World Health Organization
REGIONAL OFFICE FOR Europe

Umwelt Bundesamt

Water safety plan:

a field guide to improving drinking-water safety in small communities

Abstract

The WHO *Guidelines for drinking-water quality* recommend the water safety plan (WSP) approach as the most effective way of ensuring continuous provision of safe drinking-water. The challenges related to drinking-water supply in rural areas and small towns are of notable concern across the entire WHO European Region, but the WSP approach has been proven to work effectively in small-scale water supplies. This field guide aims to support WSP implementation in small communities by providing brief explanations of the WSP process and practical templates for field use.

Keywords
DRINKING-WATER
RISK MANAGEMENT
RURAL COMMUNITIES
WATER QUALITY
WATER SUPPLY

ISBN 978-92-890-5007-4

Address requests about publications of the WHO Regional Office for Europe to:

Publications
WHO Regional Office for Europe
UN City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark

Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office web site (http://www.euro.who.int/pubrequest).

Design and layout: Mikhail Romanyuk. Design of figures on pages 25 and 26: Esther Melhorn.

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Water safety plan:

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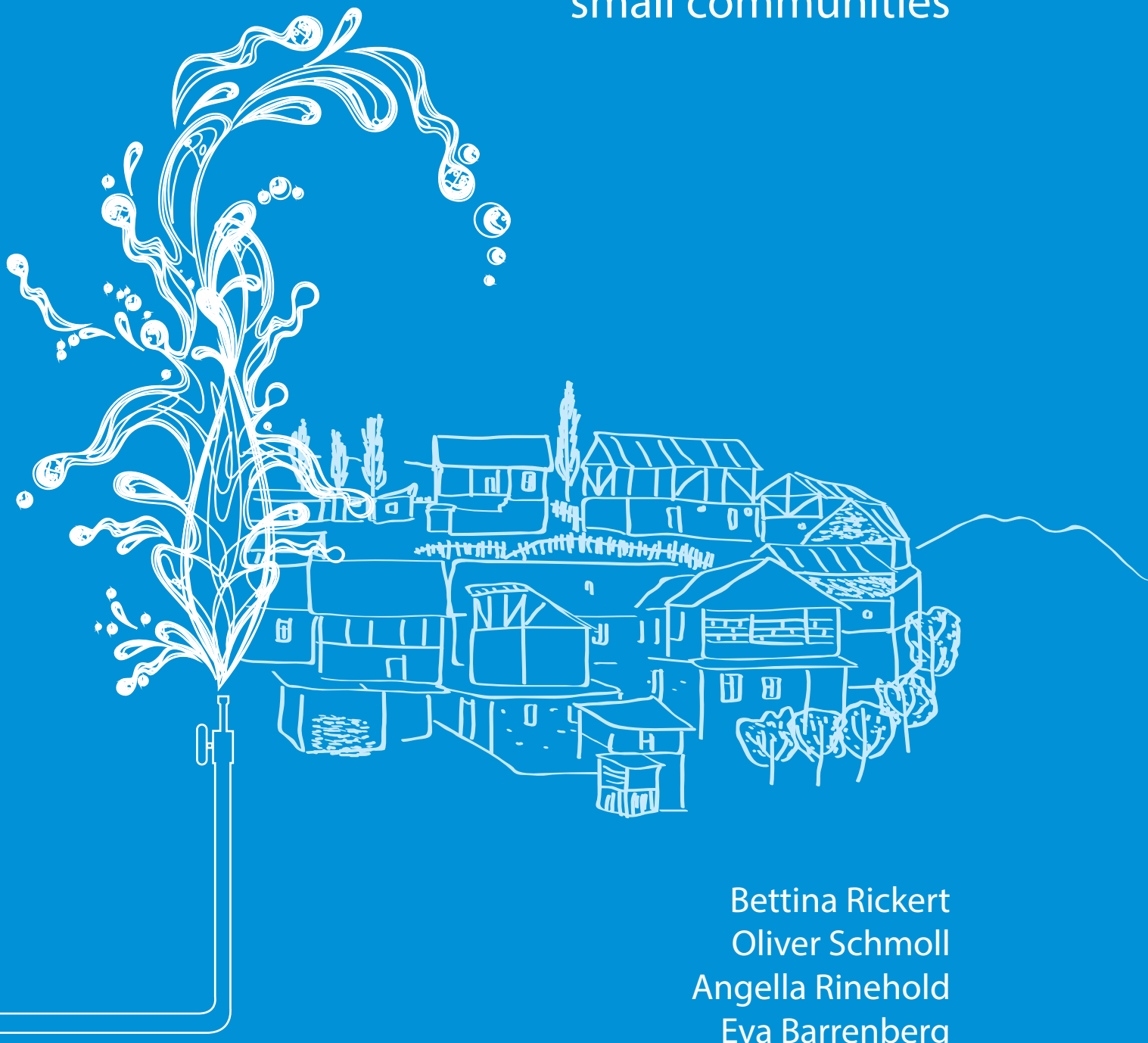

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Contents

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The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, via the Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia, funded the production of this document.

Foreword

The water safety plan (WSP) approach, recommended by the WHO (2011) *Guidelines for drinking-water quality*, is the most effective way of ensuring continuous provision of safe drinking-water, regardless of the size of the supply or the level of development in a given setting.

In the Parma Declaration on Environment and Health (WHO Regional Office for Europe, 2010), European governments declared one of four regional priority goals to be "ensuring public health by improving access to safe water and sanitation". The United Nations Economic Commission for Europe and WHO Regional Office for Europe (2006) Protocol on Water and Health is the first international legal instrument that aims at the protection of human health and well-being by linking the prevention and reduction of water-related diseases and the sustainable management of water resources in the European Region.

The challenges related to drinking-water supplies in rural areas and small towns are of notable concern across the entire European Region. The Protocol recognizes that improving the situation of small-scale water supplies is thus a priority area of work. This particularly includes continuing advocacy for adoption and scale-up of WSPs and ongoing capacity building, as well as providing tools – such as this field guide – to support local WSP uptake and implementation.

Improving access to safe drinking-water in small communities will improve community health and thereby enhance opportunities for sustainable livelihoods, poverty reduction and educational and economic development. It will thus contribute to the development of resilient communities, in line with the WHO Regional Office for Europe (2013) Health 2020 public health policy framework.

The evidence shows that the WSP approach works effectively in community-managed supplies. This field guide is designed to be used by community members working with this approach. It contains short explanations of the water safety planning process and practical templates that support WSP development and implementation on the ground. Local government authorities, health and water supply offices and nongovernmental organizations can also use it to support community members in implementing their WSPs.

This field guide aims to support the implementation of the WHO (2011) *Guidelines for drinking-water quality*. It is based on and complementary to the WHO (2012) manual *Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in small communities*, which primarily targets professionals working in and providing assistance to small communities. The manual provides additional guidance, with case study experiences and examples, and is a valuable resource for further background reading.

The experiences and lessons learnt from WSP pilot projects in rural Tajikistan undertaken in 2011 and 2012 by the WHO Regional Office for Europe formed the basis for development of this field guide. Although developed in the European context, however, the guide is applicable to small community water supplies worldwide.

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How to use this field guide

This field guide is a practical tool for improving and maintaining drinking-water safety. It is designed to be used by YOU as a rural community member who shares responsibility for operation and management of the drinking-water supply in your community. It can also be used by YOU as a staff member of the local health or water supply office, local government authority, nongovernmental organization (NGO) or other community-based organization that supports drinking-water safety in rural communities. Ensuring the safety of the community water supply is a daily job, and community members and other stakeholders have to work jointly to achieve this goal.

This field guide explains what a water safety plan (WSP) is and how it can help you improve the safety of your drinking-water supply, showing how you can improve your water supply little by little, step by step, every day. It provides you with a range of ready-to-use templates to support you in developing your own WSP. The guidance and templates will help you see that WSP implementation is easy and can help you achieve improvements quickly.

It is important to remember that the templates provided in this publication are intended to help to guide you through important planning steps, but they do not represent the only way to develop your WSP. The WSP approach is very flexible, and you are free to change the templates in any way you choose to offer the best fit for your local situation.

As you go through the WSP process you will find that some of these templates are easier to complete than others. If you find any of the templates too difficult, even with the help of local experts, you can revise them to make them clearer or come back to them later if necessary. Remember that water safety planning is neither an all-or-nothing process nor a pass/fail exercise. Every activity you undertake and each template you complete is an important step towards improving water safety.

While implementing your WSP you will no doubt find that during discussions on one task you will also discover issues that are important for the next steps. This is normal: you can note these ideas and deal with them later in the process.

How can a WSP help you?

Availability of acceptable and safe drinking-water in sufficient quantity is essential to sustain a healthy life – for yourself, your family and your whole community. "Safe" means that your water does not contain harmful microorganisms or substances in concentrations that may make you sick with so-called waterborne diseases, such as diarrhoea. "Sufficient" means that the amount of water on hand is enough for your daily needs for drinking, food preparation and personal and domestic hygiene. If the available quantity of water is insufficient (because you need to collect it from distant sources, for example), good hygiene practices, such as hand washing, may be compromised. This may also cause disease.

Ensuring continuous provision of safe and sufficient drinking-water should always be among the top priorities of your community. This prevents the occurrence of waterborne diseases and significantly contributes to your community's economic development and sustainable family livelihoods. Households whose members do not have to travel to collect water have more time to earn money, care for children and go to school. Safe water is crucial for the sustainable development of your community.

A group of community members (such as a water association or water user group) who collectively share responsibility for delivering safe drinking-water is typically best placed to manage the community water supply. The WSP approach – explained step by step in the following chapters – is the most effective way this group can manage the supply. It supports your community in dealing with the everyday challenges of maintaining a reliable, safe water supply.

The WSP approach clearly emphasizes prevention. It helps you to identify, prioritize and manage risks that could threaten your water supply, thereby protecting your drinking-water before it is too late and problems occur. Remember that even if your water looks clear and fine it may contain hazards and harm your health. A WSP also helps you to take necessary steps, over time, to improve your water supply using the available resources in the community.

Please do not perceive the WSP as "something extra" that puts an added burden on you. In fact, experience has shown that the WSP process is most effective if it becomes an integral part of the ongoing day-to-day operation, maintenance and management of your water supply. Provided you and your community are fully committed to the continuous provision of safe drinking-water, you will see that a WSP is an effective supporting tool that makes it easier to achieve this goal.

Communities that have already gained experience of WSPs reported a number of benefits that your community may also achieve. Here are some of the key advantages they discovered.

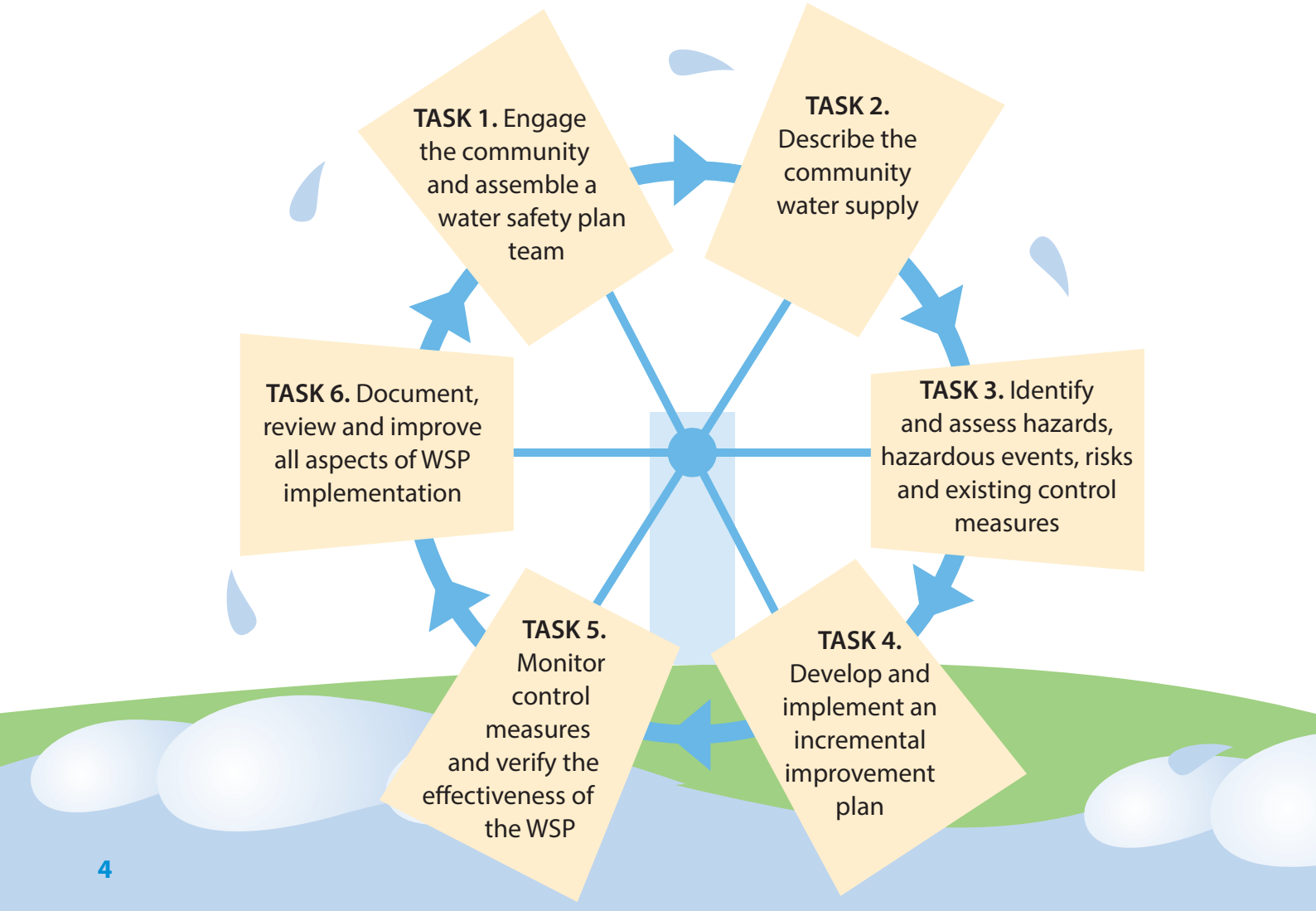
- A WSP gives you a better understanding of your water supply system. In particular, you will better understand the risks that may affect water quality and health in your community.
- A WSP improves the day-to-day management and operation of your water supply. Over time, the WSP process will lead to consistently safer water.
- A WSP encourages a team-based approach. It brings together all those who share responsibility for, interest in and knowledge of the community water supply, including authorities such as the local health or water supply office. This increases local cooperation and communication among community members.
- The WSP process involves community members, leading to improved hygiene awareness within the community and triggering positive changes in sanitary behaviour.
- A WSP helps you to identify improvement needs and opportunities for "quick wins" – potential improvements that can be achieved with your community's own resources and efforts. A WSP recognizes that even small and simple improvements are better than none.
- As part of the WSP, you will develop an incremental improvement plan. Particularly when community resources to fund water supply development are limited, this plan supports you in providing the evidence for the improvements required. With a clear and sound community WSP in hand, government entities, NGOs and other financial supporters may be more inclined to consider supportive funding.

How can you develop a WSP for your water supply?

Water safety planning is about managing your water supply in an organized way. Following the sequence of the six WSP tasks (set out in the figure below) will help to ensure that water from your supply is safe to drink and does not harm human health. With a WSP, you take a proactive approach. You identify and address risks to drinking-water safety and take preventive action before problems occur, rather than waiting until they happen. No matter what type of water supply you have, what type of source water you use, whether or not you treat your water, the size of your water supply or how many households you supply, the WSP principles you apply are always the same.

As you can see in the figure below, water safety planning is a continuous cycle of improvement, not a one-off exercise. Every small step towards this approach of improving your water supply makes a difference. The most important thing is to get started, and you will see that a WSP is not a complicated procedure but rather a new way of looking at things and managing them, following the WSP tasks described on the next pages.

The six tasks to develop and implement a WSP
Source: adapted from WHO (2012)

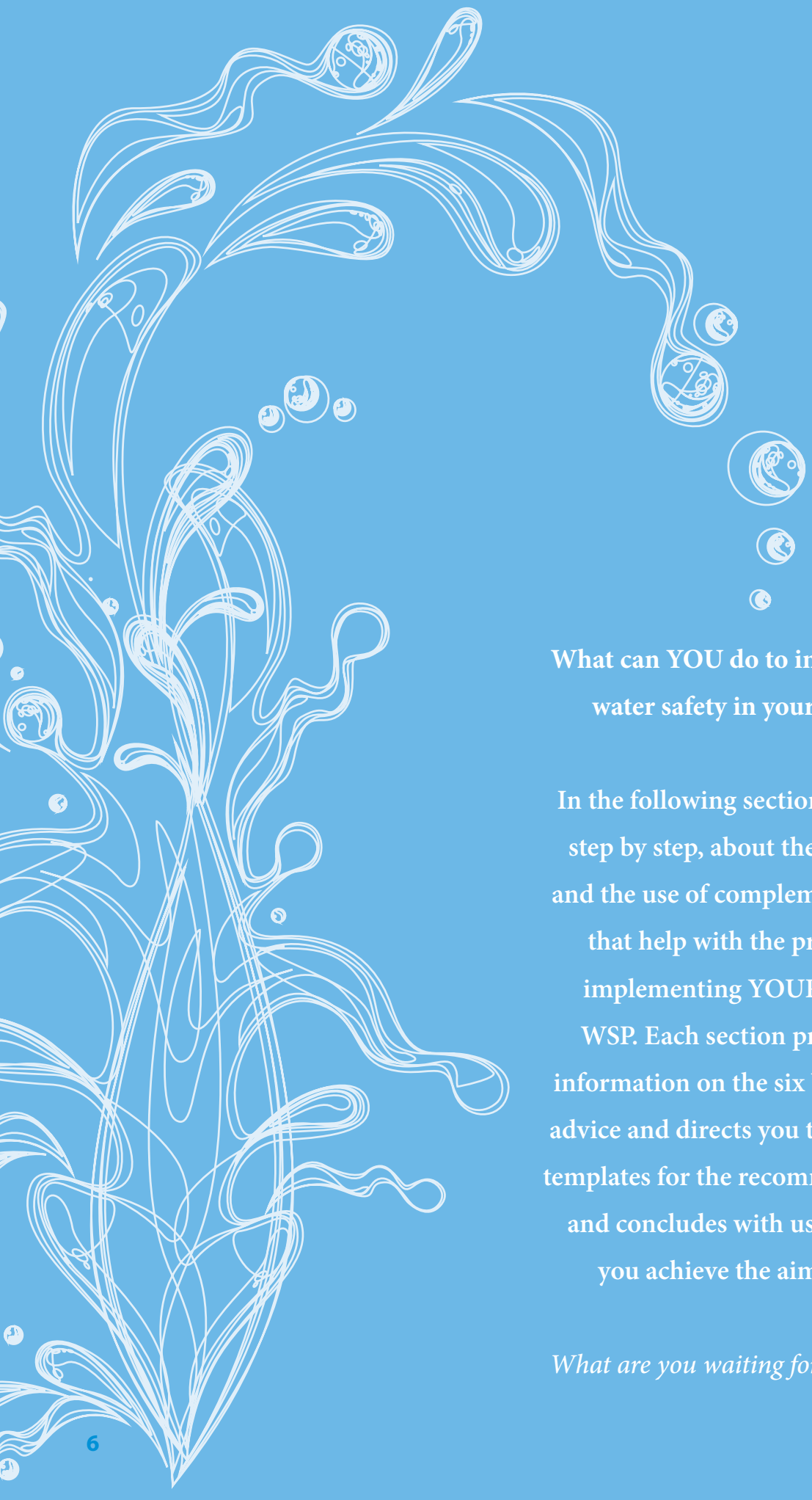


TIP

If you are interested in more detailed information, the following WHO publications provide useful background reading.

- *Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in small communities* (WHO, 2012), available in English and Russian;
- *Water safety plan manual: step-by-step risk management for drinking-water suppliers* (WHO, 2009), available in English, French, Polish, Russian and Spanish;
- fourth edition of the *Guidelines for drinking-water quality* (WHO, 2011), available in English;
- volume 3 of the second edition of the *Guidelines for drinking-water quality: surveillance and control of community supplies* (WHO, 1997), available in English;
- *Healthy villages: a guide for communities and community health workers* (WHO, 2002), available in English and French;
- *Small-scale water supplies in the pan-European region: background, challenges, improvements* (WHO Regional Office for Europe, 2011), available in English and Russian.

Web addresses of these publications are provided in the references section of this field guide. Your WHO country office can help you to obtain these documents.



What can YOU do to improve drinking-water safety in your community?

In the following sections you will learn, step by step, about the WSP approach and the use of complementary templates that help with the practical side of implementing YOUR community's WSP. Each section provides further information on the six WSP tasks, offers advice and directs you to the appropriate templates for the recommended activities, and concludes with useful tips to help you achieve the aims of the task.

What are you waiting for? Let's get started!

WSP TASK 1. Engage the community and assemble a WSP team

You do not have to develop the WSP all by yourself: it should always be a team effort, involving all those who have an interest in the community water supply, who can take action to improve it and who have knowledge and experience of the water supply and quality. The first task is therefore to form a WSP team. In addition to the person or people responsible for water supply operation and maintenance, consider involving:

- a community leader who can make financial decisions;
- a religious leader from the community who can promote drinking-water hygiene in the temple, church or mosque;
- a teacher who can promote drinking-water hygiene in the school;
- community members who bring their animals to graze near the water source.

Do not forget to involve women! They are the ones who mostly collect and handle water, and who are typically responsible for safe water in their homes.

If you already have an established community group in charge of managing the community water supply – for example, a water association, a water user group or an operation and management committee – you do not need to create a new team solely for the WSP: you can incorporate the WSP tasks into the roles and responsibilities of the existing group. This will help you to integrate the WSP into existing management structures right from the start.

You should document who is on the WSP team, using **Template 1-A. WSP team list**. One person should be chosen as the WSP team leader who drives the water safety planning process with authority and motivation. You may need external support for some aspects: do not hesitate to ask, for example, your local health office, water supply office or NGOs for help. Local water, sanitation and hygiene experts also have a strong interest in the safety of your water supply and can support you.

It is important that your WSP team meets regularly. As the WSP is about the day-to-day operation and management of your supply, you should ensure regular communication about what you have been doing, any challenges you are facing and what you need to do next. You will typically have more meetings at the beginning of the WSP implementation process, but do not forget to continue meeting once you have gone through the WSP tasks for the first time. A WSP is never finished but is a continuous process. For each meeting use a copy of **Template 1-B. Protocol of WSP team meeting**.

TIP

Have neighbouring communities already implemented a WSP? Try to arrange a meeting with them as external supporters and ask about their experience. They can tell you about the challenges they faced and factors that made their WSP a success. You can also ask for their views on the situation with your water supply. If no neighbouring community has WSP experience, you could develop your WSP with a neighbouring community that is developing theirs at the same time. Exchanging information with people and institutions outside your own community can help you greatly.

WSP TASK 2. Describe the community water supply

A WSP covers all steps of the water supply system from the area where the source water originates all the way through to the point of water consumption. You should describe this whole system as the basis for your next WSP tasks. You will see that a thorough and accurate system description will be of great help as you carry out WSP tasks 3 and 5 ahead.

In day-to-day operations you will regularly see the installations for water abstraction (including wellheads and spring boxes) and treatment (if in place), central storage reservoirs and public taps. To complete the WSP system description, however, you will also need to visit the drainage area from which your water comes and to look at the storage and handling practices for drinking-water in homes. Contamination may be introduced to the drinking-water supply system in both these areas and they therefore need to be considered.

Do you have several water sources, several water abstraction points or several water storage reservoirs? Make sure that your system description includes all of them and that you do not overlook any part of your water supply system.

To complete this WSP task you should draw an overview map of your entire supply system, using **Template 2-A. Map of water supply system**. You should also describe your system in more detail, using **Template 2-B. Description of water supply**. Please note that this is not a task you can complete sitting at a table. The WSP team needs to walk along all parts of the water supply and visit, for example, all water abstraction facilities and collection points, treatment and storage facilities and public taps, in order to describe the system accurately.

In case you need to explain something about your system to somebody who has not seen it, or if you want to re-check something after the site visit, it is helpful to take pictures if you have a camera or mobile phone available. If there is any information you do not have, it is worth asking for external support. Your local health office or water supply office may have information on the quality of your water, for example.

TIP
The site visit of your system – walking along all supply steps following the flow of water – is very important for preparing an accurate and up-to-date system description. Note that the site visit is equally important for implementing the following WSP task 3: identification of hazards, hazardous events, risks and existing control measures. If you combine your site visit to serve both WSP tasks 2 and 3, this may save time and resources.

TIP
You may use the opportunity of the site visit to promote hygiene understanding and safe behaviours among community members you meet. This could address, for example, safe water collection practices, cleanliness of collection containers or safe handling and storage practices in the home, including the importance of such practices for preventing water-related disease.

WSP TASK 3. Identify and assess hazards, hazardous events, risks and existing control measures

This task is at the heart of the WSP. To complete it, you need to ask yourself the following questions for each step of your water supply system.

- What can go wrong?
- How and why might it go wrong?
- At what times and where might it go wrong?
- Is anything being done to prevent it from going wrong?

For this WSP task, the first job of the WSP team is to identify what dangers (so-called "hazards") might threaten the safety of your water supply, and how and at what supply steps these hazards might be introduced (so-called "hazardous events").

Hazards include harmful pathogenic microorganisms (for example, from human or animal faeces), chemicals (for example, from agriculture or manufacturing), physical constituents (for example, turbidity, which is caused by very fine particles suspended in water) or simply a lack of water. Examples of hazardous events include heavy rainfall, snow-melt, pipe breaks, malfunction of a disinfection unit or power cuts. Often a hazardous event is a combination of several events and unfavourable conditions: for example, heavy rainfall causing surface runoff, which collects animal faeces from the ground and then enters a damaged wellhead.

Different kinds of hazardous events can introduce hazards at every step of your water supply. For instance, the same hazard (for example, pathogenic microorganisms derived from faeces) may be introduced to the water supply by defecating animals at the water collection point, by faecal contamination from a latrine, or by consumers who handle water in their homes with dirty hands.

Depending on how often the hazardous event could happen and how severe the consequences of the hazard could be, the risk to public health will be greater or smaller. In a WSP, you should always consider hazards and hazardous events in pairs and assess the risk for each pair (see the table on the next page). To complete this assessment you will need to have detailed discussions within the WSP team about which risks you consider more important than others. The relative importance of individual risks is different for every water supply system and for every community. Always remember that the focus of a WSP is the protection of community members' health. Other issues may also be important to your community but should not be the basis of your WSP risk assessment.

"Control measures" are barriers preventing contamination. Fencing off animals from your well, having a screen at your reservoir air vents preventing ingress of insects and disinfecting the water are examples of control measures that prevent water from becoming unsafe. With control measures you can reduce the risk of a hazard causing harm to your community. Make sure that these control measures work effectively: a fence with an open gate or inadequate disinfection procedures may not reduce the risk and will give you a false feeling of safety. You should always maintain several control measures to prevent contamination at different steps along your water supply for the best results. Using this approach you can greatly reduce the risk of contamination reaching the consumers of your water supply.

Potential hazards and hazardous events

Hazard *What dangers threaten the safety of your water supply?*	**Examples of hazardous events** *How could the hazards reach your water supply?*
Bacteria in drinking-water	Latrine leaking to groundwater and contaminating the well
	Animals grazing next to water supply and animal waste entering well or spring box during rain
	Ingress of insects through unscreened vents at storage reservoirs
	Unhygienic handling of water in the home
Chemicals in drinking-water	Leaching of naturally occurring chemicals into groundwater (such as arsenic or fluoride)
	Improper use of chemicals in agriculture in the drainage area (such as nitrate or pesticides)
	Accidental spillage at upstream filling station, garage or local production site (such as diesel)
	Overdosing of treatment chemicals (such as chlorine)

Template 3-A. Hazard analysis and risk assessment helps you with this WSP task. The various terms used above may sound very theoretical to you when reading this for the first time.

Sanitary inspection is a powerful on-site tool for risk assessment that can strongly support WSP implementation. The various checklists provided in **Template 3-B. Sanitary inspection forms** particularly support you in identifying potential hazards, hazardous events and problematic conditions related both to your water abstraction facilities, distribution system and storage reservoirs, and to water handling and storage at the household level. The outcomes of sanitary inspections can not only inform the risk assessment of your WSP but also help to identify improvement needs in your system. You should carry out sanitary inspections on a regular basis in order to document changing conditions over time.

TIP
Start with hazards and hazardous events that you can easily describe and assess. Once you have become more skilled in this, and when more information is available, you can tackle the more complicated risk assessments. As with the whole WSP this task can be taken step by step, and every step counts on the way to completing the WSP.

TIP
Regular site visits and sanitary inspections of all stages of your water supply system are very important.

WSP TASK 4. Develop and implement an incremental improvement plan

As a result of the previous WSP task you have a list of risks to your water supply system, which you ranked according to how important you think they are. You also identified whether you are already doing enough to prevent those events from happening or whether improvements are needed to protect water safety.

Based on this, you can now develop a detailed action plan describing what you will do to address important risks and thereby improve the condition and operation of your water supply. You will typically achieve these improvements either by adding new control measures or by enhancing existing controls.

Your improvement plan should always explicitly state who is responsible for the improvement action, when it will be done and with which resources. Be specific when defining these details: the more clearly you describe the actions needed, the more likely it is that they will be done. This principle also holds true for other WSP tasks.

Typically, the plan includes improvements you can make straight away with limited resources: for example, cleaning faeces or garbage from the cover of a spring box and its surroundings, or putting up a poster with pictures and diagrams describing basic hygienic water collection principles. Other actions or system upgrades may take more time and financial resources: for example, installing a chlorination unit to address microbial contamination in your system.

To document your improvement plan you can use the attached **Template 4. Improvement plan**. This plan should reflect all the steps you intend to take, including both small steps you are taking straight away and larger steps you have identified as important, even though you may lack the required resources at the moment. With a detailed improvement plan you can show that you have thoroughly assessed what needs to be done in your system, and use this as a basis for seeking financial or other support for larger upgrades and improvements you need, for example, from donors or NGOs.

TIP

Be aware that new control measures may sometimes introduce new risks that need to be addressed by the WSP team. For example, if you put in chlorination, some consumers may not like the new taste of chlorine and may start taking water from alternative, potentially unsafe sources. In order to prevent such behaviour, accompanying community education addressing the perception of taste will be vital. Also, fencing a wellhead may require thought to be given to providing an alternative water source for livestock. In doing so, the source should not be located on a slope above the wellhead.

WSP TASK 5. Monitor control measures and verify the effectiveness of the WSP

Two types of monitoring are integral parts of the WSP: compliance monitoring and operational monitoring.

The first is the testing of drinking-water quality to confirm that it complies with water quality standards, which is typically done by the local health office on a regular basis. In the language of the WSP this is called "compliance monitoring". Regular testing of your drinking-water is very important. It confirms the safety of your drinking-water at certain points in time, and it helps you to verify from time to time whether or not your WSP is working properly. To document your compliance monitoring plan in collaboration with your local health office, you can use **Template 5-A. Compliance monitoring plan**.

Although compliance monitoring is an important part of your WSP, always remember that this testing alone cannot assure you that your water supply system continuously delivers safe drinking-water for two reasons. First, compliance monitoring is typically done only once or twice a year. It will therefore not reflect drinking-water quality between testing dates. Second, test results will be available to you only after people have already drunk the water. The results will always come too late to prevent people from drinking contaminated water.

Consequently, in addition to compliance monitoring by the health office, the WSP team should conduct "operational monitoring". Operational monitoring checks and confirms that the control measures you have in place are working properly to prevent contamination from occurring. For example, rather than relying solely on compliance monitoring to detect faecal contamination of the water supply, you can regularly check the integrity of your fence to prevent animals from accessing the well area and contaminating your water.

TIP

Turbidity is a measure of the cloudiness of the water caused by suspended particles. Although it is not a direct threat to health, high turbidity levels might signal the presence of harmful microorganisms in your drinking-water. Also, community members may not want to drink the water if it appears cloudy or dirty. Your aim should be to keep turbidity below 5 nephelometric turbidity units (NTU). If you disinfect your water, it is best to keep turbidity below 1 NTU as high turbidity can reduce the efficacy of disinfection.

Turbidity is a powerful operational monitoring parameter and you should make sure that the caretaker or operator measures it regularly. Changes in turbidity may indicate water quality problems caused by rainfall and runoff (shallow groundwater sources and springs in particular can show a very rapid response), polluted water entering storage tanks or distribution pipes, or treatment malfunctions. Unexpected increases in turbidity should always trigger increased vigilance and investigation by the WSP team and, if required, corrective action.

Generally, turbidity should be tested more often when water quality is most variable – for example, during periods of rainfall (the wet season) and snow-melt. Your local health or water supply office can advise you on suitable sampling sites and frequencies, as well as locally available equipment and techniques for measuring turbidity.

Operational monitoring involves quick and easy measurements and observations by the WSP team on a frequent and regular basis. Examples include visual observations during weekly on-site inspections (for example, checking the integrity of a fence or wellhead, or practices during water collection) and daily water quality testing for simple indicator parameters (such as turbidity in raw water or chlorine residual in storage reservoirs). If inspection or test results indicate problems, this should always trigger action to correct the faults in a timely manner.

To make sure that operational monitoring and inspection is undertaken in an organized manner, you should set up a plan using **Template 5-B. Operational monitoring and inspection plan**. As you can see, you also need to set up detailed descriptions of the corrective actions to be taken if operational monitoring results indicate problems.

In addition to the regular schedules you define in the operational monitoring and inspection plan you should also perform operational monitoring and inspections during periods of rain, snow-melt and drought, and immediately after events such as heavy rainfall and flooding, to show whether controls continue to be effective under extreme or unusual conditions. For these inspections you can use the forms provided in **Template 3-B**. If you identify that your control measures are not in order, corrective action needs to be taken. If your monitoring results clearly change over time, this indicates that conditions may have changed and you should follow up and review the situation.

TIP
The water quality experts at your local health or water supply office can support you in defining suitable operational monitoring parameters and schedules.

WSP TASK 6. Document, review and improve all aspects of WSP implementation

Regular and diligent maintenance of water supply infrastructures and ongoing attention to important operational tasks are essential to ensuring a continuous supply of safe drinking-water in your community. Your next task is therefore to make sure that the caretaker or operator responsible for running the water supply has step-by-step instructions for carrying out important operational and maintenance tasks (often referred to as "standard operating procedures") such as cleaning of reservoirs and operating the chlorination unit. These instructions will give the caretaker confidence that he or she always knows what to do and when. The instructions will also be useful when new caretakers need to be trained, or when the caretaker happens to be ill or on leave and needs to be replaced. If you already have a caretaker manual for your water supply system, you should review it to make sure it is up to date. If you do not already have clear instructions for the caretaker to follow to operate and maintain the system, you can create these instructions using **Template 6-A. Instructions for operations and maintenance**.

It is also important to consider and document what you would do in case of a water supply emergency: for example, inform the local health office and consumers that the water is not safe at the moment and that consumers should boil it to avoid ingesting microbially contaminated water. To document your actions in response to an emergency situation you can use the attached **Template 6-B. Emergency response plan**.

Once you have completed **Template 6-A** and **Template 6-B** you have successfully worked through all major WSP tasks and templates. Congratulations! As you have seen, you generate documentation when you work through the WSP process. All your completed templates represent your WSP documentation, which should be kept in a folder – the "WSP documentation binder". You should also keep any further useful additional information in this binder: for example, results of water quality monitoring, reports from your local health or water supply office and information on hygiene education programmes you have conducted.

The full WSP documentation helps you to manage your water supply effectively and to show its status and changes over time to others who are not as familiar with the system as you are. In this way, even when you are ill or on vacation the person filling in for you will have the basic information needed at hand.

As part of your WSP team meetings, you should periodically review your WSP to check whether it still reflects the actual situation. To do so, go through all the WSP tasks and templates described above again and ask yourself the following questions.

- Is this still the case?
- Has my supply system changed?
- Have I identified new risks?
- Do my control measures work?
- Are the water quality test results satisfactory?
- What improvement actions have I already completed?

Do not worry – this will very probably not take as long as when you did it the first time. During these reviews, you should go through all the changes that have occurred to the system and check how far along you are already with your step-by-step development of the WSP and your improvements. Based on the review, updates and improvements to your WSP may be required.

TIP
Always note the date on the documents you develop for your WSP: conditions change over time, and by keeping older versions and comparing them with more recent ones you can see development and improvement of your system over time. Document any new constructions and improvements when you install them. It will be much harder to try to remember the details later.

TIP
If you partner with a neighbouring community, you may review each other's WSPs and give each other input from your own experience. For example, risks that have been overlooked in one supply can thus be added to the other WSP, and the know-how of one community can support the other community.

References

UNECE and WHO Regional Office for Europe (2006). *Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes.* Geneva, United Nations Economic Commission for Europe and WHO Regional Office for Europe (http://www.euro.who.int/en/publications/policy-documents/protocol-on-water-and-health-to-the-1992-convention-on-the-protection-and-use-of-transboundary-watercourses-and-international-lakes, accessed 7 November 2013).

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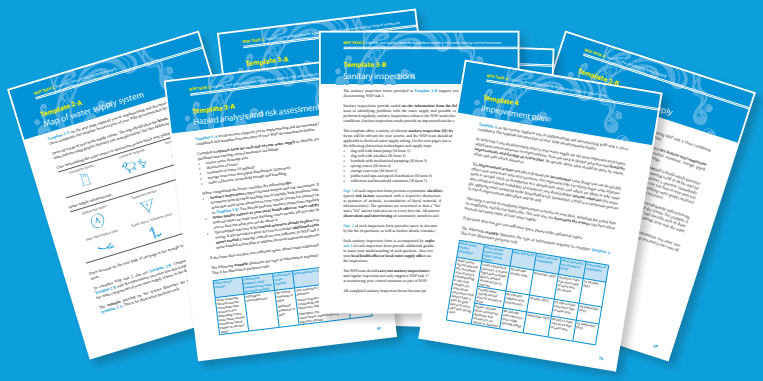
Templates to support you in developing your WSP



Template 1-A. WSP team list

Template 1-B. Protocol of WSP team meeting

Template 2-A. Map of water supply system

Template 2-B. Description of water supply

Template 3-A. Hazard analysis and risk assessment

Template 3-B. Sanitary inspections

Template 4. Improvement plan

Template 5-A. Compliance monitoring plan

Template 5-B. Operational monitoring and inspection plan

Template 6-A. Instructions for operations and maintenance

Template 6-B. Emergency response plan

The templates provided on the following pages will assist you in developing and maintaining your WSP. As the WSP is not a one-off exercise but requires ongoing implementation, review and updating, you will need to revise the completed templates over time.

Most of the templates need to be revised after some time, and some will need to be used more frequently (for example, templates 1-B and 3-B). In addition, some require multiple copies each time they are used (for example, templates 3-A, 5-B and 6-A). So don't forget to make an adequate number of copies of all templates before you start. If you work directly on the templates in this booklet, it will be difficult to reproduce them later.

If you have internet access, you can download and print this field guide and the templates from the following web address:

http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation.

Template 1-A
WSP team list

Template 1-A on the reverse supports you in implementing and documenting WSP task 1. Once completed, this template becomes part of your WSP documentation binder.

By creating the team list you make sure that each team member knows his or her responsibilities and that every person on the team knows how to reach all the other team members.

Record the **roles and responsibilities** of individual WSP team members in the team list. It could, for example, include the leader of the WSP team, the person responsible for operation of the water supply, a representative of the women's association or the school teacher in charge of hygiene education.

Make sure you also include relevant **external contacts**, such as the water quality expert at your local health office, water supply office, local administration or NGO. He or she may not participate in every WSP team meeting but is nevertheless an important resource for the development of your WSP.

If you have not yet read through WSP tasks 2–6, you may be wondering about specific WSP team responsibilities. If so, it will be helpful for you to keep the following **general duties of the WSP team** in mind as you convene the WSP team and complete this template. The WSP team should:

- understand and map your whole water system from the source to the point of water use;
- identify and evaluate risks to your water supply and make an improvement plan;
- plan for regular water system monitoring, inspection, maintenance and emergency response;
- implement and maintain the WSP and meet regularly (for example, quarterly) to discuss necessary updates of the WSP documentation;
- meet regularly (for example, annually) to review and, if necessary, revise all parts of the WSP documentation.

To complete WSP task 1, also use **Template 1-B**.

Date: .....

Name	Role and responsibility on the WSP team	Organization and position (e.g. local health office)	Contact details (e.g. phone number)

Template 1-B
Protocol of WSP team meeting

Template 1-B on the reverse supports you in implementing and documenting WSP task 1. Each completed team meeting protocol becomes part of your WSP documentation binder.

For each WSP team meeting you hold you should make a copy of the protocol template on the reverse and fill in the information. You do not have to document every detail of everything said at the meeting, but write down the **main decisions and outcomes**, including important follow-up actions to take. In this way, you can always look up again what you have agreed on, and team members or external contacts who were not able to join the meeting can have a quick overview.

While you are all together at the team meeting, agree on a date, time and location for the next meeting.

As implementation progresses over time, the WSP team should regularly review the WSP during their meetings. You should check whether or not the WSP documentation (including templates 1-A to 6-B) is still up to date, the WSP is implemented as planned and water quality test results are as expected. If any of these is not the case, or if new information has become available, the team should agree on necessary updates and adjustments to the WSP.

To complete WSP task 1, also use **Template 1-A**.

Date of WSP team meeting:

.....

Names of WSP team members participating:

....

....

....

....

....

Decisions and outcomes of meeting:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Date, time and location of the next WSP team meeting:

.....

Template 2-A
Map of water supply system

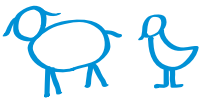
Template 2-A on the next page supports you in implementing and documenting WSP task 2. Once completed, this template becomes part of your WSP documentation binder.

Draw up a map of your water supply system. The map should show the **layout and location** of the main features using graphic elements (see examples below) but also additional descriptive text.

Uses surrounding the water source or abstraction points which may pollute the source water:

Sanitation facility

Livestock keeping



Farming and gardening

Water supply infrastructure:

Abstraction point

Treatment facility

Storage reservoir

Main distribution pipe

Public tap or collection point

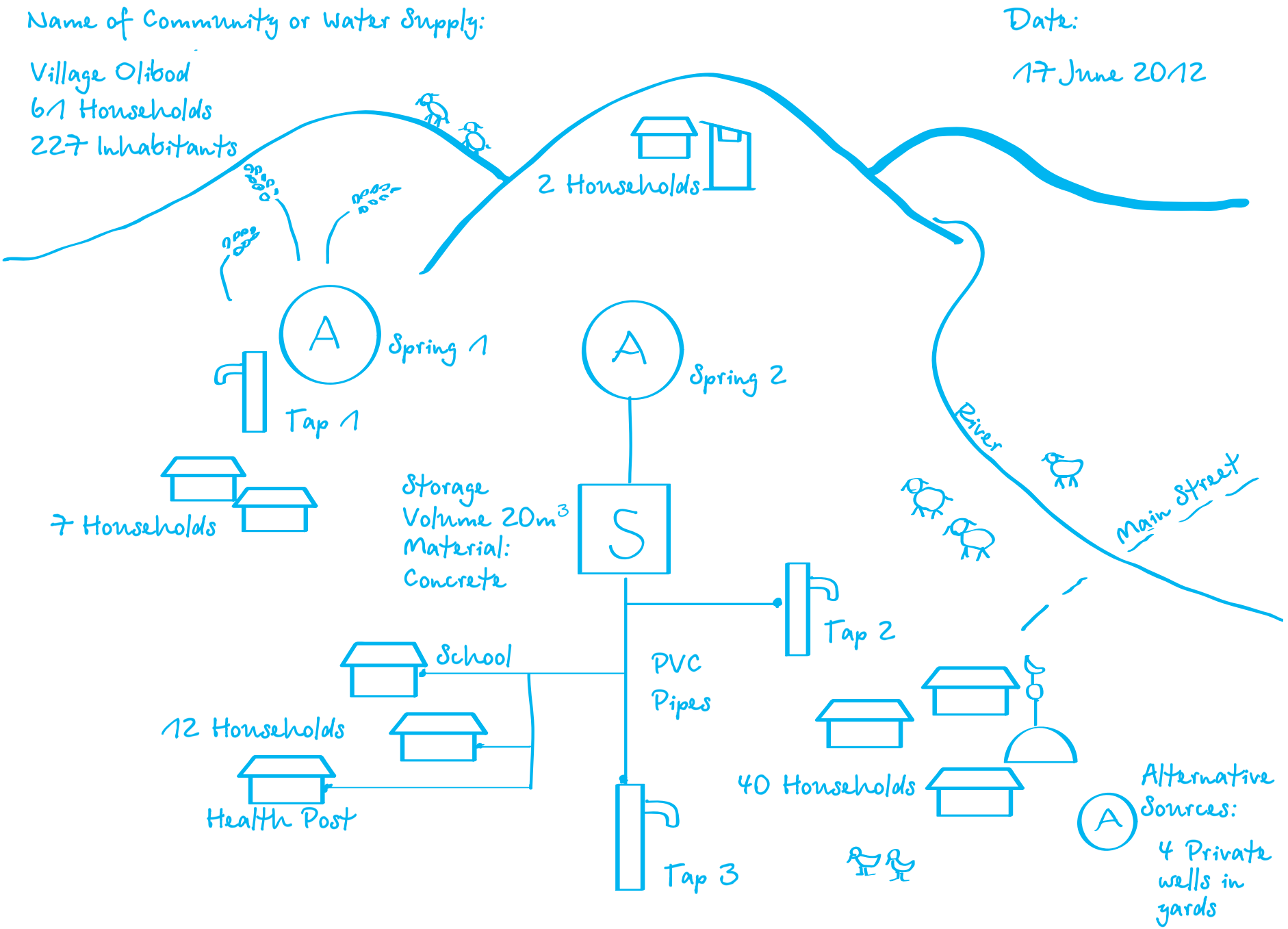
Community area supplied

Draw the map on the next page. If one page is not enough to show sufficient detail, please use more.

To complete WSP task 2, also use **Template 2-B**. Compare the information you enter into **Template 2-B** with the information you enter into this template so that you ensure you cover all the main components of your water supply system in the description.

The **example** drawing on the reverse illustrates the type of map required to complete **Template 2-A**. This is for illustration purposes only.

EXAMPLE MAP


Name of Community or Water Supply:
Village Olibod
61 Households
227 Inhabitants
Date:
17 June 2012
2 Households
A
Spring 1
Tap 1
7 Households
A
Spring 2
Storage
Volume 20m3
Material:
Concrete
S
River
Main Street
Tap 2
School
12 Households
Health Post
PVC
Pipes
Tap 3
40 Households
A
Alternative
Sources:
4 Private
wells in
yards

Name of community or water supply: .....

Date: .....

Template 2-B
Description of water supply

Template 2-B supports you in implementing and documenting WSP task 2. Once completed, this template becomes part of your WSP documentation binder.

Carefully go through all questions in the template. They address **key features and components** of your water supply system, including source water, abstraction, treatment, storage, piped distribution, water collection and household handling and storage.

Take your time to **discuss all the questions within the WSP team** and to decide which questions apply to your system. You may need more than one WSP team meeting to fill in all the relevant sections of the template. Sometimes you may not be able to answer a question immediately because your community will not have the information. In this case you have to wait until you have collected the required information (such as the results of drinking-water quality analyses) with the support of the local health office or water supply office if necessary.

Confirm the information on site – you cannot describe your system adequately without having a thorough look at it. Make sure that you do not miss any parts of the system. For example, if you have several points of water abstraction, make sure you visit and describe each of them. You should also always look at the drainage area your water is coming from and the water distribution system.

To complete WSP task 2, also use **Template 2-A**. Compare the information you enter into **Template 2-A** with the information you enter into this template so that you ensure you cover all the main components of your water supply system in the description.

I. General information

1. **Date of this document:** .....

2. **What is the name of your village or town?** .....
   What is the name of your district? .....
   What is the name of your region? .....

3. **How many people live in your community?** .....

4. **What is the source of the primary water supply?** *(Please tick all that apply.)*
   - ☐ Groundwater
   - ☐ Spring water
   - ☐ Surface water (i.e. river, lake, reservoir, dam)
   - ☐ Other source (*please specify*) .....

   .....

5. **What is the population served by your supply (number of citizens)?** .....

6. **What is the volume of water supplied [m³/year]?** .....

7. **Are any alternative water sources present in the village and used by community members (e.g. private wells)?**
   ☐ Yes ☐ No
   If yes, please include details here.

   .....

   .....

   .....

II. Management of the supply

1. Is your water supply managed by the community?

☐ Yes ☐ No

If yes, has your community formally established a group of people (e.g. a water association or water user group) responsible for this?

☐ Yes ☐ No

If no, who or which entity is responsible for management and operation of the water supply?

.....

2. What is the total number of staff or community members involved in the operation and management of the water supply?

.....

3. Who is responsible for the overall operation and management of the supply?

Name: .....

Profession: .....

4. What other staff are involved in the operation and management of the supply?

Name: .....

Specific responsibilities: .....

Profession: .....

Name: .....

Specific responsibilities: .....

Profession: .....

5. Who is/are the contact(s) at your local health office and/or water supply office?

Name: .....

Contact details: .....

Name: .....

Contact details: .....

6. Do you collect fees from the community members for the water supply services?

☐ Yes ☐ No

If yes, how much per month? .....

III. Information on drinking-water catchment, water source and abstraction

1. **Do you or the local health office or local water supply office have information on the microbial and/or chemical quality of your source water?**

   ☐ Yes ☐ No

   If yes, please include details here.

   .....

   .....

2. **Do seasonal weather patterns cause any known or observable water quality problems?**

   ☐ Yes ☐ No

   If yes, please include details here (i.e. what type of problems).

   .....

   .....

3. **If your community uses groundwater, do you have information on groundwater flow direction in the area?**

   ☐ Yes ☐ No

   If yes, please indicate whether groundwater flow is towards the …

   ☐ North ☐ South ☐ West ☐ East

4. **How many abstraction points does your water supply have?** .....

5. **How is water abstracted?**

   ☐ Manually ☐ Hand pump ☐ Mechanical pump ☐ Gravity flow

6. **Is there evidence of naturally occurring chemicals in the area?**

   ☐ Iron ☐ Manganese ☐ Sulphate ☐ Arsenic ☐ Fluoride ☐ Other (*please specify*)

   .....

7. What potentially contaminating activities are present around your drinking-water source (i.e. in your drinking-water catchment)?

For each of the activities listed below, please provide further details of the approximate distance to the abstraction point. (Please tick all that apply.)

- ☐ On-site sanitation facilities
- ☐ Centralized wastewater disposal
- ☐ Agricultural and horticultural activities
  - ☐ Animal keeping (including e.g. feedlots)
  - ☐ Use of animal or human waste in farming (e.g. manure, wastewater or sewage sludge)
  - ☐ Use of fertilizers
  - ☐ Use of pesticides
  - ☐ Irrigation and/or drainage
- ☐ Commercial activities (e.g. workshops, paint shops, slaughterhouses)
- ☐ Manufacturing and processing industries
- ☐ Extractive industries (e.g. mining)
- ☐ Fuel storage
- ☐ Waste disposal and landfill sites
- ☐ Other human activity (*please specify*) .....
- ☐ Wildlife has access to water source
- ☐ No information available

8. Do you regularly meet with people living and working in the drinking-water catchment to discuss the impact of their activities on the community drinking-water supply?

☐ Yes ☐ No

If yes, please include details here (i.e. how often, with whom).

.....

.....

9. **Do you regularly inspect the area around your water source and abstraction to identify potential pollution sources?** *(Note. For this step you can use the sanitary inspection forms of Template 3-B.)*

   ☐ Yes ☐ No

   If yes, please include details here (i.e. how often, who inspects).

   .....

   .....

10. **Does the local health office and/or water supply office regularly inspect the area around your water source and abstraction to identify potential pollution sources?**

    ☐ Yes ☐ No

    If yes, please include details here (i.e. how often).

    .....

    .....

IV. Technical information

A. QUANTITY AND CONTINUITY OF SUPPLY

1. Does your water supply provide water to consumers ...

☐ continually? ☐ intermittently?

If intermittently, please provide details or reasons.

.....

.....

2. For intermittent supplies, water is supplied ..... **hours per day for** ..... **days per week.**

3. Is the quantity available for your supply ...

☐ always sufficient? ☐ seasonally insufficient? ☐ always insufficient?

B. TREATMENT

1. Do you treat the source water?

☐ Yes ☐ No

If no, continue with section IV.C.

2. Please include details of the kind of treatment. *(Please tick all that apply.)*

☐ Sedimentation

☐ Filtration (e.g. sand filtration)

☐ Disinfection (e.g. with chlorine)

☐ Other treatment (*please specify*) .....

Please include information on the equipment and water treatment chemicals you use.

.....

.....

3. If you disinfect drinking-water with chlorine, please provide details of how chlorination is done (e.g. product specification, dosage procedures, target level of free residual chlorine in drinking-water, and if chlorination is permanently applied or only under certain conditions).

.....

.....

4. **How old is the treatment equipment (year of initial installation)?** .....

   Have you upgraded the treatment equipment in the past?

   ☐ Yes ☐ No

   If yes, please include details (e.g. year, type of upgrade).

   .....

   .....

5. **Is the equipment in working condition?**

   ☐ Yes ☐ No

   If no, please provide details (e.g. reasons).

   .....

   .....

6. **Are you aware of any of the following problems?** *(Please tick all that apply.)*

   ☐ Inefficient treatment capacity or design

   ☐ Power cuts

   ☐ Treatment inadequate for general source water quality

   ☐ Varying source water quality

   ☐ Malfunctioning or breakdown of equipment

   ☐ Lack of access to treatment chemicals

   ☐ Difficulties in adequately dosing treatment chemicals

   ☐ Lack of personal protective equipment for those dealing with treatment chemicals

   ☐ Other (*please specify*) .....

   Please include details here (e.g. frequency, reasons).

   .....

   .....

7. **Do you monitor treatment processes (e.g. turbidity, chlorine dosage)?**

   ☐ Yes ☐ No

   If yes, please include details (e.g. on monitoring parameters, target levels, frequencies and locations).

   .....

   .....

8. Do you regularly maintain the treatment installations?

☐ Yes ☐ No

If yes, please include details (e.g. how often, which installations).

.....

C. STORAGE

1. Do you store drinking-water in storage reservoirs?

☐ Yes ☐ No

If no, continue with section IV.D.

2. How many storage reservoirs are operated? .....

3. What are their storage volumes? *(If there are several reservoirs, please number them.)*

.....

.....

4. What is the age of the storage reservoirs? *(If there are several reservoirs, please number them.)* .....

.....

5. What are the materials of the storage reservoirs? *(If there are several reservoirs, please number them.)* .....

.....

6. How often do you inspect the storage reservoirs' infrastructure? *(Note. For this step you can use the respective sanitary inspection form of **Template 3-B**.)* .....

.....

7. How often do you clean and maintain the storage reservoirs? .....

.....

8. **Are you aware of any of the following problems at the storage reservoirs?** *(Please tick all that apply.)*

☐ Damaged reservoir infrastructure (e.g. deep cracks)

☐ Absent or damaged or corroded inspection covers

☐ Damaged or non-covered air vents

☐ Insanitary conditions of the reservoirs

☐ Insanitary cleaning or maintenance practices

☐ Other (*please specify*) .....

Please include details here (e.g. frequency, reasons).

.....

.....

9. **Are you able to repair the identified deficiencies?**

☐ Yes ☐ No

If no, why not?

.....

.....

D. PIPED DISTRIBUTION

1. **Do you have a piped distribution system in place?**

☐ Yes ☐ No

If no, continue with section V.

2. **What types of connections do you have in your distribution system?** *(Please tick all that apply.)*

☐ Public taps/water kiosks

If ticked, how many taps/kiosks are present in the community? .....

☐ Household connections

If ticked, what percentage of the community households have such a connection?.....

3. **What is the age of the piped distribution (year of first installation)?** .....

4. **How many metres of pipelines do you operate?**.....

5. **Have you significantly refurbished the distribution system?**

   ☐ Yes ☐ No

   If yes, please include details here (i.e. when, replacements, expansions).

   .....

6. **What materials are used in the piped distribution?**

   .....

   .....

7. **How often do you inspect the public taps and distribution system?** *(Note. For this step you can use the respective sanitary inspection form of Template 3-B.)*

   .....

8. **How often do you carry out maintenance work on the piped distribution?**

   .....

9. **Are you aware of any of the following problems with the distribution system?** *(Please tick all that apply.)*

   ☐ Breaks

   ☐ Pressure losses

   ☐ Cross-connections with non-drinking-water pipes

   ☐ Pipe exposure above ground

   ☐ Corrosion of pipes

   ☐ Other (*please specify*) .....

   Please include details here (e.g. frequency, reasons).

   .....

   .....

10. Are you able to repair the identified deficiencies?

☐ Yes ☐ No

If no, why not?

.....

.....

.....

V. Collection, water use and household treatment

1. **For what purposes do households primarily use the water?** *(Please tick all that apply.)*

   ☐ Drinking

   ☐ Personal hygiene

   ☐ Food preparation (e.g. washing, cooking)

   ☐ Household cleaning (e.g. cleaning of surfaces, washing of clothes)

   ☐ Water for animals

   ☐ Other purposes (*please specify*) .....

2. **How many water collection points do you have in your community?** .....

3. **Do caretakers oversee the collection points?**

   ☐ Yes ☐ No

   If yes, what are their duties?

   .....

   .....

4. **How far do community members typically have to go, and how long does it take them to collect water every day?** *(Please provide average estimates.)*

   Number of collection trips per household per day .....

   Distance per return trip (metres) .....

   Time required per return trip (minutes) .....

   Amount of water collected per trip (litres) .....

5. **Do households also use alternative water sources?**

   ☐ Yes ☐ No

   If yes, please specify types of water sources (e.g. lakes, rainwater) and purposes of use.

   .....

   .....

6. Is water typically stored at the household level?

☐ Yes ☐ No

If yes, please include details on types of storage containers typically used.

.....

.....

7. Is water typically treated at the household level?

☐ Yes ☐ No

If yes, please include details on type of treatment (e.g. boiling, filter, disinfection).

.....

.....

8. Are hygiene education and awareness-raising programmes conducted in your community (e.g. regarding drinking-water quality, hygiene and sanitation issues in households)?

☐ Yes ☐ No

If yes, please include details (e.g. programme providers, population reached, contents of programmes, educational materials available).

.....

.....

.....

.....

VI. Water quality

Note. *In many settings the local health office is responsible for testing the drinking-water from your supply. It will have detailed knowledge of drinking-water quality parameters. You should therefore fill in this section of the template in conjunction with your local health office, and ask its staff to support you.*

1. **How often is the quality of your drinking-water monitored by the local health office <u>in practice</u>?**

   .....

2. **Which microbial, chemical and physical parameters does the local health office test for?**

   .....

   .....

3. **At which location(s) does the local health office collect drinking-water for testing (e.g. storage reservoirs, public taps)?**

   .....

   .....

4. **Does the local health office also collect drinking-water quality samples at the household level?**

   ☐ Yes ☐ No

   If yes, please include details here (e.g. how often, how many).

   .....

   .....

5. **Does the local health office share the test results with the community?**

   ☐ Always ☐ Sometimes ☐ Never

6. Has testing by the local health office found any problems with water quality?

☐ Yes ☐ No

If yes, please provide details (e.g. what was the problem, where and when did it occur, what was done to correct it).

.....

.....

.....

.....

7. In addition to drinking-water quality testing by the local health office, do you or does someone in the community also undertake water quality testing?

☐ Yes ☐ No

If yes, please include details (e.g. which parameters, how often, locations).

.....

.....

8. Have community members reported any problems regarding drinking-water quality?

☐ Yes ☐ No

If yes, please include details (e.g. which problems, how often reported).

.....

.....

9. Are you aware of any waterborne health problems in your community?

☐ Yes ☐ No

If yes, please include details (e.g. which diseases, how often, how many people, problematic geographic areas, affected groups).

.....

.....

10. Please provide a summary of drinking-water quality data for the past five years, if possible.

- *Specify the number of annual samples per parameter.*
- *Specify the drinking-water standard value according to national legislation for each parameter.*
- *Specify compliance rates in relation to the national standard for each parameter.*

Template 3-A
Hazard analysis and risk assessment

Template 3-A on the reverse supports you in implementing and documenting WSP task 3. Once completed, this template becomes part of your WSP documentation binder.

Complete **a separate form for each step of your water supply** to identify, assess and document problems and existing control measures, including:

- source water drainage area
- abstraction of water
- treatment of water (if applied)
- storage reservoirs and piped distribution (if present)
- water collection, household storage and handling.

When completing the forms, consider the following **tips**.

- **Sanitary inspections** support hazard analysis and risk assessment. They provide useful information from the field and help you to identify both problems with your water supply and areas that need more attention in your system. Forms for sanitary inspections are provided in Template 3-B. You should perform sanitary inspections regularly.
- **Water quality experts at your local health office or water supply office** can help you to find out what can make your drinking-water unsafe, tell you why this is important and help you to find out what you can do about it.
- This template asks you to list **control measures already in place** to prevent things from going wrong. It also provides a place for you to consider **additional control measures or improvements needed** if existing controls are not sufficient. In WSP task 4 ahead you will develop a more detailed action plan to address the most important improvement needs identified.

If the form does not give you sufficient space, please make additional copies.

The following **example** illustrates the type of information required to complete Template 3-A. This is for illustration purposes only.

What can go wrong?	If the event happens, what hazard(s) may make the water unsafe?	Is this event under control?	How important is this event?	Is additional control needed?
Goats accessing the well and the immediate area around it and defecating in this area; heavy rainfall introduces faecal matter to the well water	Pathogenic microorganisms	No control measures in place Wellhead protection is poor	Very important: requires urgent attention Access of goats to well surroundings is frequently observed; animal faeces are visible Pathogenic microorganisms can cause illness; cases of diarrhoea are regularly noticed	More control is needed Should build a fence to keep animals away from the well surroundings

This table is for the following step of the water supply: .....

Date of assessment: .....

What can go wrong? List what hazardous events could happen that might introduce hazards to your system and might make your drinking-water unsafe.	**If the event happens, what hazard(s) might make the water unsafe?** **M** = Microorganisms **C** = Chemicals **P** = Physical constituents **Q** = Loss of quantity	**Is this event under control?** List all control measures that are **already** in place and explain whether they are working effectively. *Note. Control measures are anything that is a barrier to contamination.*	**How important is this event?** Describe how often the event could happen in your supply and how severe the consequences would be for the health of the community. Judge to what extent this needs attention and improvement. Urgent attention is needed for events that happen a lot and/or can cause significant illness. **Very important:** requires urgent attention and action **Important:** requires attention and action may be taken **Less important:** no action required at this time	**Is additional control needed?** For important events that are not already under control, consider additional control measures needed. *Note. You will make a detailed improvement plan in WSP task 4 ahead.*

Template 3-B
Sanitary inspections

The sanitary inspection forms provided in **Template 3-B** support you in implementing and documenting WSP task 3.

Sanitary inspections provide useful **on-site information from the field**. They assist the WSP team in identifying problems with the water supply and possible contamination sources. If performed regularly, sanitary inspections enhance the WSP team's knowledge of supply system conditions. Sanitary inspection results provide an important basis for completing **Template 3-A**.

This template offers a variety of relevant **sanitary inspection (SI) forms**. Please note: not all SI forms will be relevant for your system, and the WSP team should **select the relevant SI forms** applicable to the local water supply setting. On the next pages you can find one SI form each for the following abstraction technologies and supply steps:

- dug well with hand pump (SI form 1)
- dug well with windlass (SI form 2)
- borehole with mechanized pumping (SI form 3)
- spring source (SI form 4)
- storage reservoirs (SI form 5)
- public/yard taps and piped distribution (SI form 6)
- collection and household containers (SI form 7).

Page 1 of each inspection form presents a systematic **checklist of simple questions** that address typical **risk factors** associated with a respective abstraction technology or supply step (such as presence of animals, accumulation of faecal material, design flaws or lack of protective infrastructures). The questions are structured so that a "Yes" answer indicates a potential risk and a "No" answer indicates no or a very low risk. All answers should be based on **visual on-site observation and interviewing** of community members and/or operators by the WSP team.

Page 2 of each inspection form provides space to document additional problems not covered by the list of questions, as well as further details, remarks, observations and recommendations.

Each sanitary inspection form is accompanied by **explanatory notes**. These notes on pages 3 and 4 of each inspection form provide additional guidance to the WSP team with information to assist your understanding of each question. Also remember that the water quality expert at your **local health office or local water supply office** can significantly support you in performing the inspections.

The WSP team should **carry out sanitary inspections regularly** (for example, quarterly). Vigilant and regular inspection not only supports WSP task 3 but is also useful for other purposes, such as monitoring your control measures as part of WSP task 5.

All completed sanitary inspection forms become part of your WSP documentation binder.

SANITARY INSPECTION FORM 1
DUG WELL WITH HAND PUMP

I. General information

a. Name of village or town: .....

b. Location and/or name of dug well: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

Note. *If there is more than one dug well in your community, or if the community uses other water sources (such as springs or boreholes), carry out sanitary inspections for these sources too.*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

1. Is there a latrine uphill and/or within 10 metres of the well? Yes | No
2. Is the fence absent, inadequate or faulty? Yes | No
3. Can animals have access within 10 metres of the well? Yes | No
4. Is there any other source of pollution within 10 metres of the well (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)? Yes | No
5. Is stagnant water ponding within 3 metres of the well? Yes | No
6. Is the drainage channel absent or cracked, broken or in need of cleaning? Yes | No
7. Is the cement floor or slab less than 2 metres in diameter around the top of the well? Yes | No
8. Are there cracks in the cement floor or slab? Yes | No
9. Is the hand pump loose at the point of attachment or, for rope-washer pumps, is the pump cover missing or damaged? Yes | No
10. Is the well cover absent, cracked or insanitary? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors: .....

Additional details, remarks, observations and recommendations:

EXPLANATORY NOTES
DUG WELL WITH HAND PUMP

1. **Is there a latrine uphill and/or within 10 metres of the well?**
   Latrines close to groundwater supplies may affect water quality (for example, by infiltration of faecal material). Pollution on higher ground poses a risk, especially in the wet season, as faecal material (and other pollutants) may flow into the water source (the risk increases if no surface water diversion is present). Groundwater may also flow towards the well from the direction of the latrine. You may need to check structures visually to see if they are latrines in addition to asking residents. If you observe any latrines uphill or within 10 metres of the well, answer "Yes".

2. **Is the fence absent or faulty?**
   If there is no fence – or if the fence is inappropriate (for example, too low or not equipped with a functioning gate) or damaged – animals (including those used for collecting the water) can access the well site. They may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

3. **Can animals have access within 10 metres of the well?**
   If animals can access the well site or its immediate vicinity, they may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

4. **Is there any other source of pollution within 10 metres of the well (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)?**
   Animal or human faeces on the ground close to the well constitute a risk to water quality, especially when water diversion ditches are not present. Disposal of other waste (for example, household, agricultural or commercial) indicates that environmental sanitation practices are poor, which constitutes a risk to water quality. This can be confirmed by observation of the general surroundings in the community. If you find any of these practices within 10 metres of the well, answer "Yes".

5. **Is stagnant water ponding within 3 metres of the well?**
   If pools of water accumulate around the well they may provide a route for contaminants to enter the source. If you observe spilt water or pools of water close to the well, answer "Yes".

6. **Is the drainage channel absent or cracked, broken or in need of cleaning?**
   Poor construction or maintenance of the drainage channel leads to cracks and breaks. Especially when combined with spillage of water and poor sanitary conditions, this poses a risk to water quality. If you observe any of these problems, answer "Yes".

7. **Is the cement floor or slab absent or less than 2 metres in diameter around the top of the well?**
   The slab is built to prevent backflow of water into the well. To do this adequately it needs to be at least 2 metres in diameter. If it is absent or too small, answer “Yes”.

8. **Are there cracks in the cement floor or slab?**
   Cracks, especially deep ones, in the cement may allow backflow into the water source. If you see deep cracks, answer “Yes”.

9. **Is the hand pump loose at the point of attachment or, for rope-washer pumps, is the pump cover missing or damaged?**
   A loose hand pump or a missing pump cover may allow backflow of contaminated water into the water source. If the pump is not securely attached to the pump base in the apron (or the pump cover is missing), answer “Yes”.

10. **Is the well cover absent, cracked or insanitary?**
    Absence of a cover, a cracked cover or an insanitary cover increases the likelihood of contamination entering the well. If you observe any of these problems, answer “Yes”.

SANITARY INSPECTION FORM 2
DUG WELL WITH WINDLASS

I. General information

a. Name of village or town: .....

b. Location and/or name of dug well: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

Note. *If there is more than one dug well in your community, or if the community uses other water sources (such as springs or boreholes), carry out sanitary inspections for these sources too.*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

1. Is there a latrine uphill and/or within 10 metres of the well? Yes | No
2. Is the fence absent, inadequate or faulty? Yes | No
3. Can animals have access within 10 metres of the well? Yes | No
4. Is there any other source of pollution within 10 metres of the well (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)? Yes | No
5. Is stagnant water ponding within 3 metres of the well? Yes | No
6. Is the drainage channel absent or cracked, broken or in need of cleaning? Yes | No
7. Is the cement floor or slab absent or less than 2 metres in diameter around the top of the well? Yes | No
8. Are there cracks in the cement floor or slab? Yes | No
9. Is the wall or parapet around the well absent, inadequate or faulty? Yes | No
10. Are the rope and bucket left in such a position that they may become contaminated? Yes | No
11. Do individuals use their own buckets for drawing water from the well? Yes | No
12. Is the well cover absent, cracked or insanitary? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–12* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–12
- additional comments

IV. Names and signatures of assessors: .....

Additional details, remarks, observations and recommendations:

EXPLANATORY NOTES
DUG WELL WITH WINDLASS

1. **Is there a latrine uphill and/or within 10 metres of the well?**
   Latrines close to groundwater supplies may affect water quality (for example, by infiltration of faecal material). Pollution on higher ground poses a risk, especially in the wet season, as faecal material (and other pollutants) may flow into the water source (the risk increases if no surface water diversion is present). Groundwater may also flow towards the well from the direction of the latrine. You may need to check structures visually to see if they are latrines in addition to asking residents. If you observe any latrines uphill or within 10 metres of the well, answer "Yes".

2. **Is the fence absent or faulty?**
   If there is no fence – or if the fence is inappropriate (for example, too low or not equipped with a functioning gate) or damaged – animals (including those used for collecting the water) can access the well site. They may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

3. **Can animals have access within 10 metres of the well?**
   If animals can access the well site or its immediate vicinity, they may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

4. **Is there any other source of pollution within 10 metres of the well (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)?**
   Animal or human faeces on the ground close to the well constitute a risk to water quality, especially when water diversion ditches are not present. Disposal of other waste (for example, household, agricultural or commercial) indicates that environmental sanitation practices are poor, which constitutes a risk to water quality. This can be confirmed by observation of the general surroundings in the community. If you find any of these practices within 10 metres of the well, answer "Yes".

5. **Is stagnant water ponding within 3 metres of the well?**
   If pools of water accumulate around the well they may provide a route for contaminants to enter the source. If you observe spilt water or pools of water close to the well, answer "Yes".

6. **Is the drainage channel absent or cracked, broken or in need of cleaning?**
   Poor construction or maintenance of the drainage channel leads to cracks and breaks. Especially when combined with spillage of water and poor sanitary conditions, it poses a risk to water quality. If you observe any of these problems, answer "Yes".

7. **Is the cement floor or slab absent or less than 2 metres in diameter around the top of the well?**
   The slab is built to prevent backflow of water into the well. To do this adequately it needs to be at least 2 metres in diameter. If it is absent or too small, answer “Yes”.

8. **Are there cracks in the cement floor or slab?**
   Cracks, especially deep ones, in the cement may allow backflow of contaminated water into the water source. If you see deep cracks, answer “Yes”.

9. **Is the wall or parapet around the well absent, inadequate or faulty?**
   If there is no wall or if the wall is damaged, especially in the wet season, spilt water contaminated with faecal material (and other pollutants) may directly flow into the well. This poses a risk to water quality. If you observe either of these problems, answer “Yes”.

10. **Are the rope and bucket left in such a position that they may become contaminated?**
    The rope and the bucket are immersed in the well water and may introduce contamination to the well. If the rope and/or the bucket are left on the ground or in other places where they may become contaminated with faecal material (and other pollutants), this poses a high risk to water quality. If you find the rope and/or the bucket in such positions, answer “Yes”.

11. **Do individuals use their own buckets for drawing the water from the well?**
    If individuals use their own buckets (either exclusively or in addition to a centrally installed bucket) for drawing water from the well, this increases the potential of the water becoming contaminated by insanitary buckets. If individuals use more than one bucket for drawing water from the well, answer “Yes”.

12. **Is the well cover absent, cracked or insanitary?**
    Absence of a cover, a cracked cover or an insanitary cover increases the likelihood of contamination entering the well. If you observe any of these problems, answer “Yes”.

SANITARY INSPECTION FORM 3
BOREHOLE WITH MECHANIZED PUMPING

I. General information

a. Name of village or town: .....

b. Location and/or name of borehole: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

Note. *If there is more than one borehole in your community, or if the community uses other water sources (such as dug wells or springs), carry out sanitary inspections for these sources too.*

Note. *If the borehole serves a storage reservoir or directly feeds into a piped distribution system, also carry out sanitary inspections using the forms "Storage reservoirs" and/or "Public/yard taps and piped distribution" respectively.*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

1. Is there a latrine or sewer within 100 metres of the pumping mechanism? Yes | No
2. Is there a latrine within 10 metres of the borehole? Yes | No
3. Is there any other source of pollution within 50 metres of the borehole (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)? Yes | No
4. Is there an uncapped well within 100 metres of the borehole? Yes | No
5. Is the drainage channel around the pumping mechanism absent or cracked, broken or in need of cleaning? Yes | No
6. Can animals come within 50 metres of the borehole? Yes | No
7. Is the base of the pumping mechanism permeable to water? Yes | No
8. Is there any stagnant water ponding within 2 metres of the pumping mechanism? Yes | No
9. Is the well seal insanitary? Yes | No
10. Is the borehole cap cracked? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors: .....

Additional details, remarks, observations and recommendations:

EXPLANATORY NOTES
BOREHOLE WITH MECHANIZED PUMPING

1. **Is there a latrine or sewer within 100 metres of the pumping mechanism?**
   Any leaks from the sewer or infiltration from the latrine could contaminate the borehole water by drawdown caused by pumping and/or because groundwater may flow towards the well from the direction of the latrine. You can observe latrines and cross-check with residents but you may need to ask relevant professionals about the location of sewers. If you observe any latrines or sewers this close to the pumping mechanism, answer "Yes".

2. **Is there a latrine within 10 metres of the borehole?**
   Latrines close to groundwater supplies may affect water quality (for example by infiltration of faecal material). You may need to check structures visually to see if they are latrines in addition to asking residents. If you observe any latrines this close to the borehole, answer "Yes".

3. **Is there any other source of pollution within 50 metres of the borehole (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)?**
   Animal or human faeces on the ground close to the borehole constitute a risk to water quality, especially when water diversion ditches are not present. Disposal of other waste (for example, commercial, household or agricultural) indicates that environmental sanitation practices are poor, which constitutes a risk to water quality. This can be confirmed by observation of the general surroundings in the community. If you find any of these practices within 50 metres of the borehole, answer "Yes".

4. **Is there an uncapped well within 100 metres of the borehole?**
   Uncapped wells can easily be contaminated and the pollution can spread through the groundwater. You can check visually for such wells and also ask residents. If there are any uncapped wells in the area within 100 metres of the borehole, answer "Yes".

5. **Is the drainage channel around the pumping mechanism absent or cracked, broken or in need of cleaning?**
   Poor construction or maintenance of the drainage channel leads to cracks or breaks. Especially when combined with spillage of water and poor sanitary conditions, it poses a risk to water quality. If you observe any of these problems, answer "Yes".

6. **Can animals come within 50 metres of the borehole?**
   If animals can access the borehole site, they may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. Animals should also not be kept in a fenced area around the borehole for security purposes or for providing them with water. If you observe any of these problems within 50 metres of the borehole, answer "Yes".

7. **Is the base of the pumping mechanism permeable to water?**
   If the base is permeable (for example, there is no cover or the cover has deep cracks) any surface runoff could provide a route for contamination to enter the water source. If you observe this, answer “Yes”.

8. **Is there any stagnant water ponding within 2 metres of the pumping mechanism?**
   If pools of water accumulate around the pumping mechanism they may provide a route for contaminants to enter the source. If you observe spilt water or pools of water close to the mechanism, answer “Yes”.

9. **Is the well seal insanitary?**
   Faeces, garbage and other wastes around the well seal pose a risk to the water quality. If you see these insanitary conditions close to the seal, answer “Yes”.

10. **Is the borehole cap cracked?**
    Cracks allow contaminants to enter the borehole, posing a risk to water quality. If you find deep cracks that penetrate the cap, answer “Yes”.

SANITARY INSPECTION FORM 4
SPRING SOURCE

I. General information

a. Name of village or town: .....

b. Location and/or name of spring: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

Note. *If there is more than one spring source in your community, or if the community uses other water sources (such as dug wells or boreholes), carry out sanitary inspections for these sources too.*

Note. *If the spring serves a storage reservoir or directly feeds into a piped distribution system, also carry out sanitary inspections using the forms "Storage reservoirs" and/or "Public/yard taps and piped distribution" respectively.*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

1. Is the spring box absent or faulty? Yes | No
2. Is the brick wall or backfill area protecting the spring faulty or eroded? Yes | No
3. If there is a spring box, is the inspection cover absent, faulty or unsanitary, or is the concrete around the cover damaged? Yes | No
4. Does spilt water flood the collection area? Yes | No
5. Is the spring box unfenced, or is the fence inadequate or faulty? Yes | No
6. Can animals have access within 10 metres of the spring? Yes | No
7. Is there a latrine uphill and/or within 30 metres of the spring? Yes | No
8. Does surface water collect uphill within 30 metres of the spring? Yes | No
9. Is the diversion ditch above the spring absent or non-functional? Yes | No
10. Are there any other sources of pollution uphill of the spring (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors: .....

Additional details, remarks, observations and recommendations:

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EXPLANATORY NOTES
SPRING SOURCE

1. **Is the spring box absent or faulty?**
   This box helps to protect the water from contamination by surface runoff so if it is absent or faulty, there is a risk to water quality. If the spring box is absent or faulty, answer "Yes".

2. **Is the brick wall or backfill area protecting the spring faulty or eroded?**
   The brick wall (or masonry) diverts surface runoff away from the spring box, protecting the source from contamination. The backfill area helps with diversion of runoff and protects the masonry. If it is absent or eroded, there is a risk to water quality. If you observe any of these conditions, answer "Yes".

3. **If there is a spring box, is the inspection cover absent, faulty or unsanitary, or is the concrete around the cover damaged?**
   If either the inspection cover is insanitary, absent or faulty (for example, shows cracks) or the surrounding concrete is damaged, pollutants (such as bird droppings or other faeces) may enter the box and contaminate the water source, especially in wet weather. If you observe any of these problems, answer "Yes".

4. **Does spilt water flood the collection area?**
   Any spilt water may be contaminated by runoff (especially if animals have access to the collection area) and, in cases of extreme flooding, may provide a route for contaminants to flow into the box. Containers may also be contaminated by the spilt water during collection. Accumulation of spilt water in the area also indicates that drainage or the overflow pipe is inadequate. If you observe spilt water accumulation, answer "Yes".

5. **Is the spring box unfenced, or is the fence inadequate or faulty?**
   If there is no fence – or if the fence is inappropriate (for example, too low or not equipped with a functioning gate) or damaged – animals (including those used for collecting the water) can access the spring site. They may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

6. **Can animals have access within 10 metres of the spring?**
   If animals can access the spring site they may damage the structure and pollute the area with excreta. You will need to check both the protection of the site and whether animals are routinely in the area. If you observe either of these problems, answer "Yes".

7. **Is there a latrine uphill and/or within 30 metres of the spring?**
   Faecal material and other pollutants from higher ground may flow into the water source, posing a risk to water quality (which is increased if no surface water diversion is present), especially in the wet season. Groundwater may also flow towards the spring from the direction of the latrine. If you find this contamination risk present within 30 metres of the spring, answer "Yes".

8. **Does surface water collect uphill within 30 metres of the spring?**
   Surface water can be contaminated by dirt, garbage and faeces, especially if animals have access to the area, when it flows down towards the spring. It may pollute the source. If the volume of water accumulated uphill is high and it is suddenly released, it may flow towards the spring and contaminate the source. If you see this within 30 metres of the spring, answer "Yes".

9. **Is the diversion ditch above the spring absent or non-functional?**
   The role of the ditch is to protect the source from possibly polluted runoff by directing it downhill and away from the box. If the ditch is filled with waste or poorly contoured then runoff can collect and infiltrate the source, posing a risk to water quality. You should look for water or waste collected in the ditch. If the ditch is absent or not functioning correctly, answer "Yes".

10. **Are there any other sources of pollution uphill of the spring (such as animal breeding, cultivation, roads, garages, craft enterprises or waste)?**
    Faeces, garbage and other wastes pose a risk to water quality. If you see these uphill of the spring, and especially in the fenced area, answer "Yes".

SANITARY INSPECTION FORM 5
STORAGE RESERVOIRS

I. General information

a. Name of village or town: .....

b. Location and/or name of storage reservoir: .....

c. Date of inspection: .....

d. Weather conditions during inspection: .....

e. Location and/or name of water source(s) feeding the reservoir: .....

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Note. *If there is more than one storage reservoir in your community, use one form for each reservoir.*

Note. *If the storage reservoir feeds a piped distribution system, also carry out a sanitary inspection using the form "Public/yard taps and piped distribution".*

Note. *If the storage reservoir is equipped with a tap for collecting water, also carry out a sanitary inspection using questions 1–5 of the form "Public/yard taps and piped distribution".*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

1. Is there any point of leakage of the pipe between source and storage reservoir? Yes | No
2. Is the physical infrastructure of the storage reservoir cracked or leaking? Yes | No
3. Is the inspection cover of the storage reservoir absent or open? Yes | No
4. Is the inspection cover faulty, corroded or is the concrete around the cover damaged? Yes | No
5. Is the inspection cover insanitary? Yes | No
6. Are screens protecting the air vents on the storage reservoir missing or damaged? Yes | No
7. If there is an overflow pipe, is the screen protecting it missing or damaged? Yes | No
8. Is there any scum or foreign objects in the storage reservoir? Yes | No
9. Is the diversion ditch above the storage reservoir absent or non-functional? Yes | No
10. Is the area around the storage reservoir unfenced or is the fence damaged, allowing animals to access the area? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors:.....

Additional details, remarks, observations and recommendations:

EXPLANATORY NOTES
STORAGE RESERVOIRS

1. **Is there any point of leakage of the pipe between source and storage reservoir?**
   If pipes are damaged or leaking then cracks may provide a route for contaminants to enter the pipes. Watch out for ponding or unexpected flows of water above ground. If you observe leaks, answer “Yes”.

2. **Is the physical infrastructure of the storage reservoir cracked or leaking?**
   Cracks allow contaminants to reach the water stored in the tank; leakage also leads to loss of water. If you find deep cracks that penetrate the tank, answer “Yes”.

3. **Is the inspection cover of the storage reservoir absent or open?**
   If there is no inspection cover, or the cover is not closed at the time of inspection, it allows contaminants (such as bird droppings or other faeces from rodents or cats) to reach the water stored in the tank rapidly, especially in wet weather. If you observe either of these problems, answer “Yes”.

4. **Is the inspection cover faulty, corroded or is the concrete around the cover damaged?**
   Corroded or damaged covers and cracked concrete surrounds allow contaminants (such as bird droppings or other faeces from rodents or cats) to reach the water stored in the tank rapidly, especially in wet weather. If you observe any of these problems, answer “Yes”.

5. **Is the inspection cover insanitary?**
   If the inspection cover is contaminated by faeces (for example, from birds or rodents), spider webs, insects, soil or slime, this poses a risk to water quality. If you observe any of these problems, answer “Yes”.

6. **Are screens protecting the air vents on the storage reservoir missing or damaged?**
   If there are no screens protecting the air vents, or if they are damaged, this allows insects and other animals (such as birds and rodents) to access the reservoir. This poses a risk to water quality. If you observe either of these problems, answer “Yes”.

7. **If there is an overflow pipe, is the screen protecting it missing or damaged?**
   If there are no screens protecting the overflow pipe, or if they are damaged, this allows insects and other animals (such as birds and rodents) to access the reservoir. This poses a risk to water quality. If you observe either of these problems, answer “Yes”.

8. **Is there any scum or foreign objects in the storage reservoir?**
   If there is any scum floating on the surface of the water table (for example, insects, foam or algae), or if there are any other objects on the ground of the reservoir (for example, dead animals or garbage), this poses a risk to water quality. If you observe any of these conditions, answer “Yes”.

9. **Is the diversion ditch above the storage reservoir absent or non-functional?**
   The role of the ditch is to protect the reservoir from surface runoff by directing it downhill and away from the reservoir. If the ditch is filled with waste or poorly contoured then runoff can collect and infiltrate near the reservoir, possibly causing damage to the infrastructure or posing a risk to water quality due to ingress into the reservoir. You should look for water or waste collected in the ditch. If the ditch is absent or not functioning correctly, answer "Yes".

10. **Is the area around the storage reservoir unfenced or is the fence damaged, allowing animals to access the area?**
    If there is no fence – or if the fence is inappropriate (for example, too low or not equipped with a functioning gate) or damaged – animals (including those used for collecting the water), can access the reservoir area. They may cause damage to it and pollute the area with excreta. You will need to check whether animals are routinely in the area by asking residents and by personal observation in the area (including seeing any animal excreta at the site). If you observe any of these problems or if the area is unfenced, answer "Yes".

SANITARY INSPECTION FORM 6
PUBLIC/YARD TAPS AND PIPED DISTRIBUTION

I. General information

a. Name of village or town: .....

b. Date of inspection: .....

c. Weather conditions during inspection: .....

d. Location and/or name of water source(s) feeding the distribution system: .....

.....

e. Location and/or name of storage reservoir feeding the distribution system (if any): ....

.....

Note. *If the distribution system is served by a storage reservoir, also carry out a sanitary inspection using the form "Storage reservoirs".*

Note. *If consumers store water in homes, also regularly inspect water storage and handling in homes, using the sanitary inspection form "Collection and household containers".*

II. Specific questions for assessment

Note. *Fill in one form per public or yard tap under inspection. In communities where no such taps are present (but only taps in the household), only questions 6–10 apply. Not all yard taps in the community need to be inspected in every inspection round: a selected sample is sufficient.*

Public or yard tap

1. Does the tap leak? Yes | No
2. Is the tap or are attachments (such as hoses) insanitary? Yes | No
3. Does spilt water accumulate around the tapstand? Yes | No
4. Is the area around the tapstand insanitary? Yes | No
5. Is the area around the tapstand unfenced, allowing animals to access the area? Yes | No

Piped distribution

6. Are there any signs of leaks in the inspection area (for example, accumulating water)? Yes | No
7. Are any of the pipes exposed above ground in the inspection area? Yes | No
8. Do users report any pipe breaks within the last week? Yes | No
9. Has there been discontinuity in the last 10 days? Yes | No
10. Is there a sewer or a latrine within 30 metres of the tapstand? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

Note. *In situations where only questions 6–10 apply, the score below can be adapted as follows: "Very high" = 5; "High" = 3–4; "Medium" = 2; "Low" = 0–1.*

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors:.....

Additional details, remarks, observations and recommendations:

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EXPLANATORY NOTES
PUBLIC/YARD TAPS AND PIPED DISTRIBUTION

1. **Does the tap leak?**
   If taps are leaking or damaged then cracks may provide a route for contaminants to enter the pipes, particularly if the distribution system is operating intermittently. Leaking taps also contribute to water wastage. During the inspection you will need to differentiate between water from leaking taps and spilt water. If you observe leaks or damage at taps, answer "Yes".

2. **Is the tap or are attachments (such as hoses) insanitary?**
   If the tap is contaminated, or if any attachments to the tap (such as hoses) are insanitary, collected water may be contaminated and contamination can be introduced to the distribution system. If the tap is insanitary, answer "Yes".

3. **Does spilt water accumulate around the tapstand?**
   Any spilt water may be contaminated by runoff, especially if animals have access to the collection area. Containers may be contaminated by the spilt water during collection. Also, if cracks are present in the collection area, they may provide a route for contaminants to enter the distribution pipes, particularly if the distribution system operates intermittently. If you observe accumulation of spilt water, answer "Yes".

4. **Is the area around the tapstand insanitary?**
   Faeces, garbage and other waste increases the risk of water becoming contaminated during collection – for example, by contaminating collection containers. If you observe any of these problems close to the tap, answer "Yes".

5. **Is the area around the tapstand unfenced, allowing animals to access the area?**
   If there is no fence – or if the fence is inappropriate (for example, too low or not equipped with a functioning gate) or damaged – animals (including those used for collecting the water) can access the tapstand area. They may cause damage to the taps and pollute the area or collection containers with excreta. You will need to check whether animals are routinely in the area by asking residents and by personal observation in the area (including seeing any animal excreta at the site). If you observe any of these problems or if the area is unfenced, answer "Yes".

6. **Are there any signs of leaks in the inspection area (for example, accumulating water)?**
   If pipes are damaged or leaking then cracks may provide a route for contaminants to enter the pipes, particularly if the distribution system operates intermittently. Watch out for ponding or unexpected flows of water above ground but you will need to differentiate between water from leakage and spilt water. If you observe leaks in the inspection area, answer "Yes".

7. **Are any of the pipes exposed above ground in the inspection area?**
   Exposure of the pipe means that it is more prone to both damage (especially if by/on a road) and contamination from runoff than pipes below ground. You will need to identify the routes of the main pipelines in the inspection area. If the pipelines are exposed, answer "Yes".

8. **Do users report any pipe breaks within the last week?**
   Pipe breaks pose a risk to water quality as contaminants can enter the system through the break, particularly if the distribution system operates intermittently. You will need to ask residents about any pipe breaks. If breaks are reported, answer “Yes”.

9. **Has there been discontinuity in the last 10 days?**
   During discontinuities the distribution pipes become empty and pressure differences may lead to ingress of water and silt from the soil around the pipes. As water and soil may be contaminated this poses a risk to water quality. You will need to ask residents about discontinuities. Also record the frequency and duration, if possible. If there has been a discontinuity, answer “Yes”.

10. **Is there a sewer or a latrine within 30 metres of the tapstand?**
    Any leaks from a sewer or infiltration from a latrine could contaminate the piped water, especially if there are any cracks in the distribution system and if the distribution system operates intermittently. Groundwater may flow towards the distribution pipes from the direction of the sewer or latrine. You can observe latrines and cross-check with residents but you may need to ask relevant professionals about the location of sewers. If either a sewer or latrine is present, answer “Yes”.

SANITARY INSPECTION FORM 7
COLLECTION AND HOUSEHOLD CONTAINERS

I. General information

a. Name of village or town: .....

b. Date of inspection: .....

c. Name and location of household visited: .....

d. Location and/or name of water source(s) used by household visited: .....

II. Specific questions for assessment

1. Is the water obtained from more than one source? (If yes, specify source on the back of the form.) Yes | No
2. Is the drinking-water collection container cracked, leaking or in an insanitary condition? Yes | No
3. Is the drinking-water collection container used for storing any other liquid or material, including water of lower quality? Yes | No
4. Is the drinking-water storage container cracked, leaking or in an insanitary condition? Yes | No
5. Is the drinking-water storage container used for storing any other liquid or material, including water of lower quality? Yes | No
6. Is the drinking-water storage container lid or cover absent, damaged or not in place? Yes | No
7. Is the drinking-water storage container kept at ground level? Yes | No
8. Is the area around the drinking-water storage container insanitary? Yes | No
9. Do any animals have access to the area around the drinking-water storage container? Yes | No
10. Is the tap or utensil used to draw water from the drinking-water storage container inappropriate or insanitary? Yes | No

Total score of risk factors as total number of "YES" answers:.....

III. Results and comments

a. Sanitary inspection risk score (tick appropriate box):

☐ *Very high risk* *Risk score: 9–10* ☐ *High risk* *Risk score: 6–8* ☐ *Medium risk* *Risk score: 3–5* ☐ *Low risk* *Risk score: 0–2*

b. Important points of risk noted and reported on the reverse of this form:
- list according to question numbers 1–10
- additional comments

IV. Names and signatures of assessors:.....

Additional details, remarks, observations and recommendations:

EXPLANATORY NOTES
COLLECTION AND HOUSEHOLD CONTAINERS

1. **Is the drinking-water obtained from more than one source?**
   Waters from different sources may have different qualities. This may be a seasonal occurrence, affected by factors such as availability of sources or the length of queues at water points. You will need to ask residents about their use of single or different sources of water (for example, in different seasons or during discontinuities); you will also need to collect information on what the water from the different sources is used for. If more than one source is used, answer "Yes".

2. **Is the drinking-water collection container cracked, leaking or in an insanitary condition?**
   Cracks in a damaged collection container may provide an entry route for contaminants. You will need to differentiate between water leaking from the container and water spilt during collection. If the collection container is insanitary it poses a risk to water quality. If the collection container is damaged, leaking or insanitary, answer "Yes".

3. **Is the drinking-water collection container used for storing any other liquid or material, including water of lower quality?**
   A container used for collecting and transporting drinking-water should never be used for other purposes. Other liquids or materials in contact with the container, including water of lower quality, may be contaminated or may cause contamination themselves, and thus constitute a risk to drinking-water quality. Contamination from such containers may also be released for a while after this practice has ended. You will need to check the collection container visually for evidence of this practice and also ask the residents. If you observe any of these problems, answer "Yes".

4. **Is the drinking-water storage container cracked, leaking or in an insanitary condition?**
   Cracks in a damaged storage container may provide an entry route for contaminants. You will need to differentiate between water leaking from the container and spilt water. If the storage container is insanitary it poses a risk to drinking-water quality. If the storage container is damaged, leaking or insanitary, answer "Yes".

5. **Is the drinking-water storage container used for storing any other liquid or material?**
   A container used for storing drinking-water should never be used for other purposes. Other liquids or materials in contact with the container, including water of lower quality, may be contaminated and thus constituting a risk to drinking-water quality. Contamination from such containers may also be released for a while after this practice has ended. You will need to check the storage container visually for evidence of this and also ask the residents. If you observe any of these problems, answer "Yes".

6. **Is the drinking-water storage container lid or cover absent, damaged or not in place?**
   Water stored in containers with a damaged or absent cover can easily be contaminated. You can check visually for the lid or cover, and also ask residents. If the lid or cover is absent or not in place, answer "Yes".

7. **Is the drinking-water storage container kept at ground level?**
   Keeping the container at ground level constitutes a risk to water quality, especially when animals are living in the home or sanitation practices are poor. You can check the location of the container visually. If this is the case, answer "Yes".

8. **Is the area around the drinking-water storage container insanitary?**
   Faeces, garbage and other wastes pose a risk to the water quality during water handling. If you see these close to the storage container, answer "Yes".

9. **Do any animals have access to the area around the drinking-water storage container?**
   If animals can access the storage area they may pollute the area or the container with excreta. You will need to check whether animals are routinely in the area by asking residents and by personal observation in the area (including seeing any animal excreta at the site). If you observe any of these problems, answer "Yes".

10. **Is the tap or utensil used to draw water from the drinking-water storage container inappropriate or insanitary?**
    If the tap is contaminated or – if there is no tap – the buckets, cups, ladles or other devices used to collect water are insanitary, contamination can be introduced to the container this way. The container can also be contaminated by accessing the container with dirty hands. If the tap or utensils used to draw water are insanitary, answer "Yes".

Template 4
Improvement plan

Template 4 on the reverse supports you in implementing and documenting WSP task 4. Once completed, this template becomes part of your WSP documentation binder.

In WSP task 3 you decided which risks to your water supply are the most important and require additional control measures or improvements. Now you need to further prioritize and **detail the improvements and develop an action plan**. Be specific about what should be done, by whom, when and with which resources.

The **improvement actions** you take will always be **incremental**: some things you can do quickly, others may need more time and resources. For important risks for which larger scale improvement is needed (such as installation of a disinfection unit), and which are likely to take some time owing to limited availability of resources, you should define **interim solutions** (for example, applying water treatment at the household level). Remember, a WSP is a continuous process in which improvement takes place step by step.

Also keep a record of completed improvement activities in your plan, including the actual date of completion, and do not delete this. This way you can **document the actions** you have taken towards increased safety of your water supply.

If the form does not give you sufficient space, please make additional copies.

The following **example** illustrates the type of information required to complete **Template 4**. This is for illustration purposes only.

What needs further attention?	What specific improvement action will be taken?	Who will do it?	When will it be completed?	What resources are needed to do it?	Actual date of completion
Goats accessing the well and the immediate area around it, and defecating in this area; cracked concrete apron around the wellhead creates a path for goat faeces to enter with well during rains	Install metal fence (around 1.2 metres high) with lockable gate to prevent animal access to well site	Mr Fahridin and Ms Leyla	November 2013	50 US$ in materials and 2 days of work time per person	12 October 2013
	Provide water outside fenced area for animals to drink	Mr Fahridin together with local farmers	October 2013	25 US$ in materials and 2 days of work time	30 September 2013
	Repair concrete apron around the wellhead, and increase to 2.5 metres in diameter	Mr Fahridin and craftsmen from neighbouring village	September 2013	80 US$ in materials and 4 days of work time	25 September 2013

Date: .....

What needs further attention? List the hazardous events from the first column of Template 3-A for which you identified additional control measures in the last column of Template 3-A.	**What specific improvement action will be taken?** Improvement can aim to remove, reduce or remedy the problem. For major upgrades for which resources may only be available in the long term, also list interim solutions.	**Who will do it?** List people responsible for implementing improvement action.	**When will it be completed?** Indicate target date.	**What resources are needed to do it?** The term "resources" refers to personnel, technical and financial means.	**Actual date of completion** Indicate when the improvement is in place and operational.

Template 5-A
Compliance monitoring plan

Template 5-A on the reverse supports you in implementing and documenting WSP task 5. Once completed, this template becomes part of your WSP documentation binder.

Testing your drinking-water quality from time to time to confirm that it complies with standards is an important way to verify that the WSP is working properly to deliver safe water to your community. Your local health office staff are likely to be responsible for carrying out this compliance monitoring, so **your local health office should be able to help you** document an appropriate compliance monitoring plan for your system.

Your plan should describe the **sampling frequency, locations, parameters and target values**. It should also identify someone from within the community who will receive the test results from the local health office. Compliance monitoring is of limited value to you if you are not informed of the results, so it is very important to establish good communications with the local health office and a reporting system.

If you become aware that any test result is not compliant with the water quality standard, contact your local health office to discuss the situation and the remedial action that needs to be taken.

The following **example** illustrates the type of information required to complete **Template 5-A**. This is for illustration purposes only.

Sampling frequency	6-monthly
Parameter(s) tested and target value(s)	Faecal coliforms: 0 coliform forming units per 100 millilitres Turbidity: lower than 5 turbidity units
Sampler	Responsible health officer
Sampling locations	Community tapstands (5 randomly selected)
Laboratory at which samples are tested	District health laboratory
WSP team member to whom the results are reported	Mr Fahridin, village head and WSP team member

Date: .....

Sampling frequency	
Parameter(s) tested and target value(s)	
Sampler	
Sampling locations	
Laboratory at which samples are tested	
WSP team member to whom the results are reported	

Template 5-B
Operational monitoring and inspection plan

Template 5-B on the reverse supports you in implementing and documenting WSP task 5. Once completed, this template becomes part of your WSP documentation binder.

For each **major component** of your water supply system, complete Template 5-B by documenting operational monitoring and inspection activities. You will need a separate sheet for every system component. Remember, regular **operational monitoring and inspection** helps you to maintain the safety of your water supply.

The purpose of operational monitoring and inspection is to confirm that all water supply system components and control measures (the things you are doing for keeping your water safe) are working effectively. Operational monitoring and inspection are **your responsibility** as operator of the water supply. They are complementary to compliance monitoring by the local health office, which you addressed in Template 5-A.

By regularly testing simple water quality parameters (such as turbidity) and inspecting easily observable features of your water supply (for example, intact spring covers) you will quickly know whether something is wrong and you need to correct it. When you clearly define what needs to be done, how, when, where and by whom, you make sure that monitoring and corrective action are done in the right way to ensure water safety.

You need to prepare a sufficient number of copies of this template for each major system component before you start.

The following **example** illustrates the type of information required to complete Template 5-B. This is for illustration purposes only.

System component	Monitoring or inspection activity		Limit value or critical condition	Corrective action required
Spring box	**What?**	• Fence • Inspection cover • Spring box structure • Raw water turbidity	• Fence broken • Poor seal or poor fit on inspection cover • Spring box structure cracked or damaged • Turbidity above 5 turbidity units	Caretaker immediately to: • repair fence • repair inspection cover • contact WSP team leader to discuss spring box structure repair options • close valve to prevent any further water from entering system until turbidity drops below 5 turbidity units
	How?	• Visual inspection of fence, cover and spring box using the sanitary inspection form • Turbidity tube		
	When?	• Monthly for all visual inspections • Daily for routine turbidity testing • After heavy rains and during snow-melt for turbidity testing		
	Where?	On site at spring box		
	Who?	Caretaker, Ms Leyla		

Date: .....

System component List one system component here (e.g. intake and upstream drainage area, sand filter, storage reservoir, tap stand).	**Monitoring or inspection activity** List everything to be monitored for this system component, including all important control measures that are keeping your water safe (e.g. fence around the wellhead, chlorine disinfection).		**Limit value or critical condition** If this limit or condition is reached, your water may become unsafe and corrective action should be taken.	**Corrective action required** Describe what corrective action should be taken if the limit value or critical condition is reached.
	What?			
	How?			
	When?			
	Where?			
	Who?			

Template 6-A
Instructions for operations and maintenance

Template 6-A on the reverse supports you in implementing and documenting WSP task 6. Once completed, this template becomes part of your WSP documentation binder.

For each important operations or maintenance task, complete Template 6-A by documenting step-by-step instructions for carrying out the task. You will need a separate sheet for every task. These instructions will give the caretaker confidence that he or she always knows what to do and when. The instructions will also be very useful when new caretakers need to be trained.

As you develop your instructions for operations and maintenance you should bear in mind the following **tips**.

- It is valuable to **post copies of the instructions on site** for easy reference by the caretaker. For example, detailed instructions on chlorine mixing should be posted at the treatment site.
- It can be very helpful to **include drawings or photographs in the instructions** to ensure that the steps are clear and easy to understand. If you decide to use drawings or photographs you may wish to modify this template.

The following **example** illustrates the type of information required to complete Template 6-A. This is for illustration purposes only

Operational or maintenance task	Step-by-step instructions	Who?	When?
Cleaning of water storage tank	**Advise consumers of water shut-off** 1) One week before tank cleaning, ask the WSP team leader to notify consumers of a two-day water shut-off. **Clean tank** 1) Open drain valve, close inlet and outlet valves, and drain tank completely. 2) Dry tank for 1 day. 3) Check for cracks and repair, if necessary. 4) Clean walls with brush and remove silt manually. 5) Close drain valve and open inlet valve (keeping outlet valve closed) to fill tank for about 1 hour. 6) Close inlet valve, open drain valve, and drain tank. 7) Repeat tank filling and draining process until draining water runs clean (usually 1–2 more times). 8) Close drain valve and open inlet and outlet valves to resume service.	Caretaker, Ms Leyla	Annually (every spring)

Date: .....

Operational or maintenance task List one important task here (e.g. tank cleaning, filter cleaning, chlorination).	**Step-by-step instructions** List all steps involved in completing this task.	**Who?** Who should do the task?	**When?** When and how often should the task be done?

Template 6-B
Emergency response plan

Template 6-B on the reverse supports you in implementing and documenting WSP task 6. Once completed, this template becomes part of your WSP documentation binder.

By thinking in advance about what you should do if your water supply becomes contaminated or stops working you will be ready to take immediate action to **keep the people in your community safe and healthy** if things go wrong.

When developing your emergency response plan you will need to consider what could go wrong and decide who should be contacted first to help to manage the situation. You will also need to decide how to deliver important messages to the community quickly: for example, the need to boil water. It is also helpful to identify alternative water sources that can be used if needed during the emergency.

The following **example** illustrates the type of information required to complete Template 6-B. This is for illustration purposes only.

Possible emergency situations	• Landslide damages supply line and pipes go dry • Faecal contamination of the water supply • Waterborne disease outbreak
Persons to be notified	• Ms Leyla, Caretaker and WSP Team Leader (123456789) • Ms Black, health officer (123456788) • Mr Fahridin, village head (123456787)
Method of alerting the community	• Mr Fahridin (village head) will send runners to each household to warn them about the water and convene a public meeting • Ms Black (health officer) will deliver important health messages (e.g. advice to boil water) at the public meeting and through the local radio station
Alternative water supply	• Water from the Deep Creek can be used during emergencies, but must be boiled before drinking

Date: .....

Possible emergency situations What events have occurred in the past or might occur in the future to cause the water supply to become contaminated or stop working?	
Persons to be notified Who should be told about the emergency? List the names and contact details of responsible people from within the community and outside the community (e.g. local health office).	
Method of alerting the community If the water becomes unsafe to drink, how will all community members be warned immediately? List the names and contact details of the responsible people and describe how the message will be delivered.	
Alternative water supply Is there a different water source that can be used if there is a problem with the normal supply? Describe the other source and whether it is safe for drinking or whether treatment (e.g. boiling) is required.	

Notes

Notes

Availability of acceptable and safe drinking-water in sufficient quantity is a key prerequisite for good health, economic development and sustainable family livelihoods in rural communities. The water safety plan (WSP) approach, recommended by the WHO *Guidelines for drinking-water quality*, is the most effective way of ensuring provision of safe drinking-water in small-scale water supply systems. The WSP approach clearly emphasizes the importance of prevention of waterborne disease and supports communities in dealing with the everyday challenges of maintaining a reliable and safe water supply.

This field guide is based on the WHO manual *Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in small communities.* It provides a step-by-step introduction to the WSP approach and a range of ready-to-use templates to assist those locally involved in rural water supply to develop and implement their own WSPs. The field guide particularly addresses rural community members responsible for the operation and management of their water supplies, as well as staff of the local health and water supply offices responsible for safeguarding drinking-water quality and nongovernmental organizations supporting drinking-water safety in rural communities.

ISBN 978-92-890-5007-4

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