



Dairy effluent storage

A guide on how dairy effluent storage assessments will be rolled out in the Wellington region

September 2012

1. Introduction

This guide outlines specific requirements and direction for the monitoring of dairy effluent consents in the Greater Wellington region. It has a particular focus on storage requirements for dairy effluent.

In total there are approximately 170 dairy farms in the Wellington region. Each of those dairy farms hold resource consents which authorise the discharge of collected dairy effluent (mainly arising from dairy shed washdown water) to land.

2. Farm Dairy Effluent compliance requirements

2.1 Current requirements

Most dairy effluent consents have been issued under Rule 13 of the Regional Discharges to Land Plan (RDLP). This rule sets out four standards and terms which are to be complied with as follows:

Standards and terms

(a) no contaminants shall be able to enter water which is not part of the treatment system, except by way of imperceptible seepage, as a result of:

- (i) inadequate storage facilities;
- (ii) seepage or leakage from any part of the system, including treatment and storage facilities;
- (iii) runoff into any surface water body;
- (iv) spray drift;
- (v) insufficient spreading of effluent;
- (vi) application of effluent to water-logged or flooded land; or
- (vii) equipment failure;

(b) the discharge shall occur no less than 20 metres from the neighbouring property boundary, any surface water body, farm drain, water supply race, any bore, or the coastal marine area;

(c) the system shall be maintained in an efficient operating condition at all times; and

(d) no stormwater collected from roofs or surrounding land shall be allowed to enter the system.

One of the difficult areas to manage compliance of the standard and terms identified above is establishing clear guidance and interpretation to ensure that no contaminants enter water as a result of “*inadequate storage facilities*” and “*the application of effluent to water-logged or flood land*”.

2.2 Dairy effluent storage calculator

Over the past couple of years, Greater Wellington has supported the development of the Dairy Effluent Storage Calculator (commonly referred to as the pond calculator) in conjunction with Massey University and other Regional Councils. The pond calculator is a tool to assist farmers in the decision making process when considering effluent storage requirements to enable successful

application of effluent using deferred irrigation which will ensure compliance with the standards and terms identified above. It is noted that whilst the pond calculator is a good guide to determine pond storage requirements, it is only as good as the management practices required to enable application of effluent outside of periods where there is water-logged or flooded land.

Use of the pond calculator requires the input of good quality data and application of some regional default parameters. A guide to what parameters should be used in the Wellington region is provided in Attachment 1.

2.3 Effluent storage assessments

Greater Wellington believes that the primary approach for undertaking effluent storage assessments is with education and advice. A secondary approach will be through requiring assessments through consent renewal/variation processes and responding to any significant non-compliance. The overall approach is summarised as follows:

From 1 October 2012

- Encourage all dairy farms to use the pond calculator for determining effluent storage requirements and work with Dairy NZ / Fonterra to facilitate a co-ordinated approach for educating and supporting those dairy farms wishing to voluntarily undertake effluent storage assessments.
- Any resource consent variations or replacement consents will be required to provide an assessment of effluent storage as part of their consent application.
- Any dairy farm assessed as significant non-compliance due to inadequate storage facilities during normal routine inspections or in response to incident notifications will be required to undertake an assessment of effluent storage through either issuing an abatement notice or a formal review of consent conditions.
- All year round milkers will be asked to voluntarily undertake an assessment of effluent storage by 31 May 2013. If this is not completed, additional inspections will be completed between June -August 2013. If non-compliance is observed, an assessment of effluent storage will be required either by issuing abatement notice or undertaking a formal review of consent conditions.

From 1 July 2014

- Targeted inspections will be undertaken during periods of soil moisture surplus in key catchments / areas. As a guide this is likely to include the Lake Wairarapa and Mangatarere catchments and farms located in drinking water catchments. Any significant non-compliance found will be required to undertake an assessment of effluent storage through either issuing an abatement notice or a formal review of consent conditions.
- Further targeted inspections will be undertaken in selected catchments during periods of soil moisture surplus. Any significant non-compliance found will be required to undertake an assessment of effluent storage through either issuing an abatement notice or a formal review of consent conditions.

2.3.1 Lining of storage ponds

One additional area where “inadequate storage facilities” may exist concerns the lining material of any storage ponds. Most existing ponds do not have either a suitable clay liner or artificial liner.

It is Greater Wellington’s expectation that any upgrade of storage facilities ensures an appropriate level of lining. We believe that the permeability of any liner should not be less than 1×10^{-9} . It is also appropriate to install leak detection systems when upgrading any storage facilities.

2.3.2 Process for undertaking effluent storage assessments

Irrigation NZ have worked with the dairy industry and developed the Farm Dairy Effluent Design Accreditation Programme (www.effluentaccreditation.co.nz).

The Fertiliser and Lime Research Centre connected to Massey University have also provided additional training support around FDE system design, including training on the pond calculator. There are some individuals in the region who have completed and passed the ‘Farm Dairy Effluent: System Design and Management’ short course.

Greater Wellington strongly recommends that any effluent storage assessments are completed by companies registered as part of the Farm Dairy Effluent Design Accreditation Programme. Alternatively if other suitably qualified persons without accreditation (e.g. individuals who completed and passed the ‘Farm Dairy Effluent: System Design and Management’ short course) are used, any work given to Greater Wellington to review for compliance purposes, will be peer reviewed.

To support the primary approach for consent holders voluntarily undertaking effluent storage assessments, consent holders will not be charged for Greater Wellington reviewing any assessment and upgrade plans.

Any consent holders who are required to undertake an effluent storage assessment due to significant non-compliance and the issuing of an abatement notice or formal review of consent conditions, charges for any time spent by Greater Wellington reviewing an effluent storage assessment will apply.

3. Other resources to assist with Farm Dairy Effluent compliance

Fonterra and Dairy NZ are committed to ensuring a level high of consent compliance performance in regard to the management of collected dairy effluent.

Dairy NZ has developed a [Compliance Checklist for Greater Wellington region](#) for use by farmers for them to check how they should be performing.

Fonterra has developed a [Effluent Management Programme factsheet](#) for farmers. Fonterra's expectation outlined in their Suppliers Handbook 2012/13 is that

“You must have systems in place that manage all effluent sources in a manner that complies with the relevant regional council resource consent or permitted activity rules, 365 days a year”

There are a number of publications from Dairy NZ and IPENZ that assist with the promotion of good practice with farm dairy effluent (FDE) systems:

- [Farm Dairy Effluent \(FDE\) Design Code of Practice](#)
- [Farm Dairy Effluent \(FDE\) Design Standards](#)
- [IPENZ Practice Note 21 - Farm Dairy Effluent Pond Design and Construction](#)

They do not cover existing operational systems. Any FDE system designed, installed and operated as per these Standards and COP would be able to meet Greater Wellington's current requirements for dairymshed discharges.

Dairy NZ has also produced farmer guides relating to this material:

- [Farm Dairy Effluent \(FDE\) Design Code of Practice & Design Standards - How will the code and standards affect me?](#)
- [Farm Dairy Effluent \(FDE\) Systems - Planning the right system for your farm](#)
- [Farm Dairy Effluent \(FDE\) Systems - A farmer's guide to building a new effluent storage pond](#)

4. Summary

This compliance strategy promotes a way forward for the monitoring of dairy effluent consents in the Wellington region. In particular the strategy focuses on how Greater Wellington will promote the use of the Dairy Effluent Storage Calculator and undertaking effluent storage assessments. The primary method will be through education and advice which encourages voluntary uptake of its use. A secondary method will be through requiring effluent storage assessments for any consent applications (replacement or variation) and any consents assessed with significant non-compliance.

Attachment 1 - Pond calculator input and output parameters

Use of the pond calculator requires careful consideration of on-farm practices and application of regional defaults. Below is some guidance on the various inputs and outputs in using the pond calculator.

(a) Climate

There are 27 climate stations that can be selected for input. It is recommended to choose the closest climate station to the site.

(b) Soil Risk

The pond calculator requires an assessment of high risk and low risk soil for the effluent application area. To determine whether the site is high or low risk soils go to S-Map online at <http://smap.landcareresearch.co.nz/home>, find your site and find the soil name. The soil name can then be found on the Help button on the pond calculator to determine high or low risk. Once soil risk is determined the application area for low and/or high risk soils can be entered

(c) Catchment areas

Determine the catchment areas (in m²) for all areas including yards, sheds, and feedpads.

(d) Washwater

Input the projected washwater volumes expected.

(e) Ponds

Input the existing pond storage information. There are regional defaults required for the emergency storage period and likely surface area. Unless further justification is provided the regional defaults are:

- Emergency storage period – 3 days
- Likely surface area – 5 sqm per cow

(f) Irrigation

Input effluent irrigation data based on on-farm practices.

(g) Pond calculator outputs

The pond calculator generates various outputs including maximum pond volumes, cumulative distribution frequency of maximum pond volumes, minimum pond volumes, effluent volumes, and irrigation days.

The regional default for minimum storage requirements in the Greater Wellington region is 90% probability using the cumulative distribution frequency.