



WSP for piped supply

Most piped water supply systems in Ethiopia use groundwater from deep wells

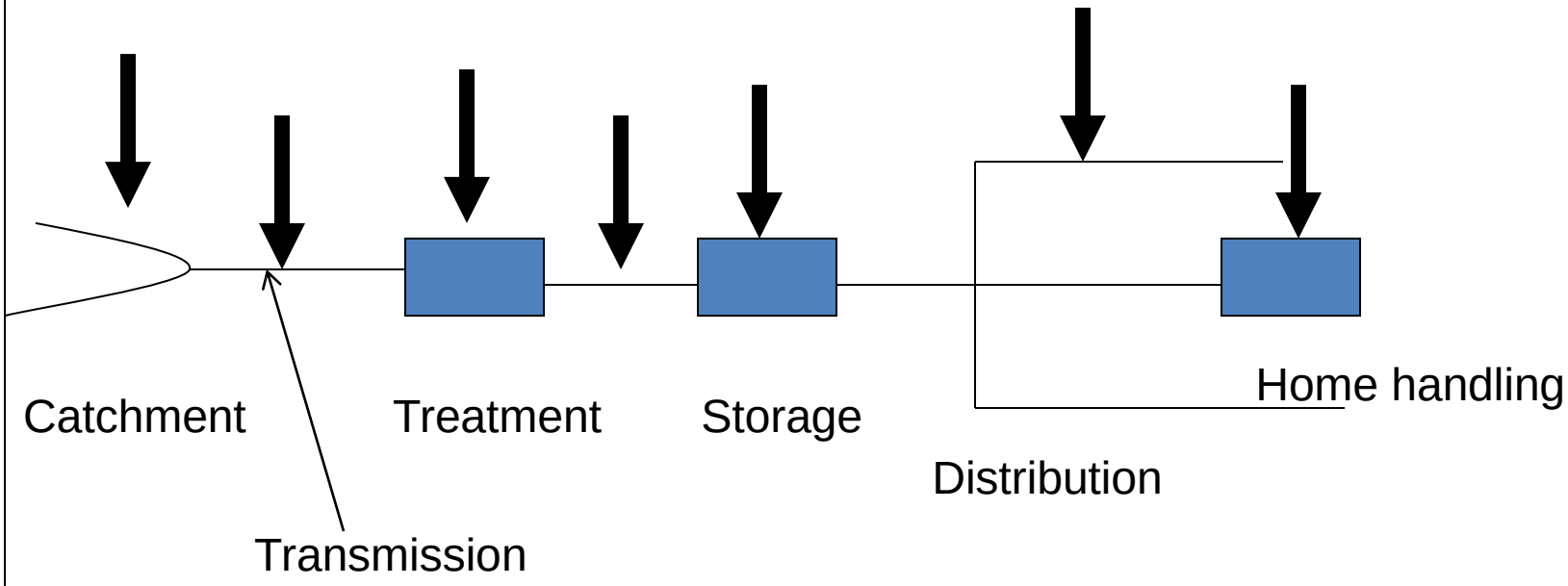
Groundwater is a good water source as it may be free from bacteriological contamination and often it does not contain high levels of chemical pollution

Unfortunately this is not always the case and therefore it is essential to carefully assess the situation

MetaMeta, Cowash

Hazards from catchment to consumer

In a piped supply all components need to be checked for possible risks



Risks in the catchment area

- Most small piped supplies in Ethiopia use groundwater as their water source. The bacteriological risk may be low unless water leaks back into the well; chemical pollution however may be a problem (Fluor, agricultural practice); Check if water quality has been tested and explore where the ground water comes from (may be from quite far).
- Another problem may be the groundwater table which may be falling. Community members may give you an indication that pumping takes longer but this may also be caused by lack of maintenance

Try to find out if water quality has been tested and where the groundwater comes from and whether this implies quality or quantity risks

Mitigation in the catchment often is beyond the individual community and needs Woreda level interventions

Risks in the pumping unit

Boreholes may not be well protected, do not have an apron and may allow for contamination by dirty water, dirt or small animals and may even allow seepage (infiltration) along the well casing

Electricity cables are often not protected .

Check the system carefully for any risks of contamination, and other risks (electricity) and lack of maintenance (corrosion)

Mitigation can include temporary covering of the well with sheets (see picture), but a more permanent solution should be established

Risks in the power supply (generator)

Whereas this risk is not directly related to water quality it may have an important bearing on water quantity. Burnt pumps and worn out generators are quite common and may lead to long supply interruptions

A new generator but already cracks are appearing in the base and the location of the generator is not well protected.

To ensure a long life span it is crucial that the installation is done properly. In this case we see problems that need to be remedied including an analysis of the concrete on which the system is placed as well as improvement of the housing

Another crucial action is to establish a good maintenance system to ensure sustainability and a monitoring schedule to track performance

Risks in water storage

Water can be stored in overhead tanks or ground tanks. Both may involve water quality problems die to contamination by infiltration of water or access by animals and tanks may be leaking

Check carefully for leakages; Fill tank with all valves closed and exploring possible drop in water level after one hour or more; you can also use this exercise to test pump discharge by measuring time it takes to fill the tank; operator also may be able to tell if it takes more time than before

Also check if tank is cleaned / flushed at times

Remedial action:
Repair, clean and disinfect tanks;
Check pump if water production is low or has reduced over time

Risks in distribution network

This is an important risks which is larger when supply is intermittent. Leakage and illegal connections may create considerable water loss and may lead to infiltration of contaminated water

Explore if pipes pass poorly drained areas or close to latrines / septic tanks and find other problems

Check leakage (eg water drop in storage tank with all taps closed

Leaking taps generate water loss and show poor maintenance

Remedial action: Make Inventory of all problems and develop action plan and inform users of possible risks suggesting household water treatment

Risks in water collection and transport

Water may be contaminated during collection, transport and storage

- Hand contact with water and dirty funnels or tubes may contaminate water
- Dirty containers may also be a source of pollution in transport and storage
- Poor drainage of tap stand creates risks as well

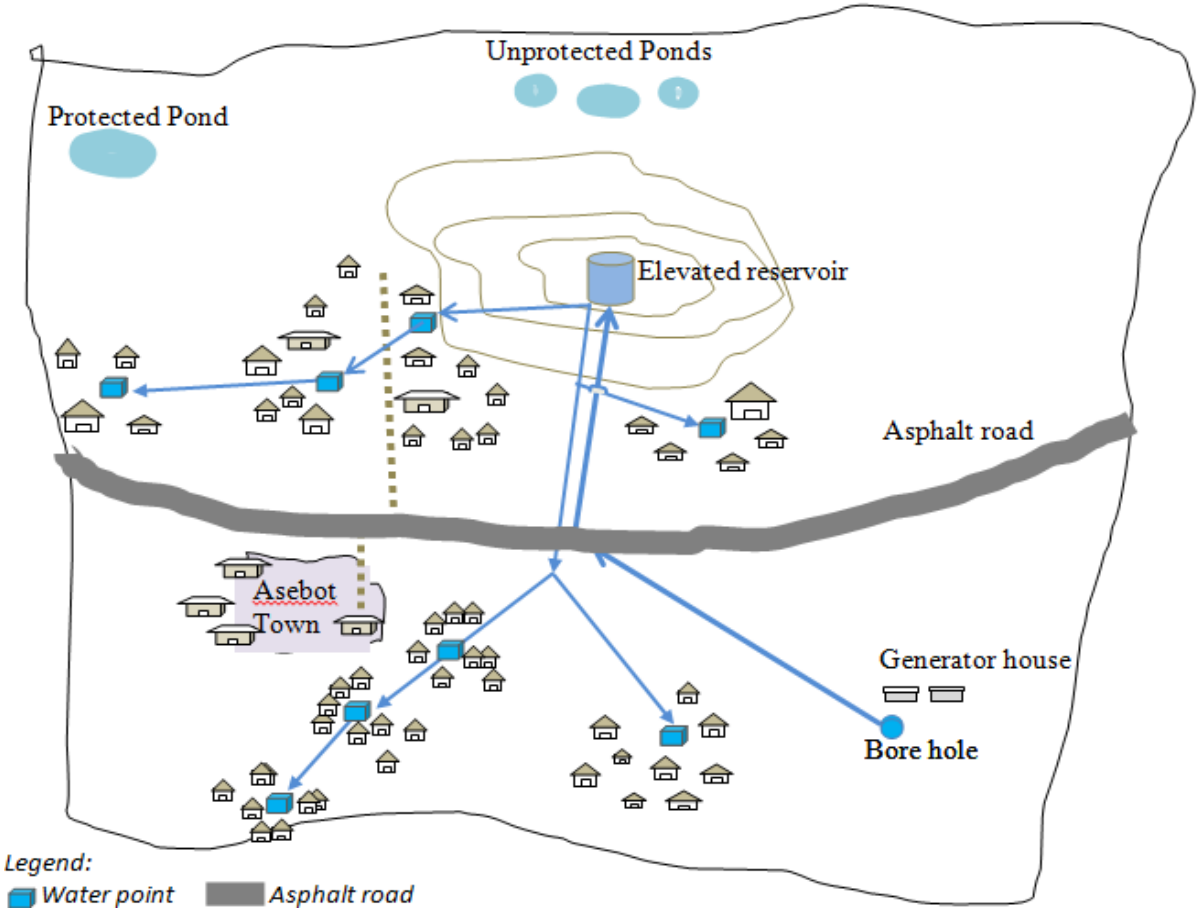
Explore with HEW if diarrhoea is an important problem and what information has been provided to households about safe water handling

Remedial actions: check if water is safe at the source and if feasible check quality in some households (also to show the risk to users). Then explore if safer handling is possible or that home treatment needs to be recommended (particularly for young children and elderly people)

Basic community water supply data

Registering community water supply data as shown in the poster: wells and pumps is the first step of the CWSAP; It is also essential to have a good map of the situation and the system.

Map needs to include main components of the system (borehole with pump, generator, storage tanks, pipe lines, distribution network, tap-stands, house connections), but also main regulation valves. Also good to check and mark special risk areas were pipes cross (marsh land, poorly drained areas etc., and any risk you have identified; location of schools is useful to see distance to waterpoints



Assessment: Piped supply

System	Motorized scheme with 1 borehole
Details	Constructed in 1995 E.C (government funds) 1 reservoir (100 m^3), depth borehole 130m; pump depth 90m; 8 WPs, Pump production 22m^3/hr (takes 4.5 hrs to fill tank with outlet closed)
Quality of system	System not working for one month. Lack of maintenance, poor repairs, important leakages; 2 WP never worked (1 km pipes stolen); 3 defunct for 3 months; System needs indepth analysis
Water quantity	While system was working, 2 - 8 jerry cans (dry season) and 2 - 4 (wet season) collected per household/day. Water use may be restricted because of cost and queuing (very long in dry season)
Water quality	Good taste, first flow shows turbidity (probably water infiltration) no sign of fluorosis; sanitary inspection showed no risk in borehole and pump, but high risk in distribution system and during transport and storage (same jerrycans for pond water)
Continuity	Severe discontinuity; when working 6 hours of supply
Cost	10 cents/20 liter jerrycan initially now 60 cents; users complain also for not having information (accounting not clear)

Short and long term water actions

	Technical interventions	Actor	Before
1	Contract mechanic to check the generator and the pump, carry out maintenance and check what repairs may be needed	WASHCO [a]	May 15
2	Check performance of pump and generator (production, fuel consumption for few days)	Operator	May 8
3	Organize repair of tap stands as many are leaking	WASHCO	May 15
4	Request a detailed analysis of the whole system by the Water Bureau as system needs repairs; good to also include option for water storage at tapstands	WASHCO	May 8
5	Explore option to test bacteriological water quality	WASHCO	May 8
6	Ask Woreda Desk to look into the possibility that water table is falling and if this requires actions in the catchment area	WASHCO	June 15
a	WASHCO has conflict with community, is not properly reporting and will need to be replaced as soon as possible by Kebele leaders		

Short and long term water actions

	Other interventions	Actor	Before
1	Inform users of current risk and advice them about safe water handling and household water treatment (chlorine, solar disinfection)	HEW	May 1
2	Initiate the establishment of a new WASHCO in consultation with Woreda Desk	Kebele leaders	May 1
3	Explore temporarily water rationing to reduce waiting times at tap stands, pending repair of system	WASHCO	May 8
4	Establish maintenance and monitoring system seeking support from Woreda Desk, (simple reporting format)	WASHCO	May 8
5	Train new operators and review their work and reporting	WASHCO	July 1
6	Report to community on income and expenditures and explore the tariff which perhaps is high because of water loss	WASHCO	June 1
7	Review sanitary conditions close to tap stand s (long queues)	HEW	May 1