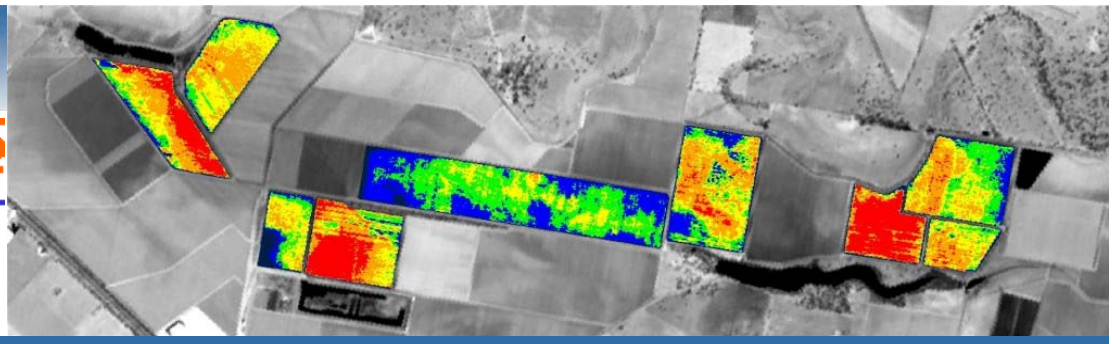
www.terrabyte.net.au
enquiries@terrabyte.net.au
Ph. 02 69719144

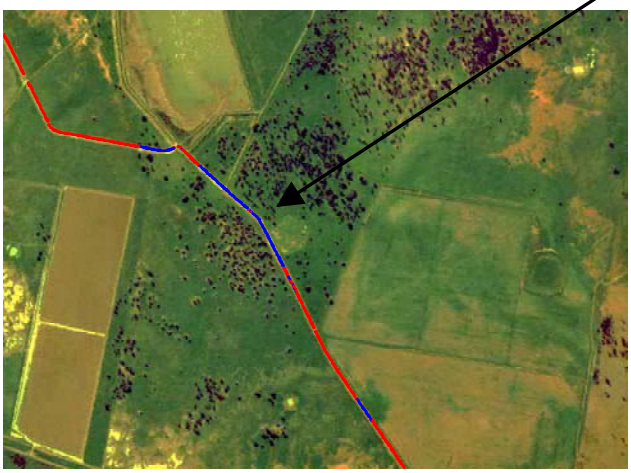


Channel Seepage Mapping: Trangie NSW

Problem

A private irrigation scheme in Central West NSW was losing a significant amount of water to transmission losses through seepage. No obvious symptoms of seepage; boggy areas, rushes, salinity etc, could be fund adjacent the channel therefore it was assumed that the water was moving to depth through the floor.

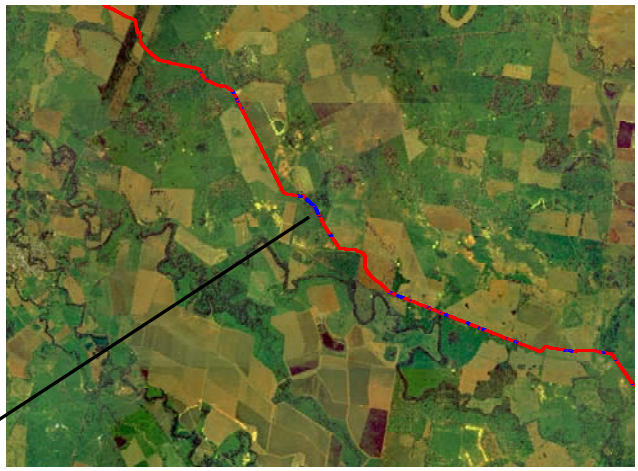
A potential solution was to compact the entire 51 km length of the problem section with a compacting roller. Another solution was to clay line with costs of up to $6,000 per km.



Low conductivity areas (blue) match landscape changes identified from remote sensing

Solution

Terrabyte Services was contracted to perform an Electromagnetic (EM31) survey of the irrigation channel floor. This was done while the channel was full to limit the effect of soils with differing residual moisture levels.



Collected data is positioned with sub-metre accuracy allowing other data sets to be incorporated in the analysis

The channel was mapped twice, to confirm data accuracy, with a DGPS equipped pontoon. Survey time 10 hours

Benefits

Data showed only 4 km of the total 52 required further investigation and possible repair.

Rapid, accurate mapping.
Even in very shallow water

Ponding test Trangie NSW at interface of high and low conductivity zones (Test results and photo courtesy of Sustainable Soils Management Warren NSW)

Ponding channels sections to quantify seepage losses

Following data collection and analysis areas of concern are identified and channel sections are filled then blocked to determine actual rates of loss.

Earth coffer dams or fabric water inflatable weirs can be installed and losses accurately gauged

Electromagnetic surveying can accurately target areas required for compaction

Benefits of Electromagnetic surveying followed by ponding tests

- Rapid and identification of potential problem areas.
- All data captured with sub metre or sub cm accuracy allowing GIS analysis with other data sets such as satellite imagery, bore logs or piezometer readings
- Ponding tests can be accurately positioned to give best results rather than merely between two control structures.
- Areas of high clay can be identified, using the electromagnetic sensors, as a source for lining material
- Lengths of channel required for clay lining or compaction can be identified to within 10 metres

Email:	**jmedway@terrabyte.net.au**	**Jon Medway**	**0427 254 760**	**Phone**	**02 69719144**
Web:	**www.terrabyte.net.au**	**John Lucas**	**0428 252 210**	**Fax**	**02 60710177**