CASE STUDY
September 2013

Managing Percussion Drill Samples

Good management of percussion drill samples is particularly important when operating in areas of high value agricultural land to minimise the impact of the collection, storage and disposal of samples on the agricultural operations and reduce the cost of rehabilitation.

Background

Unity Mining Limited (previously Cortona Resources Limited) has been conducting drilling campaigns on high value pasture paddocks in recent years. For these drilling campaigns to meet landholder expectations, the drilling activities must have minimal impact on the pasture. The landholders had invested a great deal of time and money to develop their pasture and stock and required minimal interference.

The Solution

Managing the collection, storage and disposal of drill samples is key to minimising the impact of percussion drilling operations.

Although samples are collected in plastic bags and laid in rows on the ground, percussion drilling involves several processes where chips and dust may be deposited on the ground due to spillage and venting of cyclone and outside return hoses.

Minimising disturbance and damage to the ground cover reduces the amount of rehabilitation and makes the drilling process more acceptable to the landholder.

Sample Management

To minimise the impact of the collection, storage and disposal of percussion samples on pasture, Unity incorporated the following steps into its drilling procedures:

- Using dust suppression to reduce dust and rock fragments blowing over the pasture
- Using above ground sumps to collect and manage water from the drill hole (see Case Study 3)
- Removing sample bags to a dedicated bag farm as soon as practical.

Dust Suppression

A dust suppression system greatly reduces the amount of dust and chips spilled from a conventional cyclone and the amount of airborne dust vented from the cyclone and outside return. An ideal dust suppression unit should have the ability to capture and filter both the sample and outside return material. It should also have a bin to catch dust and chip spillage and any water, which can then be drained into an above ground sump.

A dust suppression unit also reduces the amount of material to be cleaned up after drilling has finished and minimises the grey dust 'scar' from the cyclone and outside return hose.

Dust suppressor and sump

The handling of dust and spillages will depend on the particular dust suppression system used. Using black plastic beneath cyclones to catch spillage makes clean-up easier. Eliminating material falling on the ground significantly reduces the clean-up time and impact of the drilling.

Sample Bags

The short-term impact of storing the plastic sample bags on pasture is sweating and killing of the grass. The long-term impact on pasture is that the bags deteriorate over time, can be disturbed by stock and the clean-up process takes more time and money. Removing the sample bags to a suitable bag farm once the hole was complete minimised the impact of the bags on the pasture, reduced the rehabilitation time and cost and met landholder expectations.

The bag farm needs to be readily accessible and in a location that will not cause additional management and rehabilitation issues if bags are stored long term. Removing sample bags involves manual handling, and correct lifting techniques must be used. It is important to place the bags in ordered rows, with each labelled with hole number, in case further sampling is required. Bag farms are usually fenced to prevent interference from stock.

When the plastic sample bags are no longer required the bags may be recycled or disposed of in an appropriate landfill site.

Disposal of Reverse Circulation (RC) Chips

Disposing of RC chips can be difficult, especially if they contain sulphides or deleterious elements like arsenic or heavy metals. Under the Office of Environment and Heritage (OEH) Waste Classification Guidelines, material deemed to be contaminated has to be disposed of in a licenced facility. To determine the Waste Classification of the RC chips and whether they are 'contaminated' or pose a risk to the environment from leaching of elements or acid generation, the RC chips need to be analysed according to Australian Standard AS4439.3-1997. The analysis should be tailored to reflect the type of contamination risk.

The analyses are Specific Contaminant Concentration (SCC) for total metals and a TCLP leach at final pH 5 followed by ICP analysis of the leachate for metals. The results need to be analysed by an Environmental Consultant and a certificate provided as to the Waste Classification of the material. The OEH Waste Classification Guideline contains contamination tables with metal threshold levels.

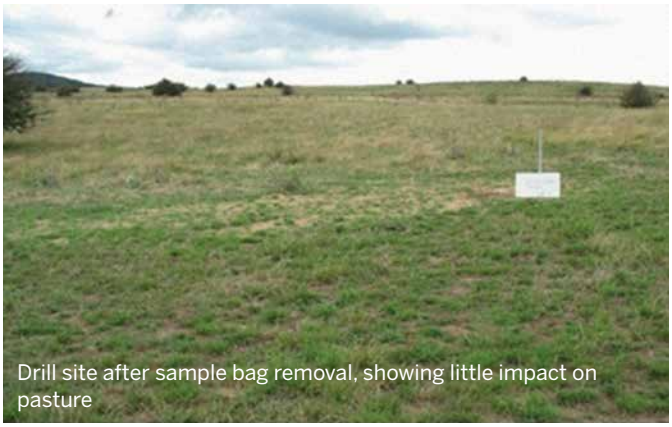
The final Waste Classification will determine the disposal method.

If the RC chips are to be stored at the project site, the waste classification will determine the appropriate measure, which will include storage in a bunded area and may include impermeable (plastic) liners and covers.

RC chip disposal needs to be planned for in the drilling program as it is very easy to accumulate many tons of material.

Conclusion

Good management of percussion samples is key to minimising the short- and long-term impacts of the sampling process and storage on the land, and to reducing the amount of clean up and disruption to landholder activities.



Drill site after sample bag removal, showing little impact on pasture