Good Practice 6

Greywater Systems

Greywater is all household wastewater excluding toilet/latrines wastewaters, so it comprises wastewater from sinks, showers and, in houses not connected to a piped water supply, from bowls used for food preparation and cleaning cooking utensils, plates, etc. The type of water supply generally determines the amount of greywater produced and thus the options for its collection, treatment and disposal or reuse.

The simplest method of greywater disposal, suitable for households whose water consumption is low (~25 litres per person per day or less) is an on-plot soakaway (50- 80 cm diameter, 1- 1.5 m deep and filled with large stones or brickbats). Alternatively, the greywater can be used to irrigate vegetables in a garden plot (a "greywater garden") or field. For households with a pour-flush toilet (see 'Good Practice 4'), greywater can be used to flush the toilet, with any excess being used on a greywater garden.

Simplified sewerage ('Good Practice 8') and settled sewerage ('Good Practice 11') remove all household wastewaters, so separate arrangements for greywater are not necessary, although, if water is scarce and/or expensive, some of the greywater can be used to flush pour-flush toilets.

In periurban areas and in small towns and large villages greywater could be removed in 'greywater drains' or greywater sewers, but these are likely to cost much the same as simplified sewerage and are therefore unlikely to be the greywater solution of choice. Stormwater drains can be easily designed to carry greywater flows by modifying the cross-section of the drain (Figure 1), but it is important to keep the drain free of garbage, leaves, etc., otherwise the greywater will pond and culicine mosquitoes breed, with a resulting risk of the transmission of Bancroftian filariasis.

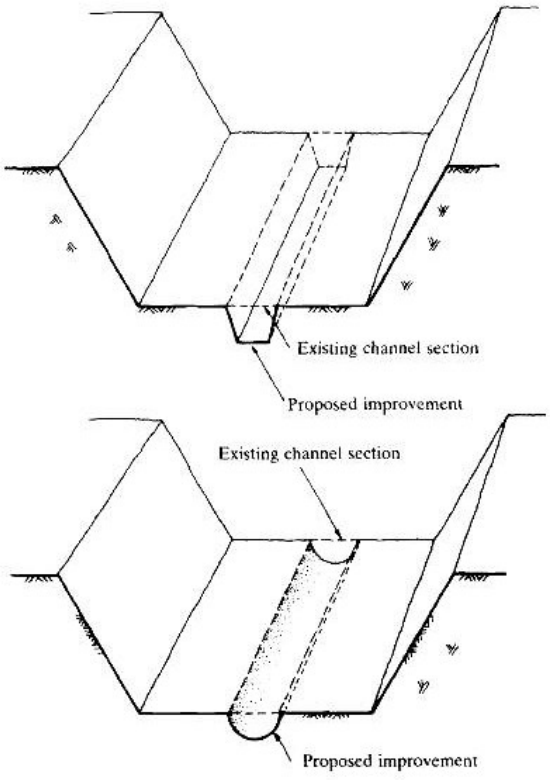

Figure 1. Stormwater drain modified to carry greywater flows (Kalbermatten et al., 1982).

Reference

Kalbermatten, J. M., Julius, D. S., Gunnerson, C. G. & Mara, D. D. (1982). *Appropriate Sanitation Alternatives: A Planning and Design Manual* (World Bank Studies in Water Supply and Sanitation No. 2). Johns Hopkins University Press, Baltimore, MD; available at http://go.worldbank.org/7B6FR34OO0.

Further information

Carden, K., Armitage, N. and others (2007). The use and disposal of greywater in the non-sewered areas of South Africa: Part 1 – Quantifying the greywater generated and assessing its quality. *Water SA* **33** (4), 425-432; available at: http://www.wrc.org.za/downloads/watersa/2007/Jul%2007/2123a.pdf.

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Morel, A. and Diener, S. (2006). *Greywater Management in Low- and Middle-Income Countries*. Sandec/EAWAG, Dübendorf; available at: http://www.eawag.ch/organisation/abteilungen/sandec/schwerpunkte/ewm/projects/project_greywater.

Ridderstolpe, P. (2004). *Introduction to Greywater Management*. Stockholm Environment Institute, Stockholm; available at: http://www.ecosanres.org/pdf_files/ESR_Publications_2004/ESR4web.pdf.

University of Leeds, Greywater Management, webpage at: http://www.personal.leeds.ac.uk/~cen6ddm/GreywaterManagement.html.