

Local flow systems occur in hilly areas where groundwater recharges on the hills and discharges into the adjacent valleys. Recharge and discharge areas are separated by a relatively short distance ranging up to a few kilometers.

Regional flow systems occur on extensive plains that are underlain by deep sedimentary basins (e.g. Great Artesian Basin and the Murray Darling Basin) where groundwater can travel over large distances (e.g. 50 km) and at great depths.

Intermediate flow systems lie somewhere between local and regional systems and flow paths can range from 5-50 km.

Recharge and discharge

Recharge is unused rainwater which moves down through the soil past the root zone to the watertable, causing it to rise. Discharge is the process whereby groundwater escapes to the surface by evaporation, transpiration from vegetation, or from springs or seepage zones where dryland salinity may then result.

While the actual physical movement of water between recharge and discharge areas is very slow, it is the hydraulic pressure that drives the system. Adding more water to recharge areas increases the hydraulic head which pushes more water out at the lower end (as saline discharge). It is therefore important to manage recharge since this is the primary cause of dryland salinity.

The recharge area

Recharge can occur over the whole landscape, although some areas may drain more readily to the watertable than other areas. These are known as high recharge areas and are priority areas for management in saline catchments. Creeks, rivers, lakes and wetlands can also act as recharge areas to groundwater.

Detecting high recharge areas

Areas of higher recharge can be identified by using soil, landscape and vegetative indicators such as:

- ground surfaces that allow water to soak in rapidly (e.g. sandy, gravelly, rocky surfaces),
- freely draining subsoils (e.g. deep sands or well structured clays with old root channels),
- areas where water concentrates and drains rapidly (e.g. depressions, gravelly stream beds),
- unarable and degraded landscapes with low vegetative cover (rocky ridges, eroded sandhills).

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