GUIDELINES FOR

Assessing the Risk to Groundwater from On-Site Sanitation







BRITISH GEOLOGICAL SURVEY

COMMISSIONED REPORT CR/01/142

Guidelines for Assessing the Risk to Groundwater from On-Site Sanitation

A R Lawrence, D M J Macdonald British Geological Survey, UK

A G Howard¹, M H Barrett, S Pedley Robens Centre for Public and Environmental Health, UK (¹ presently with Water, Engineering and Development Centre, UK)

K M Ahmed University of Dhaka, Bangladesh

M Nalubega Makerere University, Uganda

Key words

Groundwater, water supply, sanitation, boreholes, wells, springs, risk assessment, monitoring, guidelines

Bibliographical reference

ARGOSS 2001. Guidelines for assessing the risk to groundwater from on-site sanitation. *British Geological Survey Commissioned Report*, CR/01/142. 97pp.

© NERC 2001

British Geological Survey 2001

BRITISH GEOLOGICAL SURVEY

The full range of Survey publications is available from the BGS Sales Desks at Nottingham and Edinburgh; see contact details below or shop online at www.thebgs.co.uk

The London Information Office maintains a reference collection of BGS publications including maps for consultation. The Survey publishes an annual catalogue of its maps and other publications; this catalogue is available from any of the BGS Sales Desks.

The British Geological Survey carries out the geological survey of Great Britain and Northern Ireland (the latter as an agency service for the government of Northern Ireland), and of the surrounding continental shelf, as well as its basic research projects. It also undertakes programmes of British technical aid in geology in developing countries as arranged by the Department for International Development and other agencies.

The British Geological Survey is a component body of the Natural Environment Research Council.

Keyworth, Nottingham NG12 5GG

Fax +44 115-936 3241
Fax +44 115-936 3488
e-mail: sales@bgs.ac.uk
www.bgs.ac.uk
Shop online at: www.thebgs.co.uk

Murchison House, West Mains Road, Edinburgh EH9 3LA

#44 131-667 1000
 Fax +44 131-668 2683
 e-mail: scotsales@bgs.ac.uk

London Information Office at the Natural History Museum (Earth Galleries), Exhibition Road, South Kensington, London SW7 2DE

Ŧ	+44 20-7589 4090	Fax +44 20-7584 8270
T	+44 20-7942 5344/45	email: bgslondon@bgs.ac.uk

Forde House, Park Five Business Centre, Harrier Way, Sowton, Exeter, Devon EX2 7HU

a +44 1392-445271 Fax +44 1392-445371

Geological Survey of Northern Ireland, 20 College Gardens, Belfast BT9 6BS

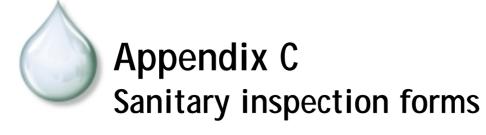
Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB

☎ +44 1491-838800	Fax +44 1491-692345

Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire SN2 1EU

2 +44 1793-411500 Fax +44 1793-411501 www.nerc.ac.uk



I	Type of facility	BOREHOLE WITH HANDPUMP	
1.	General Information	District:	
		Parish	
		Organisation	
2.	Village/zone:		
3.	Date of Visit		
4.	Water sample taken? .	Sample No FC/100ml	
П	Specific diagnostic in	nformation for assessment	Risk
1.		nm of the borehole calculated from the manual)	Y/N
2.	. Is there a latrine uphill of the borehole?		Y/N
3.		urces of pollution within 10m of borehole? cultivation, roads, industry etc)	Y/N
4	Is the drainage faulty	allowing ponding within 2m of the borehole?	Y/N
5.	Is the drainage channe	l cracked, broken or need cleaning?	Y/N
6.	Is the fence missing or	faulty	Y/N
7.	Is the apron less than	1m in radius?	Y/N
8.	Does spilt water collec	t in the apron area?	Y/N
9.	Is the apron cracked o	r damaged?	Y/N
10. Is the handpump loose at the point of attachment to apron?			Y/N
Total Score of Risks/10 Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low			
III Results and recommendations:			
The	The following important points of risk were noted: (list nos. 1-10)		
Signature of Inspector:			
Comments:			

I	Type of facility	PROTECTED SPRING	
1.	General Information	District:	
		Parish	
		Organisation	
2.	Village/zone:		
3.	Date of Visit		
4.	Water sample taken? .	Sample No FC/100ml	
П	Specific diagnostic ir	nformation for assessment	Risk
1.	Is the spring unprotect	ted?	Y/N
2.	Is the masonry protect	ing the spring faulty?	Y/N
3.	Is the backfill area beh	ind the retaining wall eroded?	Y/N
4.	Does spilt water flood	the collection area?	Y/N
5.	Is the fence absent or f	aulty?	Y/N
6.	Can animals have acce	ss within 10m of the spring?	Y/N
7.		l and/or withinm of the spring? calculated from the manual)	Y/N
8	Does surface water co	llect uphill of the spring?	Y/N
9.	Is the diversion ditch a	above the spring absent or non-functional?	Y/N
10	Are there any other sol (e.g. solid waste)	urces of pollution uphill of the spring?	Y/N
	tal Score of Risks k score: 9-10 = Very hig	gh; 6-8 = High; 3-5 = Medium; 0-3 = Low	/10
111	Results and recomme	endations:	
Th	e following important p	oints of risk were noted:	(list nos. 1-10)
Sig	nature of Inspector:		
Со	mments:		

I Type of facility	DUG WELL WITH HANDPUMP/WINDLASS		
1. General Information	District:		
	Parish		
	Organisation		
2. Village/zone:			
3. Date of Visit			
4. Water sample taken?	Sample No FC/100ml		
II Specific diagnostic i	nformation for assessment	Risk	
1. Is there a latrine with (please put in distance	inm of the well? e calculated from the manual)	Y/N	
2. Is the nearest latrine u	uphill of the well?	Y/N	
	rce of pollution within 10m of well? cultivation, roads, industry etc)	Y/N	
4. Is the drainage faulty	allowing ponding within 2m of the well?	Y/N	
5. Is the drainage chann	el cracked, broken or need cleaning?	Y/N	
6. Is the fence missing o	r faulty?	Y/N	
7. Is the cement less that	n 1m in radius around the top of the well?	Y/N	
8. Does spilt water collect	ct in the apron area?	Y/N	
9. Are there cracks in the	e concrete apron?	Y/N	
10. Is the handpump loos	se at the point of attachment to well head?	Y/N	
11. Is the well-cover insar	nitary?	Y/N	
Total Score of Risks/11 Risk score: 9-11 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low			
III Results and recommendations:			
The following important p	points of risk were noted:	(list nos. 1-11)	
Signature of Inspector:			
Comments:			

I.	Type of facility	DEEP BOREHOLE WITH MECHANICAL PUMPING	
1.	General Information	District:	
		Parish	
		Organisation	
2.	Village/zone:		
3.	Date of Visit		
4.	Is water sample taken?	Sample No FC/100ml	
П	Specific diagnostic in	formation for assessment	Risk
1.		ver withinm of the pumphouse? calculated from the manual)	Y/N
2.	Is the nearest latrine un (a pit latrine that perce		Y/N
3.	If there any other source (e.g. animal excreta, ru	ce of pollution within 10m of the borehole? bbish, surface water)	Y/N
4.	Is there an uncapped w	vell within 15-20m of the borehole?	Y/N
5.	Does the apron at the v	wellhead extend for less than 2m radius?	Y/N
6.		und the pumphouse faulty? g ponding and/or leakage to ground)	Y/N
7.		he installation damaged in any way which ccess or any unauthorised entry?	Y/N
8.	Is the floor of the pum	phouse permeable to water?	Y/N
9.	Is the well seal insanita	ry?	Y/N
10.	Is the top 3m of the bo	rehole sealed with an impermeable lining?	Y/N
	al Score of Risks k score: 9-10 = Very hig	h; 6-8 = High; 3-5 = Medium; 0-3 = Low	/10
ш	Results and recomme	ndations:	
The	e following important po	pints of risk were noted:	(list nos. 1-10)
Sig	nature of Inspector:		
Coi	mments:		