IMPROVING IRRIGATION EFFICIENCY PROJECT

Management Tools

Floating Flag - Testwells

Introduction

Perched water tables occur due to an impermeable layer in the soil profile, such as clay or sheet rock. Irrigation water that passes the below the root zone is restricted by this layer , causing an artificial watertable.

Rising watertables can be highly saline and move salt deposits in the soil up the profile into the root zone. Salinity and waterlogging in the root zone can cause productivity loss for the crop and possibly death.

A perched water table usually occurs due to a large amount of drainage water. While leaching factors may be required in irrigation areas, they may not be required each irrigation.

Salinity tests can be done on a regular basis to determine if a critical level has been reached and a leaching fraction required. This can save water, and reduce the likelihood of a perched water table.

Trench showing perched water table Installed Floating Flag

Installation

Floating Flags are installed to a depth below the root zone or until a clay layer is reached to monitor a perched water table.
Floating Flag testwells are easy to construct and instructions are over the page.

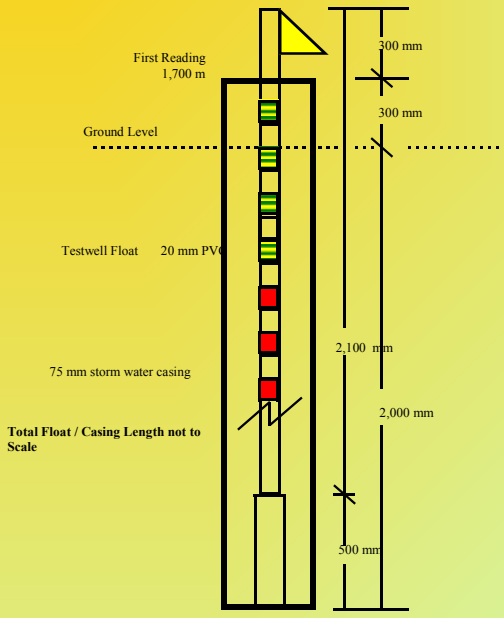
Site Selection

Sites are usually selected in low lying areas where excess irrigation water will flow to.
If an area is know for waterlogging problems then this would be an ideal location.

Monitoring

Monitoring should occur on a regular basis. Readings should be taken before and one to two days after an irrigation or rainfall event. Recording sheets should be kept with the date, reading before, reading after , irrigation time, and comments.
To take a reading observe the marker at the top of the casing. If the first reading 1.7 for a 2 meter testwell (float sinks in water) and you are at the 2nd marker then the water table will be 1.6 meters from the surface. Generally if the water table is within a 1m then action should be taken to avoid an affect on the crop. This can depend on the crop and soil.

Example of Floating Flag diagram for a 2m testwell



River Murray Catchment Water Management Board
A healthy river – sustainable uses

RENMARK TO THE BORDER LOCAL ACTION PLANNING ASSOCIATION INC.
Natural Heritage Trust
Helping Communities Helping Australia

Mid Murray Local Action Planning Association
Riverland West Local Action Planning
Loxton to Bookpurnong
A action for our environment...
COORONG DISTRICT COUNCIL

IMPROVING IRRIGATION EFFICIENCY PROJECT

Management Tools

Floating Flag - Testwells

Installation

Monitoring Wells should be installed in accordance with the following principles.

1. The proposed Test Well should be completed to the current water table or Blanchetown clay layer, or to a depth of no greater than two metres.

2. The **testwell casing** is constructed with 75mm PVC storm water pipe. With one meter from the bottom up, of hacksaw slots (staggered) on opposite sides of the casing at .300mm intervals. A 75mm storm water cap is glued to the bottom with a small hole drilled in it.

3. The casing of the proposed Well should extend .300mm above the natural surface of the land.

4. The casing is placed in the auger hole and backfilled with course washed River sand or fine gravel until the slots are covered. The rest is backfilled to ground level with the natural topsoil extracted when the hole was bored.

5. A 75mm storm water push on cap is pushed on top of the casing pipe. This has a 32mm hole drilled in it if the Test well is to have a floating flag installed in it.

6. **Float pole:** 20mm cl12 upvc, manufactured to a length that when at the bottom of the Test well is .300mm above the top of the casing pipe (this must take into account the .500mm float at the bottom).
   1 – 20mm end cap
   1 – Plastic marker flag

A floating flag is constructed from upvc pipe as follows (calibration table 1):
Float: .500mm x 40mm cl6 upvc
   1 – 40mm end cap
   1 – 40mm x 20mm reducer coupling

Note: New pre-made styrene floats are available for the Test well float poles (calibrations table 2). If these are to be used the 20mm cl12 upvc is all that is needed and will extend to .300mm above the Test well casing.

Details can be obtained from the River Murray Catchment Water Management

Table 1: Floating Flag Calibration — PVC Float

Casing Length From Ground Level	*Casing Above Ground (standard)*	*Total Casing Length*	*40mm Float standard*	*20mm Float Pipe Inc 300mm At Top*	*Total Float Length*	*Depth Float Sinks In Water*	*First mm Reading Level with Casing*
1.000 m	.300 mm	1.300 m	.500 mm	1.100 m	1.600 m	.300 mm	0.700 m
2.000 m	.300 mm	2.300 m	.500 mm	2.100 m	2.600 m	.380 mm	1.620 m / 1.600 m
2.200 m	.300 mm	2.500 m	.500 mm	2.300 m	2.800 m	.425 mm	1.775 m
2.500 m	.300 mm	2.800 m	.500 mm	2.600 m	3.100 m	.440 mm	2.060 m

Table 2: Floating Flags Calibration - Foam Floats (from RMCWMB)

Casing Length From Ground Level	*Casing Above Ground (standard)*	*Total Casing Length*	*Total 20mm Float Length Inc 300mm above casing*	*Depth Float Sinks In Water*	*First mm Reading Level with Casing*
1.000 m	.300 mm	1.300 m	1.600 m	140mm	860mm
1.200 m	.300 mm	1.500 m	1.800 m	150mm	1,050mm
1.500 m	.300 mm	1.800 m	2.100 m	170mm	1,330mm
1.700 m	.300 mm	2.000 m	2.300 m	200mm	1,500mm
2.000 m	.300 mm	2.300 m	2.600 m	200mm	1,800mm

For Further information contact your local Irrigation Field Officer:
Renmark Irrigation Trust 85 864 510
Central Irrigation Trust 85 807 100
Private Areas – Riverland 85 824 477
Private Areas – Lower Murray 85 325 262