

## Land Based Systems



Effluent ponds

Land based effluent disposal systems appear to be the most sustainable effluent management systems in the long term. For this reason Environment Bay of Plenty has a policy of trying to encourage farmers to dispose of their farm dairy effluent on to land wherever possible.

Advantages for farmers of land-based systems include:

- Consent applications will generally not be publicly notified. This can save cost and processing time.
- A longer term is possible, up to 20 years for well designed pasture irrigation systems.
- Compliance monitoring costs are generally lower.
- Effluent spread onto the land by irrigation has significant fertiliser value.

Environment Bay of Plenty authorises a variety of land

based treatment and disposal systems:

- Pond soakage—where the effluent is collected in a pond system and is partially treated before soaking into the soil through the bottom of the pond. This is generally limited

to herds of less than 200 cows and is not allowed in some areas.

- Land soakage—where the effluent soaks into an area of land larger than a pond. This may be after treatment in a pond or directly to the land - restrictions on herd size apply.
- Pasture irrigation—where effluent is sprayed onto pasture. The effluent may be treated or untreated - restrictions are placed on area and applications rates.

The annual nitrogen applications from effluent to any land area receiving dairy shed effluent should be in the range of 150-200 kg/per ha. This equates to:

- if untreated, 3.0-4.0 ha required for 100 contributing cows.
- if treated, 1.5-2.0 ha required for 100 contributing cows.



Irrigation sump



Travelling irrigator

In designing an irrigation system consideration of fertiliser applications should be taken into account.

Alternatively where the effluent application area is used for cropping, silage or hay making (annually), up to 250 kg N/ha may be applied annually. This equates to 2.4 ha/100 cows (untreated) and 1.2 ha/100 cows (treated).

It may not be necessary to make large capital investment in an on-farm system as the region has a number of contractors who specialise in effluent spreading and who are aware of Environment Bay of Plenty's guidelines and requirements.

Reducing the volume of effluent to be stored, can significantly

reduce the capital and operating costs of the system. It can also improve the performance of the treatment system as retention times in the sump and/or pond systems are increased when stormwater is diverted.

Unless it is required to supplement irrigation, rainwater from roofs and yards should not run into the sump/ponds. Roof guttering and piping should be installed.

A stormwater diversion can be used to redirect the roof and yard stormwater. Stormwater should be diverted before the sump and directed via overland flow to a waterway.

Make sure the diversion is closed during milking and washdown or effluent could enter a drain leading to a waterway which would be polluted.

It is important that all land disposal systems are managed to prevent overflow or seepage of effluent to drains or water courses. This involves regular monitoring of pond water levels, regular maintenance of the pump and irrigation lines and shifting of

the irrigator to prevent ponding or overland flow to ensure compliance with resource consent conditions.

Low-lying areas with high water tables may not be suitable for certain land disposal methods. Contact Environment Bay of Plenty for advice on appropriate methods.

An alternative method in this case is the Integrated System Process. This is a self-supporting digester system that processes manure while producing energy (biogas) of nutrients suitable for organic agriculture.



Integrated system process



Effluent irrigation by a contractor



For further information and advice, contact Environment Bay of Plenty:

Telephone: 0800 ENV BOP (368 267)  
 Facsimile: 0800 ENV FAX (368 329)  
 Pollution Hotline: 0800 73 83 93  
 Email: [info@envbop.govt.nz](mailto:info@envbop.govt.nz)  
 Website: [www.envbop.govt.nz](http://www.envbop.govt.nz)  
 Address: 5 Quay Street, P O Box 364, Whakatane, New Zealand

Farm dairy information is also available at: [www.dexcel.co.nz](http://www.dexcel.co.nz)

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