee: -

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose:
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House: -	Tradition related to Spring: -

4. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst: √
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		1			
Spring Located	Ridge and Gulley: √	Rocky terrain:	Agriculture land:	Forest:	River Bank:
Types of Rock:		Dolomite (strike, 65/36°NW), Joint J1=10/62°SE, J2= 76/75°NW			
Related Hazard		Landslide, Subsidence and flood			
Possible Useful		Drinking			
Outlet of Spring		From a flowing stream			

5. Land use Surrounding in the spring.

Upslope: Subtropical Broad leaves tree forest

Downslope: River terrace

6. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
7. Conservation Measure and use

The Spring can be used for small family. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make bacteria free.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L10	Slope: <30
Latitude: N26.88005	Spring Size: 2*2
Longitude: E86.68920	Distance from Hamlet:
Height: 400m	Sanitation status: No
Shape: Narrow	

2. Social Status

Name of Spring: -
Ownership of the Spring: -
Status of tenure: -
Spring management Committee: -

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

4. The Physical Condition of the Spring

Type of Spring	Depression: √	Contact:	Fracture:	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant: √		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		3.16			
Spring Located	Ridge and Gulley:	Rocky terrain: √	Agriculture land:	Forest: √	River Bank:
Types of Deposit		Alluvium Deposit (Boulder, Pebble, Gravel, and sand) Proportion of Boulder is very high.			
Related Hazard		No			
Possible Useful		Domestic Drinking for small community			
Outlet of Spring		From a flowing stream			

5. Land use Surrounding in the spring.

   Upslope: Subtropical broad leaves Forest (Sal Utis)

   Downslope: Densely vegetation cover

6. Other Details
   a. Details of any damage to the Spring: Road Construction led to a damaged Spring and landslide occur near to Spring.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
7. Conservation Measure and use

The Spring can be used for small family. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. Clear vegetation above the head of the spring to make bacteria free.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L3	Slope: >30 (Gentle slope)
Latitude: N26.84832	Spring Size: 1*1
Longitude: E86.69423	Distance from Hamlet: 2km
Height: 276m	Sanitation: No
Shape: Narrow and long	

2. Social Status

Name of Spring:
Ownership of the Spring: Public
Status of tenure: Public
Spring management Committee: Not formed.

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth)
Irrigation:	Cattle drinking purpose.
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

4. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing:	Drying up: √		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge (l/m)		0.60			
Spring Located	Ridge and Gulley:	Rocky terrain: √	Agriculture land:	Forest:	River Bank:
Types of Rock		Sedimentary Rock (Sandstone and Mudstone)			
Related Hazard		No			
Possible Useful		2-3 Household can be benefits for drinking.			
Outlet of Spring		Spring Box			

5. Land use Surrounding in the spring.

   Upslope: Dense Forest

   Downslope: Sparse Forest

6. Other Details

   k. Details of any damage to the Spring: Road Construction led to a damaged Spring.

   l. Local-level/ local people use the procedure to conserved Spring. Not used any measured.

7. Conservation Measure

The Spring capacity for small Households. The surrounding area is free of hazards. Important water Awareness programs can be conducted in the community for their good water preservation. Water is open, bacteria growth can harm if taken directly. Water Boundary and storage tank should be made to sound water and good water quality.

Photograph of Spring

1. Geo-Spatial Location

Spring ID: L26	Slope: <30
Latitude: N26.87969	Spring Size: 1*3
Longitude: E86.75104	Distance from Hamlet: 500m
Height: 699	Sanitation status: No
Shape: Oval	

2. Social Status

Name of Spring: -
Ownership of the Spring: -
Status of tenure: Public
Spring management Committee: Not formed.

3. Spring Useful Condition

Drinking:	Cleaning (Taking Bath/ Washing Cloth):
Irrigation:	Cattle drinking purpose. √
Drinking + irrigation:	Not used: √
Drinking + Cleaning:	Others:
Beneficiaries House:	Tradition related to Spring:

4. The Physical Condition of the Spring

Type of Spring	Depression:	Contact:	Fracture: √	Fault:	Karst:
Water Available:		Annually: √	6 months:		3 months:
Current Condition:		Flowing: √	Drying up:		Dried Up:
Spring water History trend:		Increasing:	Constant:		Decreasing:
Infrastructure to conserved Spring		Not Built			
Discharge L/M		0.75			

Spring Located	Ridge and Gulley: √	Rocky terrain: √	Agriculture land:	Forest:	River Bank:
Types of Rock:		Strongly foliated Schist			
Related Hazard		Landslide, Rock fall			
Possible Useful		Drinking			
Outlet of Spring		Spring Box			

5. Land use Surrounding in the spring.

   Upslope: Vegetation cover

   Downslope: Vegetation cover (Bar Chilaune Simal)

6. Other Details
   a. Details of any damage to the Spring: No.
   b. Local-level/ local people use the procedure to conserved Spring. Not used any measured.
7. Conservation Measure

Spring waste management should be done. Water Awareness programs can be conducted for the community for their good water preservation. Fence the area around the spring tank to prevent pollution by children or livestock. A Water Storage tank should be made.

Photograph of Spring