

3. WSP for wells and pumps

Groundwater is abstracted through shallow and deep wells with or without pumps

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

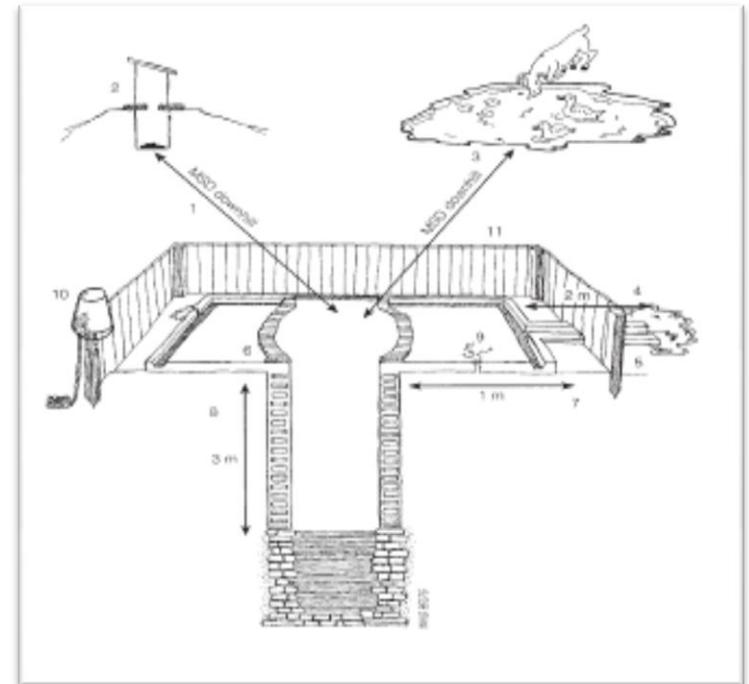


Risks in open shallow wells

Shallow wells usually include water that has infiltrated nearby which may create a risk

Look for risks around the well that may cause bacteriological pollution such as nearby latrines or unlined ponds; also chemical pollution may occur from agricultural practice or Fluor

A common problem is that pollution is introduced through dirty buckets, ropes etc.) and cracks in the headwall of the well; Another problem is that wells may dry up in the dry season



Some of these risks are difficult to overcome and may require household water treatment or even relocating the well changing it into a well with pump

Risks in open shallow wells (2)

- 
- Nearby infiltration of pollution (latrines); if above well at least 25 metres (!!! check water quality!!!)
 - Direct infiltration (holes)
 - Direct pollution from dirty buckets, and ropes
 - Chemical pollution from nearby fields or already in the ground (Fluor)

- Well may dry up in dry season

Mitigation actions

- 
- Remove the nearby sources of infiltration
 - Repair or replace the head wall
 - Cover the well
 - Put extraction device (rope & bucket, rope pump (both some water hand contact), other pump)
 - Introduce household water treatment

- Wells that dry up still are good supplementary source, but partial alternative is needed; options: deepening, (hand)drilled well, other

Risks in shallow wells with pumps

Shallow wells with pumps have a lower risk as there is no direct water contact unless pump allows dirt, animals, or water entering the well; Other risks related to shallow well are the same



Check with WASHCO if water can infiltrate through the pump or apron which for rope pumps is more easy

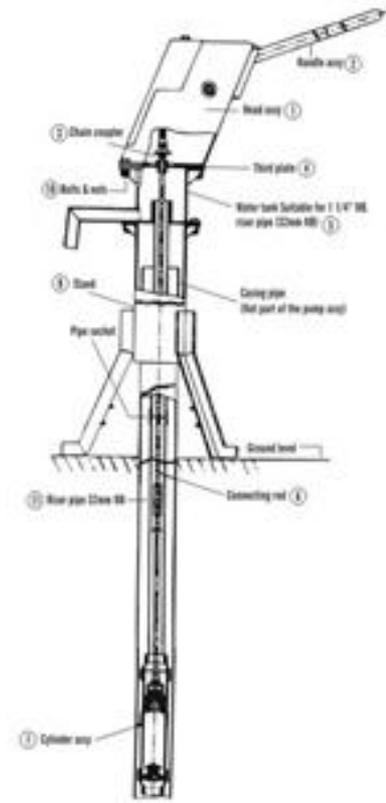
Risks in deep wells with handpumps

Deep wells usually contain water that is infiltrated at a different location and may have a low risk

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).

Water quantity may also be an issue. Check with the community if they have water problems and if it for example takes longer to pump water, which may be the result of poor maintenance or a falling water table .

Testing of chemical water quality may be needed



Risks with rope pumps



- Apron being below ground level
- Hand contact with rope
- Contamination during repairs
- Frequent and late repairs
- Lack of water for part of the year

Mitigation:

- Ensure good apron above ground
- Avoid hand contact with rope
- Disinfect after repairs
- Household water treatment
- Take action against producer if quality is poor

If water is lacking for part of year find complementary source

Risks with other hand pumps



- Apron allowing infiltration
- Hand contact with water or funnel
- Contamination during repairs
- Poor maintenance and late repairs
- Lack of water for part of the year
- Too many users (long waiting lines)

Mitigation:

- Ensure good apron repair cracks etc.
- Avoid hand contact with water
- Disinfect after repairs
- Household water treatment
- Improve preventive maintenance
- Introduce monitoring
- Find (construct) additional water point(s)

Important to explore short and long term water security (Woreda Desk)

Short and long term water security



Groundwater is rainwater that has infiltrated into the ground and this may take place nearby (shallow groundwater) or at a larger distance. Less water may infiltrate due to lower rainfall, but also due to changes in the catchment area, which also may affect water quality. An indication of problems may be the lower discharge of pumps in the dry season suggesting a fall of the water table.

Mitigation:

Is not an issue for an individual community; it requires catchment management and improvement

Woredas and Water Bureaus need to explore changes in catchments

Basic community water supply data

Registering these data is the first step of the KWSP

Name	Dadeche community
Population	Some 2000 population with very limited grow
Occupation	Mixed Farming
Type of water supply systems	<ul style="list-style-type: none">● 7 Springs including 4 with reservoir and (broken) taps● River and reservoir for livestock and domestic use● 1 Borehole with handpump
Water access	Most Households can access water within 1.5 km
% population using improved water sources	Some 80% of community uses protected springs or handpump but springs have a low production in dry season; and handpump also has problems
Schools	No water supply; no water storage facilities
Health centre	No water supply; no water storage facilities

Assessment: deep well with handpump

System 1	Borehole with handpump
Details	Constructed in 2002 E.C (government fund); borehole depth 100 m; pump depth 30 m. Apron with drainage; India mark 2 pump
Technical quality of system	Three years old; lacks maintenance (leaking foot valve (4 strokes to start water flow); leaking cup seals (community indicates that it takes longer to fetch water) loose nuts); fence is broken
Water quantity	Users have to wait on average over one hour to fetch water (this may be improved by repairing the pump, but may not be sufficient)
Water quality	Good taste, no odour; no turbidity; no sign of fluorosis; sanitary inspection showed a risk as well cover is cracked; yet a risk exist during collection (dirty funnel and containers), transport and storage; HEW indicates high incidence of diarrhoea at start of rainy season
Continuity	System unlocked during 8 hours/day; in dry season waiting times increases (possibly due to falling water table).
Cost	People pay 0,5 Birr per 20 litre to caretaker when fetching water; they do not get information and are suspicious; People limit water use because of cost using alternatives (rainwater, ponds etc.) if possible

Short and long term water actions (1)

	Technical interventions	Actor	Before
1	Contract mason to repair apron and improve drainage of spill water to avoid infiltration	WASHCO	May 8
2	Organize repair of fence (with user support)	WASHCO	May 8
3	Contract mechanic to repair the pump	WASHCO	May 8
4	Recheck discharge and waiting time after repair; if not sufficient then approach Woreda Desk to learn about options for additional water supply	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 1

Short and long term water actions (2)

	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	Establish maintenance and monitoring system seeking support from Woreda Desk, (simple reporting format)	WASHCO	May 8
3	Review reporting by caretaker and consider the need for additional training	WASHCO	June 1
4	Report to community on income and expenditures	WASHCO	June 1
5	Explore options with users to prioritise handpump water for drinking promoting use of other sources for other purposes to reduce waiting time at handpump	WASHCO	July 1
6	In case of long queues explore sanitary risk as open field defecation may be practiced; if so make a plan to build latrines and urinals (male/female)	WASHCO with HEW	July 1