

# Canterbury Region Dairy Report 2010-2011 Season

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Report  
Resource Management Section

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## Executive summary

This is a report on Environment Canterbury's monitoring of the disposal of dairy shed effluent in the Canterbury Region for the 2010-2011 season. Dairy effluent is one of a number of potential pollutants that could cause a significant, negative environmental effect if not properly managed. Effluent can be a source of bacteria and nutrients in streams and groundwater. Dairy effluent – if managed effectively – is also an important source of nutrients for pasture growth.

It is important to protect Canterbury's fresh water, which possesses significant cultural value to Ngāi Tahu, as well as community and recreational value. Clean and plentiful water is critical to support farming in Canterbury. Our waters are also vital for other industries such as tourism and are used for numerous recreational activities. Consent conditions attempt to find the balance between protecting the environment and allowing the economic use of water.

During the 2010-2011 season the disposal of dairy shed effluent to land in Canterbury was required to be undertaken in accordance with either a resource consent or the permitted activity rule contained in the Transitional Regional Plan. There are 921 dairy farms in Canterbury and 917 were site-inspected. Of those farms inspected, a total of 797 properties were operating under resource consents and 120 operating as permitted activities during the season. There was a slight increase in the number of dairy farms in Canterbury in comparison with the 2009-2010 season (905 dairy farms).

These farms are monitored at least once a season to check consent conditions are being complied with. Monitoring for compliance is both a legal obligation upon Environment Canterbury under Section 35(2) of the Resource Management Act 1991, and also necessary to ensure that Environment Canterbury delivers upon the community outcomes identified in its Long Term Council Community Plan 2009-2019<sup>1</sup>.

Of the 917 farms monitored, 64.9% were graded fully compliant (compared with 58.7% in the 2009-2010 season). A total of 9.7% of properties (89 farms) were graded as significantly or majorly non-compliant in the 2010-2011 season compared with 8.4% the previous season. Overall 10,137 conditions were monitored and 95% were in full compliance.

Resource Management Officers conducted compliance monitoring site inspections between July 2010 and May 2011. Compliance monitoring site inspections were conducted in accordance with nationally agreed standards. During the visit, every effort was made to talk to the resource consent holder or farm manager. Following the compliance monitoring site visit, a compliance monitoring report was prepared and mailed to the resource consent holder. Where non-compliance was observed details were provided to the consent-holder. Formal warnings, abatement notices, infringement notices, and recommendations for prosecution were issued where necessary.

The majority of dairy farms in Canterbury (481 farms, 52.4%) are located in the Ashburton and Selwyn districts. The farms in the Ashburton, Christchurch and Waimakariri districts had the highest levels of compliance at 75%. The 18 farms in the Waitaki district had the lowest levels of compliance at 50%, although the level of full compliance in the Waitaki has improved from 24% compliance in the 2009-2010 season. Factors such as farm size, years since establishment, soil type, terrain, rainfall and other factors are all potential contributors to the observed variance in compliance rates.

Most dairy farmers actively worked to ensure full compliance with resource consent and permitted activity conditions, ensuring dairy effluent disposal systems were properly maintained, farm employees were well educated, and resources were allocated for dairy

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<sup>1</sup> <http://www.ecan.govt.nz/Plans+and+Reports/annualPlansReports/>

effluent management. Despite this, there were common non-compliance issues identified, with dairy effluent ponding still being prevalent. The exceedance of undiluted effluent limits and nitrogen loading were also identified on several dairy farms. To a lesser extent discharges of dairy effluent within buffer zones were also identified, and there was one observed effluent discharge directly to water.

A total of five infringement notices were issued along with 15 abatement notices, and one set of charges was laid. The case is awaiting a court appearance. The number of infringement notices and abatement notices has reduced compared with the previous season when 28 infringement notices and 21 abatement notices were issued.

The proportion of farms achieving full compliance, following an initial non-compliant assessment, has improved over the past three seasons. Following re-inspection of significant and major non-compliances, 74.5% of significant non-compliances became fully compliant within this monitoring season. Of major non-compliances, 100% became fully compliant when re-inspected.

Environment Canterbury staff have been involved in a number of initiatives aimed at improving compliance and managing environmental effects. These include developing a national audit process that ensures consistency of monitoring across all regional councils. Environment Canterbury has been audited and been found to be consistently following nationally agreed guidelines. A joint initiative between the dairy industry and Environment Canterbury was established in the 2008-2009 season and this group has continued to implement a number of programmes. These include reviewing consent conditions to ensure that they are fit-for-purpose and developing a series of "Let's get it right" farmer-to-farmer cards that highlight good management practices.

Dairy industry groups have continued to implement initiatives to reduce the environmental effects from dairy farming, including the Farm EnviroWalk self-assessment checklist, the Dairying and Clean Streams Accord, and the provision of technical support to dairy farmers in relation to effluent storage and disposal. Fonterra has focused on its 'checking every farm every year' programme as well as support and advice to farmers to achieve best practice and ongoing compliance with consent conditions. Fonterra has taken on new people for the 2011/12 dairying season to provide more support for farmers, including advice on how to comply with the rules under the newly operative Canterbury Natural Resources Regional Plan.

Synlait implemented a number of programmes during the 2010/11 season to improve practice among its suppliers. These included on-farm training programmes – including effluent practices – for all farm workers; the development of farm operational plans; support for the EnviroWalk self-assessment; as well as a financial penalty scheme for farmers found to be non-complying. NZ Dairies has also put in place measures to support compliance and environmental performance, including a programme for all suppliers to complete an EnviroWalk on their property; checks of systems and consent conditions during farm visits; and a follow-up with farmers found to be non-compliance.

There are also new rules for dairy farming activities in the operative Natural Resources Regional Plan. One important change is that dairy effluent collection and storage must be covered by a resource consent. People collecting and storing dairy effluent under the permitted activity rules need to apply for a resource consent by December 11, 2011.

Some activities are still covered by permitted activity rules but if the basic conditions cannot be met a resource consent will be required.

Looking forward to the 2011-2012 dairy season, Environment Canterbury will use a similar monitoring strategy to the 2010-2011 season. Environment Canterbury encourages Canterbury dairy farmers to get in contact if they have any questions relating to attaining or

maintaining compliance with the conditions of their resource consent or permitted activity. In this way we can continue to improve the compliance relating to disposal of dairy effluent.

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# **1 INTRODUCTION: A COMBINED APPROACH TO COMPLIANCE**

Environment Canterbury recognises the significant economic benefits provided by dairy farming, while also being responsible for managing the environmental and other effects of these activities. Therefore, we are working collaboratively with the dairy industry to improve dairy effluent compliance. Farmers have a direct and personal interest in ensuring the quality of their ground water is protected, as most household water on farm is provided from within the farm boundary.

The Canterbury Dairy Effluent Group was formed in October 2008 following a review of the 2007/08 season results which included input and advice from Forest & Bird and Fish & Game.

The Canterbury Dairy Effluent Group includes Environment Canterbury, DairyNZ, Federated Farmers, South Island Dairying Development Centre (SIDDC), Fonterra, NZ Dairies, and Synlait and meets on a regular to review the various causes of non-compliance and develop and implement solutions.

The group has a range of ongoing initiatives including working more closely with effluent system suppliers, improved training for dairy farm staff, promotion of effluent management at farmer events, direct communication to farmers about compliance issues and how to implement best practice, an advertising campaign promoting good dairy effluent practice, as well as Environment Canterbury reviewing consenting requirements and compliance methods.

## **1.1 Environmental effects**

Dairy effluent provides an economic benefit to dairy farmers as it contains nitrogen (N), phosphorus (P), and potassium (K). Dairy effluent also contains high levels of organic matter, and faecal bacteria. When dairy effluent is properly applied, any detrimental effects from faecal bacteria are limited by absorption into the soil and the nutrients are taken up by plants. Thus, proper application of dairy effluent to paddocks promotes improved pasture production and minimises environmental risks.

The consent conditions for individual dairy effluent discharges are designed to ensure that environmental effects are less than minor, as required by the Resource Management Act 1991. Non-compliance with dairy effluent consent conditions can cause significant adverse environmental effects and must be dealt with appropriately.

For instance, when dairy effluent is over-applied, and allowed to cause ponding in paddocks, soil moisture levels are elevated and a moist, nutrient rich environment is created which may allow faecal bacteria to grow. Pasture production and ability to utilise effluent is reduced and soil saturation may result in dairy effluent moving below the root zone where it can potentially reach and contaminate groundwater.

## **1.2 Iwi and water**

The Resource Management Act requires Environment Canterbury (and other councils) to have particular regard to kaitiakitanga (guardianship and stewardship by Tangata whenua of natural resources). The Environment Canterbury Act 2010 also requires particular regard must be given to the vision and principles of the Canterbury Water Management Strategy

(CWMS). The vision of the CWMS is to enable the greatest social, economic, recreational and cultural benefits within a sustainable framework. The primary principles recognise that Tangata whenua must be taken into account, along with sustainable management and a regional approach, for all water management issues.

For Ngāi Tahu, water is a taonga and has an inherent value that must be recognised. Taonga refers to the values associated with the water itself, the resources living in the water, as well as other life and resources that are sustained by water.

Each water body has its own mauri (life force) and mana.

Values associated with specific water bodies include a role in unique tribal creation stories, a role in historical accounts, proximity to wahi tapu, settlement or other historical sites in, or adjacent to, specific waterways, use as access routes or transport courses, value as traditional sources of mahinga kai and other cultural materials, and continued capacity for future generations to access, use and protect the resource.

## 2 SCOPE OF THIS REPORT

This report covers the level of consent compliance for the storage and discharge to land of dairy effluent collected in the milking process in Canterbury in 2010-2011. It does not assess consent compliance of land use consents to store dairy effluent. However the dairy effluent disposal system as a whole is inspected due to the integrated nature of storage and discharge (see Section 3.2).

Effluent collected in the milking shed typically makes up around 10% of total dairy effluent<sup>2</sup>. The remaining 90% of dairy effluent on farms is deposited directly on pasture by the herd as they graze in paddocks.

When on the farm carrying out routine monitoring inspections, Resource Management Officers also check other areas, not included in the resource consent or permitted activity rules, which may have the potential to result in effluent discharges into water, such as stock in waterways and track run-off. These areas are not covered in this report. Resource Management Officers also respond to complaints about such activities received through Environment Canterbury's pollution hotline (0800 76 55 88). During the 2010-2011 season there were 27 calls to the pollution hotline relating to alleged incidents on dairy farms. Five complaints related to stock effluent on the highway and were passed to the relevant local authority. Two complaints were relating to odour, one was relating to irrigation water on the highway, and eight were unsubstantiated. The remaining 11 complaints were regarding issues relating to resource consent conditions and were dealt with by Resource Management Officers carrying out compliance checks.

### 2.1 Environment Canterbury's responsibilities

#### 2.1.1 Resource Management Act

Environment Canterbury is responsible for administering the requirements of the Resource Management Act, 1991. This act states that no person may discharge any contaminant onto or into land in circumstances which may result in that contaminant entering water, unless the discharge is expressly allowed by a rule in regional plan (and in any relevant proposed regional plan), a resource consent, or in regulations. Section 35 (2) of the Resource Management Act, 1991, states that:

*Every local authority shall monitor –*

*(b) The efficiency and effectiveness of policies, rules, or other methods in its policy statement or plans; and ....*

*(d) The exercise of the resource consents that have effect in its region and take appropriate action where this is shown to be necessary*

Dairy effluent is considered a contaminant under the Resource Management Act, 1991.

NB: Dairy farms milking fewer than 370 cows, prior to the notification of the Proposed Natural Resources Regional Plan in 2004, were regulated during the 2010-2011 year by the permitted activity rule under the Transitional Regional Plan. The Natural Resources Regional Plan became operative from 11 June 2011. The new rule in the plan, for the discharge of dairy effluent, now requires resource consent for those farms previously relying on the permitted activity rule. This means dairy farms currently relying on the Transitional Regional Plan rule, will be required to apply for resource consent by 11 December 2011.

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<sup>2</sup> Cameron & Trenouth, (1999), "Resource Management Act – Practice and Performance: A Case Study of Farm Dairy Effluent Management"

### **2.1.2 Funding of compliance monitoring**

It is the policy of Environment Canterbury to fund the cost of carrying out many of its Resource Management Act 1991 functions, including consent monitoring, by way of charges to consent holders. Section 36(1) (c) of the Resource Management Act 1991 allows the regional council to fix these charges. Holders of resource consents are charged an hourly rate of \$75.90 inclusive of GST, for the work of the Resource Management Officers. Where possible these charges are kept to a minimum, but where non-compliance is identified, all follow up work is also charged at the same hourly rate. Monitoring of dairies regulated by the permitted activity rules are charged to the user, with a fixed fee of \$299 per year. The annual administration fixed charge of \$63.25 covers services such as providing information and guidance about a consent, systems to capture and store consent data, the maintenance of records, and implementing new government regulations. These charges are set out in the Environment Canterbury Annual Plan 2010-2011<sup>3</sup>.

### **2.1.3 Desired community outcomes**

Environment Canterbury, in conjunction with other stakeholders and organisations, has identified a set of community outcomes<sup>4</sup>. These are outcomes that the community has decided are a priority for the Canterbury region. Our compliance monitoring work for dairy effluent also contributes to achieving the following community outcomes:

- Water is in a healthy condition, clean and plentiful enough to support life
- Business and farming activities do not harm the environment
- The environment, in general, is to be looked after.

### **2.1.4 The role of the Canterbury Water Management Strategy**

The vision of the Canterbury Water Management Strategy (CWMS) is:

*“To enable present and future generations to gain the greatest social, economic recreational and cultural benefits from our water resources within an environmentally sustainable framework.”*

The priorities and principals underpinning the CWMS are;

First order priorities:	environment, customary use, community supply and stock water.
Second order priorities:	irrigation, renewable electricity generation, recreation and amenity.
Primary principals:	sustainable management, regional approach and tangata whenua.
Supporting principals:	natural character, indigenous biodiversity, access, quality drinking water, recreational opportunities, and community and commercial use.

The CWMS separates Canterbury into ten water management zones; Upper Waitaki Lower Waitaki – South Coastal Canterbury, Orari-Opihi-Pareora, Ashburton, Selwyn/Waihora, Banks Peninsula, Christchurch-West Melton, Waimakariri, Hurunui-Waiapu and Kaikoura.

Each zone will focus on delivering a balanced set of quantified targets in the following areas; drinking water, irrigated land, energy security and efficiency, ecosystem health/biodiversity,

<sup>3</sup> <http://www.ecan.govt.nz/publications/Plans/annual-plan-2010-2011-appendicies.pdf>

<sup>4</sup> Report available at : <http://ecan.govt.nz/publications/Plans/LTCCP200919CommunityOutcomes.pdf>

water use efficiency, kaitiakitanga, regional and national economic growth, natural character of braided rivers and recreational and amenity opportunities.

## **2.2 Summary**

Environment Canterbury undertakes monitoring of the disposal of dairy effluent within the Canterbury region in order to satisfy the statutory obligations imposed under Section 35(2) of the Resource Management Act, 1991, and to ensure that the disposal of dairy effluent does not jeopardise the achievement of relevant community outcomes.

Regulation of dairy effluent will not deliver improved water quality in isolation. Therefore, Environment Canterbury also undertakes additional work in identified activity areas in an effort to ensure that water quality is protected. This work includes scientific investigations to obtain a better understanding of the environment, preparing policy and planning documents in consultation with the community to enable sustainable development of water resources, and environmental monitoring to measure the effectiveness of Environment Canterbury's activities and identify any trends in water quality. Additionally, during compliance monitoring site inspections and enquiries by consent holders, Resource Management Officers offer advice on dairy farm best management practices relating to dairy effluent storage and discharge.

Environment Canterbury also provides support and education to the community through our Implementation and Co-ordination Section. The Implementation and Co-ordination Section has a number of rural initiatives in place, including offering on-farm visits to discuss and offer suggestions to benefit both the business and the environment prior to dairy farm conversion.

### **3 COMPLIANCE MONITORING METHODS**

During 2010-2011, 917 of 921 dairy farms in Canterbury were monitored for compliance with the conditions of their relevant resource consents and permitted activities.

Of the 917 dairy farms, 797 held resource consents authorising the disposal of dairy effluent to land, while 120 dairy farms disposed of dairy effluent under the permitted activity rules. Three resource consents and one permitted activity were not monitored this season. Actions taken by Resource Management Officers relating to compliance monitoring of dairy effluent resource consents and permitted activities comprise: pre-visit activities; a compliance monitoring site visit; and post-visit activities.

#### **3.1 Pre-visit**

Dairy farms were divided into geographical blocks to improve efficiency and reduce compliance monitoring costs to resource consent holders. Dairy farms were then assigned to a Resource Management Officer to conduct the compliance monitoring site inspections. Prior to each site visit, the Resource Management Officer reviewed the history of the dairy farm compliance. This review included details of any previous non-compliance, information on the dairy effluent disposal area, sensitive areas on the property, as well as the number of cows being milked.

#### **3.2 Compliance monitoring site inspections**

All inspections were carried out without prior warning, in line with nationally agreed procedures. Some dairy farms hold more than one consent to store and to discharge dairy effluent. In these cases all resource consents were monitored during the same inspection. Dairy farms with previous non-compliance issues had compliance monitoring site visits earlier in the dairy season.

At the time of compliance monitoring site inspections, efforts were made to contact the senior person on site, such as the farm manager or consent holder. When no one was present on-site, a notice of inspection was left in a prominent position with the Resource Management Officer's contact details and the reason for the visit. Resource Management Officers then contacted the consent holder to arrange a compliance monitoring site inspection at a later date.

While on-site, information was collected on the peak number of cows milked during the dairy season, the number of hectares used for dairy effluent disposal, whether the dairy effluent storage pond was sealed, and how regularly the travelling irrigator was relocated.

The inspection of the dairy effluent disposal system included, but was not limited to:

- Inspection of the dairy yard and associated channels to ensure that dairy effluent was not being washed into unlined areas or surface water bodies;
- Inspection of the dairy effluent storage system for evidence of sump overflows (recent and historical);
- A clear demonstration that the effluent pond is adequately sealed. It is common for a resource consent to require the consent holder to obtain a registered engineers report as proof that the pond is adequately sealed;
- Inspection of the dairy effluent disposal area to assess the dairy effluent application rate (by walking the dairy effluent disposal area);
- Inspection for any dairy effluent ponding on the soil surface;

- Inspection to ensure that the appropriate buffer distances were being maintained between bores, soak holes and waterways;
- Inspection of the dairy effluent pipeline for any obvious breaks or leaks.

Resource consent compliance was assessed by the Resource Management Officer while on-site and each resource consent condition was graded according to the level of compliance.

The main compliance grades are as follows:

- Grade 1 – Fully compliant
- Grade 2 – Minor non-compliance
- Grade 3 – Significant non-compliance
- Grade 4 – Major non-compliance

Figures 1-4 are examples of Grade 1 to Grade 4 compliance for ponding.

Appendix 1 shows standardised grades used by Resource Management Officers when non-compliance is encountered. When non-compliance with resource consent conditions is identified during a compliance monitoring site inspection, where possible Resource Management Officers report this to the person in charge. Resource Management Officers then give verbal instruction to remedy the situation. A notice of alleged offence is issued, as applicable, to the consent holder or farm employee.



**Figure 1, Grade 1 - fully compliant.**



**Figure 2, Grade 2 - minor non-compliance.**



**Figure 3, Grade 3 - significant non-compliance.**



**Figure 4, Grade 4 - major non-compliance.**

### **3.3 Post-visit**

Following all compliance monitoring site inspections, a compliance monitoring report was produced and sent to the respective consent holder. The compliance monitoring report outlined the dairy farm's compliance with the conditions of the respective resource consent or permitted activity. The compliance monitoring report summarised any issues that were encountered during the compliance monitoring site visit. Additionally, it also detailed any remedial actions that were required and the timeframe within which they were to be completed.

Where non-compliance was identified, a range of enforcement options were used, ranging from a warning in the compliance monitoring report, to the issuing of an abatement notice and/or an infringement notice fine. On three occasions, legal action was taken in the form of a prosecution case in the District Court. All enforcement action was taken in accordance with the Compliance Monitoring and Enforcement Policy 2010.

For dairy farms with major or significant non-compliance with resource consent or permitted activity conditions, follow-up visits were conducted to assess corrective actions taken by resource consent holders and/or farm managers.

## **4 DATA ANALYSIS**

For the purpose of this report, two methods were used to interpret the results of Environment Canterbury's 2010-2011 dairy season compliance monitoring program. The two methods are consent-based compliance and condition-based compliance

### **4.1 Consent-based compliance**

The overall compliance grade is derived from the consent or permitted activity condition that has the most significant non-compliance grade. For example, where one condition is graded as having minor non-compliance (grade 2) and another is graded as having significant non-compliance (grade 3), the overall compliance grade becomes grade 3, significant non-compliance. For properties with separate consents to store and to discharge effluent, the overall grade is the most significant non-compliance grade of the two consents. The overall compliance statistics are provided in Table 1.

### **4.2 Condition-based compliance**

These statistics shows the total number of conditions monitored on all dairy effluent consents and permitted activities in the Canterbury Region over the 2010-2011 season, and identifies the compliance grade for each individual condition. The condition compliance statistics are provided in Table 3.

### **4.3 Rationale for this dual analysis**

Neither method of displaying the compliance statistics gives a truly accurate picture of the level of compliance when considered in isolation. For example, a property graded 2 on one condition will lower the overall compliance figure, despite being fully compliant on all other conditions on the consent. On the other hand, with the total condition compliance figure alone, it is not possible to know whether the majority of farms are failing to comply with a couple of conditions, or a small number of farms are failing to comply with the majority of their conditions.

## 5 RESULTS

This section includes a summary of the initial results, best practices, common non-compliance issues, enforcement action, and follow-up inspections. Initial results refer to the first inspection of the year to all farms. Follow up inspections were carried out when non-compliance was identified.

### 5.1 Statistical results

921 farms were authorised to discharge dairy effluent during the 2010-2011 season. Resource consent authorisation accounted for 797 of these authorisations and 120 were covered by the permitted activity rule for the discharge of effluent to land in the Transitional Regional Plan. Of the 921 farms that were authorised to discharge dairy effluent, 917 were monitored.

#### 5.1.1 Regional consent-based compliance results

Of the 917 farms that were monitored, 64.9% (595 dairy farms) were fully compliant with their resource consents or permitted activities. Minor non-compliance was recorded at 25.4% (233 dairy farms) and significant or major non-compliance was 9.7% (89 farms).

The percentage of significant and major non-compliance was lower for dairy farms operating as permitted activities (6.7%) than for those operating under resource consents (10.3%). Following the Natural Resources Regional Plan becoming operative from 11 June 2011, all dairy farms in Canterbury will be required to have resource consent (see Section 7.2 below)

**Table 1, Initial inspection resource consent-based compliance results 2010-2011.**

Resource Consent-Based Compliance						
Grade	Total		Permitted activity		Resource consent	
Number of dairy farms monitored	917		120		797	
Overall Grade 1, full compliance	595	64.9%	85	70.8%	510	64.0%
Overall Grade 2, minor non-compliance	233	25.4%	27	22.5%	206	25.8%
Overall Grade 3 or 4, significant/major non-compliance	89	9.7%	8	6.7%	81	10.2%

Figure 5 shows the percentage of consents and permitted activities that have achieved full compliance over the past five dairy seasons.

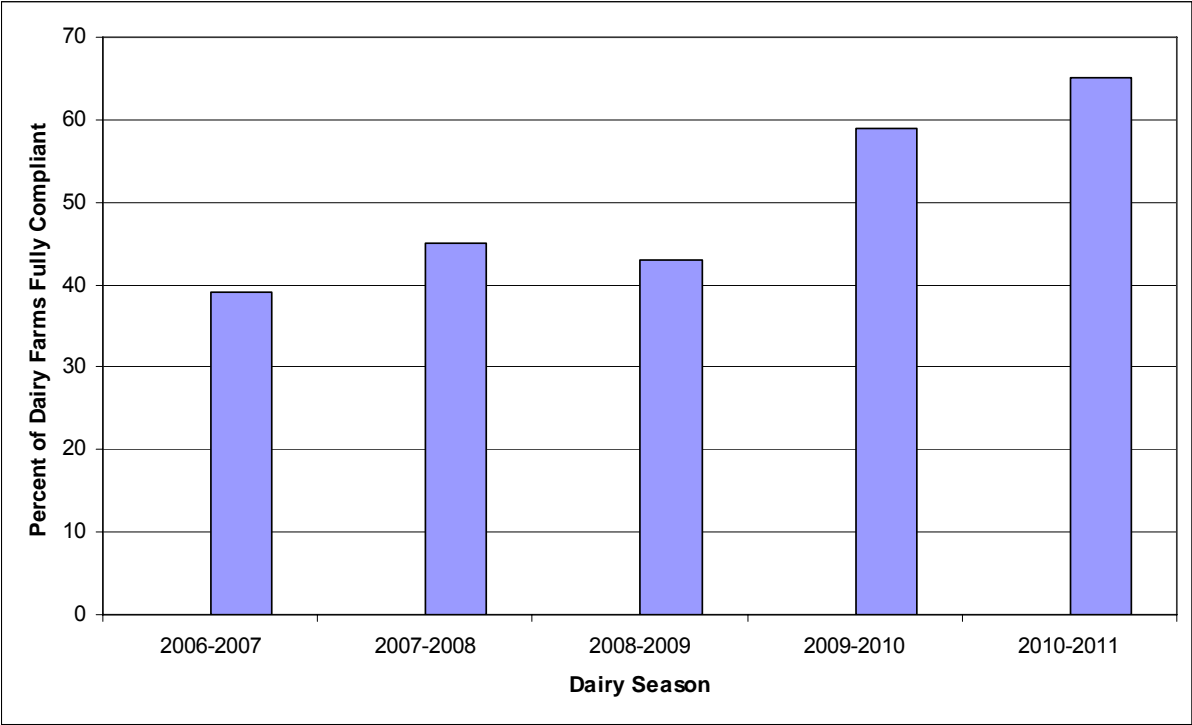


Figure 5, Fully compliant dairy farms 2006-2011.<sup>5</sup>

**5.1.2 Geographical consent-based compliance results**

The consent-based compliance results were analysed by territorial authority area for informative purposes only (no conclusions are drawn). During future monitoring seasons this analysis may be expanded if trends can be established. There are several reasons for these variances. These include differences in soil type, depth to groundwater, annual rainfall, terrain, and farm management. The average farm size and the years in operation also vary significantly between some of these territorial authorities.

Table 2 shows consent-based compliance results by territorial authority. More than half of Canterbury’s dairy farms are located in Ashburton District (32%) and Selwyn District (20%).

Three quarters of dairy farms in the Ashburton, Christchurch and Waimakariri districts were fully compliant whereas Waitaki district farms managed 50% full compliance. This district, however, only accounts for a small number of the resource consents and permitted activities within the Canterbury region and the level of full compliance in the Waitaki has improved from 24% compliance in the 2009-2010 season.

Factors such as farm size, years since establishment, soil type, terrain, rainfall and other factors are all potential contributors to the observed variance in compliance rates.

<sup>5</sup> In 2005-2006 farms that had been fully compliant in previous seasons were not monitored.

**Table 2, Initial consent compliance inspection by geographical area**

<b>Resource Consent and Permitted Activity Compliance by Territorial Authority</b>						
<b>Territorial Authority</b>	<b>TA Resource Consents and Permitted Activities</b>	<b>Regional Percent of Resource Consents and Permitted Activities</b>	<b>Overall Grade 1, Full Compliance</b>	<b>Percent within TA Grade 1, Full Compliance</b>	<b>Overall Grade 2-10, Non Compliant</b>	<b>Percent within TA Grade 2-10, Non Compliant</b>
Ashburton District	293	32.0%	220	75.1%	73	24.9%
Christchurch City	12	1.3%	9	75.0%	3	25.0%
Hurunui District	65	7.1%	38	58.5%	27	41.5%
Kaikoura District	24	2.6%	14	58.3%	10	41.7%
Mackenzie District	14	1.5%	10	71.4%	4	28.6%
Selwyn District	187	20.4%	95	50.8%	92	49.2%
Timaru District	114	12.4%	79	69.3%	35	30.7%
Waimakariri District	87	9.5%	65	74.7%	22	25.3%
Waimate District	103	11.2%	56	54.4%	47	45.6%
Waitaki District	18	2.0%	9	50.0%	9	50.0%
<b>Total</b>	<b>917</b>		<b>595</b>		<b>322</b>	

### 5.1.3 Condition-based compliance results

In total, 95.0% of all conditions were fully complied with based on the results of the initial compliance monitoring site inspections. In comparison, 94.1% of conditions were fully compliant the previous season and 72.7% of conditions were fully complied with during the 2008-2009 dairy season. Condition-based compliance data are shown in Table 3.

**Table 3, Initial inspection condition-based compliance results 2010-2011.**

<b>Condition-based compliance</b>			
<b>Conditions</b>	<b>Total</b>	<b>Permitted activity</b>	<b>Resource consent</b>
Total number monitored	10,137	742	9,395
Number graded fully compliant	9,633	686	8,947
Percentage graded fully compliant	95.0%	92.5%	95.2%
Number graded non-compliant	504	56	448
Percentage graded non-compliant	5.0%	7.5%	4.8%

## 5.2 Best practices

Actions to improve dairy effluent compliance, as noted by Resource Management Officers during compliance visits, included the following.

### 5.2.1 In the shed

- Stormwater was diverted from the dairy effluent disposal system;
- The yard was wetted down prior to milking and scrapers were used prior to hosing down to reduce the volume of washdown water required;
- All concreted areas were sufficiently bunded to contain dairy effluent.

### 5.2.2 Sumps and storage systems

- All channels, sumps, pipes and storage facilities were sealed and well maintained;
- The stone trap was cleaned out regularly, the solids were placed on a concrete pad to dry and any liquid was able to run back into the stone trap. Alternatively the material was spread to land while complying with the buffer distances between waterways, bores and soakholes;
- Adequate storage capacity was available to allow for dairy effluent irrigation to be deferred at times when soil moisture levels were too high to irrigate;
- Storage facilities were maintained with sufficient freeboard to ensure storage was available when required.

### 5.2.3 Dairy effluent disposal

- Dairy effluent irrigators were set up correctly and applied dairy effluent at the lowest rate possible, taking into consideration soil type, topography and soil moisture, to ensure that ponding, dairy effluent runoff and pasture damage did not occur;
- The irrigator was checked regularly to ensure that it was operating correctly and would not come to the end of a run while discharging;
- Disposal occurred only when soil conditions were suitable. This required adequate on-site storage;
- Where a travelling irrigator was used, the hose was laid out properly to minimise drag on the irrigator;
- Sensitive areas such as bores, waterways and soak holes were identified and the appropriate buffer distances were maintained;

- The dairy effluent application rate was measured routinely to ensure that the application rate did not exceed the maximum holding capacity specified by the resource consent;
- The dairy effluent application area was sufficient to maintain nitrogen application rates from effluent below 200 kg/ha/year and dairy effluent was applied evenly over this area. (Note that the area may need to be larger to keep potassium levels within the optimum range);
- A nutrient budget was prepared and adhered to.

#### **5.2.4 Management**

- A management plan was developed and implemented. It was displayed in a prominent place in the dairy shed, along with a copy of the resource consent;
- Staff responsibilities were clearly defined and staff were adequately trained in how systems operated;
- The equipment was maintained regularly as recommended by the manufacturer;
- Contingency measures were in place in the event of equipment failure such as a spare pump and contact details for a vacuum tanker operator;
- A pre-season check was undertaken to ensure that the dairy effluent disposal system was adequate for the coming dairy season's herd size and that all consent requirements were being complied with;
- Where dairy effluent was injected into irrigation water that was connected to a ground or surface water source, either a reduced pressure zone backflow preventer or an air gap was installed to avoid backflow of dairy effluent into the water source.

#### **5.2.5 Further information**

For further guidance on dairy effluent disposal best practice, refer to '*A Guide to Managing Farm Dairy effluent – Canterbury*'. This provides detailed information on best practice management techniques and is available from Environment Canterbury's Customer Services (phone 0800 EC INFO), or can be downloaded from [www.dairynz.co.nz](http://www.dairynz.co.nz).

### **5.3 Common non-compliance issues**

Non-compliance grades were the result of several common issues (Appendix 1 presents how each non-compliance was graded in a standardised guideline used in previous dairy seasons for assessing and responding to non-compliance issues).

#### **5.3.1 Dairy effluent ponding**

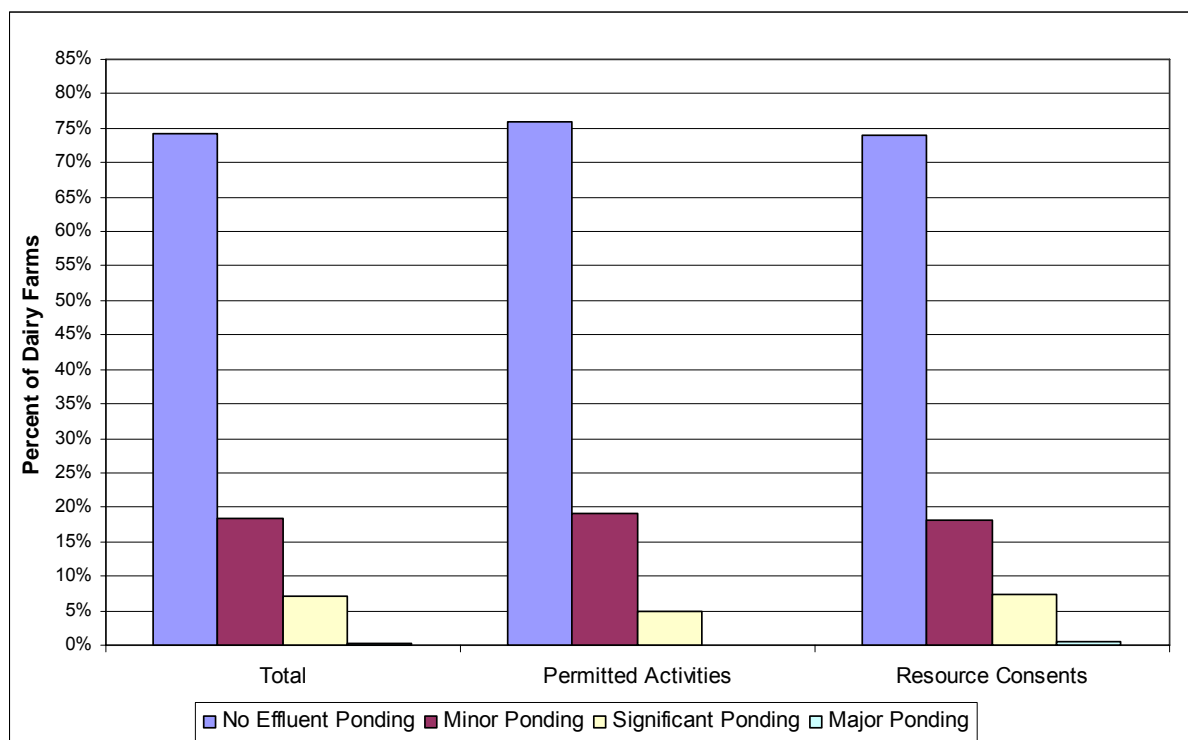
Most dairy farms (99%) use spray irrigation to dispose of dairy effluent. As in previous dairy seasons, the main problem with this method of disposal is the over-application of dairy effluent, causing ponding on the soil surface (see Section 1.1).

This can be caused by a variety of factors including failure to shift the irrigator regularly, insufficient area being used for disposal, equipment failure such as pipe breakages or pump failure, inadequate system capacity or lack of sufficient dairy effluent storage, which results in dairy effluent disposal occurring when soil moisture levels are already high.

The incidence of dairy effluent ponding in the 2010-2011 dairy season is set out in Table 4. Overall 232 (25.4%) farms inspected showed some level of dairy effluent ponding during the 2010-2011 dairy season.

**Table 4, Initial inspection of disposal area dairy effluent ponding.**

Dairy effluent ponding			
Level of ponding	Total	Permitted activity	Resource consent
No ponding	680	91	589
Minor ponding	167	23	144
Significant ponding	65	6	59
Major ponding	3	0	3
Unable to be assessed	3 <sup>6</sup>		



**Figure 6, Ponding of dairy effluent 2010-2011.**

### 5.3.2 Undiluted dairy effluent limits

Dairy effluent resource consents specify a limit on the daily volume that can be spread, either limited to herd size or total volume. Any volume of dairy effluent discharged in excess of resource consent limits is a non-compliance.

In a number of cases non-compliance was caused by an increase in the size of the herd and the consent holder not applying to change the resource consent. Another cause of non-compliance was due to the knock-on effects of the increased herd size, resulting in the failure of the dairy effluent infrastructure to cope with increased cow numbers.

A total of 12 (1.3%) dairy farms exceeded the maximum undiluted dairy effluent limits specified on their dairy effluent disposal resource consent in the 2010-2011 dairy season. This compares with 28 (3.6%) dairy farms exceeding undiluted dairy effluent limits during the 2009-2010 dairy season, and 64 (7.5%) dairy farms exceeding undiluted dairy effluent limits

<sup>6</sup> Where observed ponding was minor, and consent conditions allowed ponding for between 3 and 12 hours, these were not assessed, as any risk was deemed minor and the cost to consent holder to stay on site was not considered fair and reasonable. Other consents which were unable to be assessed were those which had not discharged at the time of the site inspection.

during the 2008-2009 dairy season. Dairy farms found to be in exceedence of their undiluted dairy effluent limits were required to apply for a change in their consent. Applicants were encouraged to allow for potential herd expansion in the coming years to reduce the need for frequent changes to resource consents.

**5.3.3 Nitrogen loading**

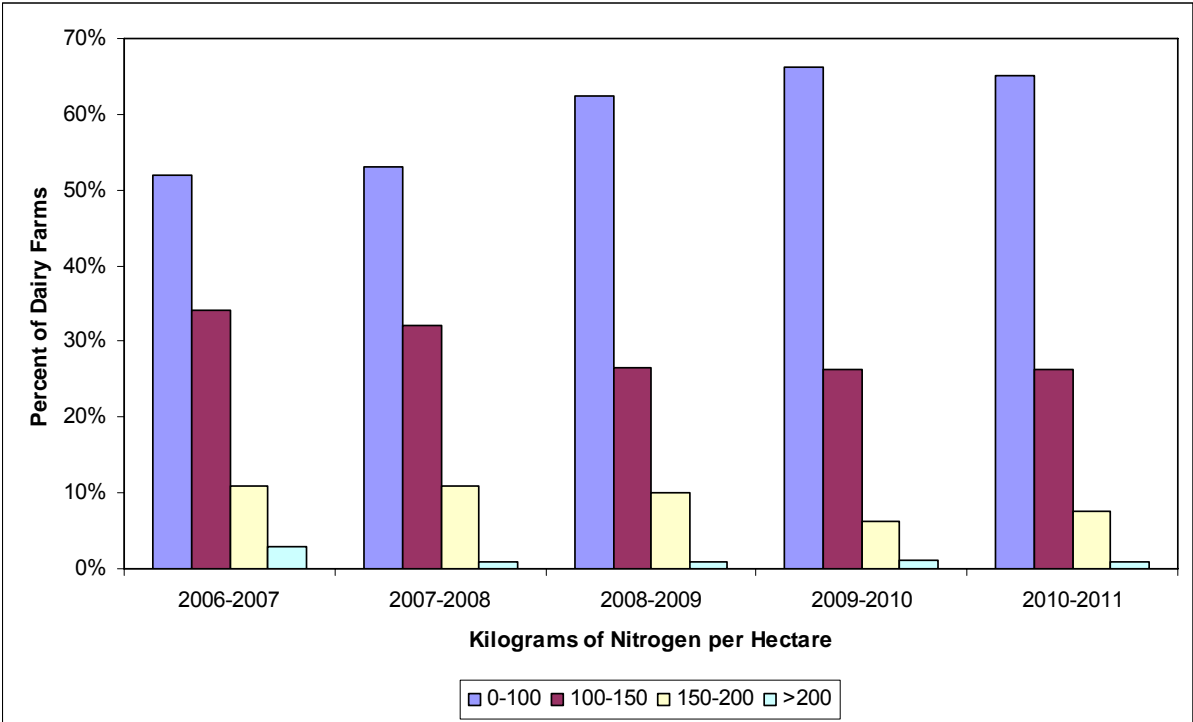
Dairy effluent contains a high level of nitrogen and over-application can increase the risks of nitrate-nitrogen leaching through the soil profile, causing both contamination of groundwater and a loss of nutrients. In order to limit the loss of nitrate-nitrogen to groundwater there is a limit of 200 kg of nitrogen from dairy effluent per hectare per year. This requires a disposal area of approximately 3.25 hectares for every 100 cows that are being milked.

There is a high level of compliance with this requirement: the majority of dairy farms applied dairy effluent at a rate less than 100 kg of nitrogen per hectare per year. Nitrogen application rates have remained the same during the 2010-2011 dairy season, compared to the previous season. Table 5 illustrates the respective nitrogen loading category of dairy farms inspected.

**Table 5, Initial inspection of dairy effluent disposal nitrogen application rates.**

Nitrogen application rates			
Application rate	Total	Permitted activity	Resource consent
0-100 kg/ha/yr	581	65	516
100-150 kg/ha/yr	250	40	210
150-200 kg/ha/yr	73	13	60
200+ kg/ha/yr	10	2	8
Not assessed	4		4

Where the nitrogen loading limit was exceeded, the nitrogen loading can be reduced by either milking fewer cows or increasing the available dairy effluent disposal area. Figure 7 illustrates trends in nitrogen loading rates since 2006-2007.



**Figure 7, Nitrogen application rates 2006-2011.**

### 5.3.4 Buffer zone discharges

Dairy effluent is not to be applied within 20 metres of any surface water body, bore, or soakhole, in order to reduce the risk of dairy effluent runoff. This requirement was found to have been breached on six occasions in the 2010-2011 dairy season. This compares with nine occasions in the 2009-2010 dairy season, 14 observed breaches during the 2008-2009 dairy season and 11 observed breaches during the 2007-2008 dairy season.

Properties where the incident was deemed a significant non-compliance were given a warning to take corrective action and re-visited. On re-inspection these dairy farms were found to be fully compliant.

All other instances of non-compliance with this condition were graded as minor non-compliance and generally were just inside the 20-metre buffer zone. Compliance monitoring reports reflected this and directed consent holders and farm managers to ensure the discharge was at least 20 metres from waterways, bores, and soakholes.

### 5.3.5 Discharges directly to water

A discharge of dairy effluent directly into water can cause significant adverse environmental effects. During the 2010-2011 season there was one observed discharge of dairy effluent direct to water. This compares with two inspections in 2009-2010, six instances during 2008-2009 and three instances in the 2007-2008 season which found dairy effluent being discharged directly to water.

### 5.3.6 Causes of significant and major non-compliance

Of the 504 consent conditions graded as non-compliant in the 2010-2011 season (Table 3 above), 127 were graded 3 (Significant non-compliance) and five were graded 10 (Enforcement action taken). An analysis of the causes of these non-compliances is shown below in Table 6.

**Table 6, Causes of significant consent condition non-compliance**

<b>Cause of non-compliance</b>	<b>Number of Conditions</b>
Ponding	84 (63.6%)
Application depth / water holding capacity exceeded	17 (12.9%)
Herd size exceeded – second year requesting change to consent	7 (5.3%)
Effluent storage overflow	6 (4.5%)
Discharge outside disposal field	4 (3.0%)
Discharge within minimum distance to buffer zones	3 (2.3%)
Effluent storage inappropriate	2 (1.5%)
No backflow prevention test – second year information requested	2 (1.5%)
No test results for pond integrity - second year information requested	2 (1.5%)
Solids stored off pad	2 (1.5%)
No management plan submitted - second year information requested	1 (0.8%)
Old consent not surrendered - second year information requested	1 (0.8%)
Run off from stockyard	1 (0.8%)

These 132 significant non-compliances occurred on 89 farms (see Table 1). With many consents there are conditions relating to both ponding of effluent and the application depth or water-holding capacity of the soil. In such cases an incidence of significant ponding could result in both conditions being graded as significantly non-compliant. In the cases of administrative non-compliance, these conditions are only graded as significantly non-compliant where the issue has not been resolved for at least the second consecutive season.

## 5.4 Enforcement action

All enforcement action is undertaken in accordance with Environment Canterbury's Compliance Monitoring and Enforcement Policy 2006<sup>7</sup>. This policy is designed to ensure that the use of enforcement tools is transparent and that people are treated in a consistent and equitable manner.

The enforcement methods most commonly used are: infringement notices (a \$750 fine, prescribed in the Resource Management (Infringement Offences) Regulations 1999); abatement notices (requiring an action to be undertaken or an activity to cease); or court prosecution (if the offence occurred after 1 October 2009, the maximum fine for a company of \$600,000 and 2 years imprisonment for any one offence and a maximum fine for an individual of \$300,000 and 2 years imprisonment for any one offence).

Enforcement action taken by Environment Canterbury over the past four dairy seasons is shown in Table 7. This shows that over the past four dairy seasons the amount of formal enforcement action taken has reduced.

**Table 7, Enforcement action 2006-2011.**

Enforcement action				
Method	2007-2008	2008-2009	2009-2010	2010-2011
Infringement notices	30	43	28	5
Abatement notices	33 <sup>1</sup>	64	21	15
Charges laid	3	2 <sup>3</sup>	4 <sup>5</sup>	2
Awaiting court Appearance	0	1	0	0
Prosecution	3 <sup>2</sup>	1 <sup>4</sup>	2 <sup>6</sup>	3 <sup>7</sup>
<b>Total</b>	<b>69</b>	<b>111</b>	<b>55</b>	<b>25</b>

<sup>1</sup> Two abatement notices were subsequently withdrawn.

<sup>2</sup> Two cases were for discharges of dairy effluent into surface water, resulting in a total of \$13,500 in fines. One prosecution was for repeated significant non-compliance and failure to comply with an abatement notice, resulting in \$10,000 in fines. All three cases appeared in court in the 2008-2009 dairy season.

<sup>3</sup> In one case charges were laid in the 2008-2009 season and subsequently withdrawn in 2009-2010 on the basis of an agreement with Environment Canterbury to undertake remedial works and hold a field day on site to promote sustainable dairying.

<sup>4</sup> This prosecution was an obstruction case where a farmer refused monitoring staff entry onto the property to carry out a routine inspection.

<sup>5</sup> Charges were withdrawn by Crown Prosecutor.

<sup>6</sup> Both prosecutions resulted in \$8,000 in fines. One for discharging effluent to water course. One for ponding effluent.

<sup>7</sup> Two prosecutions resulted in fines of \$3,000 and \$7,000. One prosecution had the charges withdrawn due to participation in a Restorative Justice programme.

The collaboration with industry groups (see Section 6.2.6) has meant that there are now more consistent messages to dairy farmers in relation to consent compliance and farm dairy effluent. This has resulted in a reduced reliance on abatement notices to achieve outcomes. This has had the knock-on effect of reduced infringement notices, since a proportion of the infringement notices are for failure to comply with abatement notices.

## 5.5 Follow-up inspection results

<sup>7</sup> A copy of this policy is available from Environment Canterbury upon request

When a consent condition is graded as significant non-compliance (grade 3) or major non-compliance (grade 4) by a Resource Management Officer, a follow-up inspection is carried out to ensure the matter has been resolved.

Nearly three quarters of conditions assessed as significantly non-compliant at the first inspection were fully compliant at the follow-up inspection (Figure 8). Just over 20% showed an improvement between the first and follow-up inspections and 2% were unchanged. Only 2% of conditions were worse at the follow-up inspection than at the first inspection.

74.5%	21.4%	2%	2%
1	2	3	4
Fully compliant	Improved	No change	Worse

**Figure 8, Significant non-compliance follow-up grade.**

The proportion of farms achieving full compliance, following an initial non-compliant assessment, has improved over the past three seasons. In the 2009-2010 season 71.7% of farms achieved full compliance following an initial non-compliant assessment, and in 2008-2009 this figure was 61.5%. In 2009-2010 18.2% of farms had either shown no improvement or had graded worse non-compliance at the follow-up inspection. In the 2010-2011 season this figure had fallen to 4%.

Some conditions rated as ‘no change’ were because the initial inspection was carried out near the end of the season and there was not enough time for a follow-up inspection. In these cases the sites were identified as priority for early inspection at the beginning of the 2011/12 dairy season.

All conditions assessed as a major non-compliance were found to be fully compliant at the follow-up inspection (Figure 9).

100%	0%	
1	2	3
Became fully compliant	Improved	

**Figure 9, Major non-compliance follow-up grade.**

## 5.6 Dairy effluent: storage and rainfall

### 5.6.1 Dairy effluent storage

The operative Natural Resources Regional Plan allows the storage of dairy effluent as a permitted activity, subject to certain conditions being met (see 7.2.4 below). Storage facilities which do not meet these conditions, including the volume of the storage facility and the ability to store a certain amount of effluent and stormwater generated on the milking platform are allowed but will require a resource consent.

The Canterbury Dairy Effluent Group is committed to helping the dairy farming community, through educational and advisory initiatives. As a more positive alternative to obtaining resource consent to store effluent, the Group are in support of the development of increased effluent storage. Improved storage will provide greater flexibility in managing effluent discharge systems and lessen environmental risk. To assist, Environment Canterbury have allowed existing dairy farms until the start of the 2012-2013 dairy season (August 2013), to have at least three days storage capacity or a detailed design plan with a signed contract to commence construction of same by that date. While the regulatory baseline requires at least three days storage, Environment Canterbury are supporting dairy industry best practice in

recommending the storage pond calculator facilitated throughout New Zealand by DairyNZ's Environmental Extension Specialists. This will show the benefits of even greater storage capacity, tailored to the individual farm of natural physical characteristics of soil types, rainfall, as well as stocking levels and discharge system.

### **5.6.2 Effects of rainfall of dairy effluent disposal**

The average rainfall in Canterbury during the 2010-2011 dairy season was 662 mm (Environment Canterbury data). Three rainfall stations were used for this average: Waiau at Lowry Hills (North Canterbury); Selwyn at Ridgens Road (mid-Canterbury); and Broadgully Creek at Morven (South Canterbury). The rainfall data do provide a trend and an assessment of conditions compared with the average. Rainfall for these sites was at or just below a long-term average for the 2010-2011 season

It is recognised that rainfall totals in other parts of the region were likely to be different from those measured at the stations. The rainfall data does however provide a trend and an assessment of conditions compared with the average. In years when there is relatively low rainfall, there is the benefit of increased absorption of dairy effluent into the ground. Higher than average rainfall can have a negative impact upon effective management of farm dairy effluent. Adequate effluent storage provides increased options in the event of prolonged wet weather or mechanical failure.

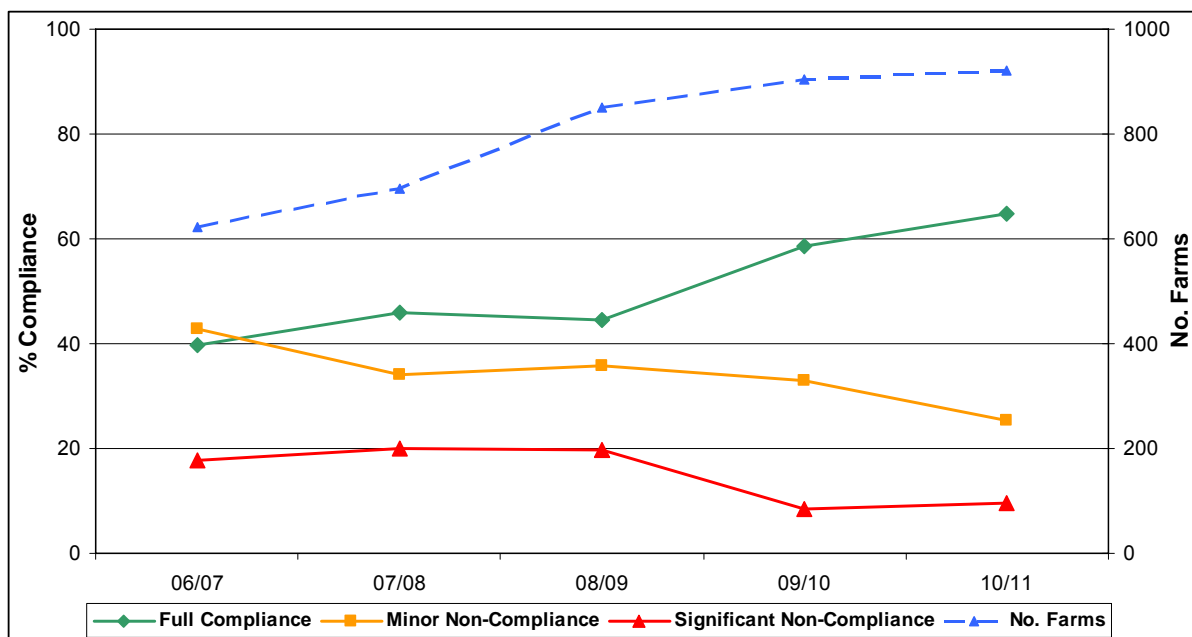
In 2010-2011 season, when there was at, or just below average rainfall, the continued improvements in full compliance can be attributed to the increased efforts by dairy farmers, and ongoing dairy industry initiatives, resulted in a reduction of ponding non-compliances classified as significant or major during the dairy season.

## **5.7 Comparison with previous monitoring seasons**

The results for the 2010-2011 dairy season showed an improvement over the previous four monitoring seasons and in comparison to the previous year, for minor non-compliance. Part of the improvement can be attributed to the continued efforts by the dairy industry and Environment Canterbury to improve compliance (see Section 6).

The levels of consent-based compliance continued to show improvement in the increase in full compliance and reduction in minor non-compliance. Compared with the 2009-2010 season, full compliance increased from 58.7% to 64.9% and minor non-compliance decreased from 32.9% to 25.4%. However, the level of significant non-compliance did not improve, increasing from 8.4% to 9.7% between the 2009-2010 and 2010-2011 seasons. This will be one of the areas of focus for the forthcoming season (see Section 7 below).

Figure 10 illustrates the trend in dairy effluent compliance for the past five seasons. This shows an improvement in full compliance, from 39.6% in 2006-2007 to 64.9% in 2010-2011, an improvement in minor non-compliance from 42.7% in 2006-2007 to 25.4% in 2010-2011 and an improvement in significant non-compliance from 20.0% in 2007-2008 to 9.7% in 2010-2011. Over the past five seasons, the number of dairy farms in Canterbury increased by 47.8%, from 623 to 921.



**Figure 10, Dairy Effluent Compliance Levels 2006-2011.**

There has been a steady decrease in farm nitrogen loadings. This may indicate that dairy effluent disposal areas are being expanded at a rate greater than the growth in dairy effluent volumes. If this is the case it indicates an increased investment in infrastructure enabling application at lower rates, lessening the risk of nutrient loss to the environment through runoff into surface waterways or by leaching into the groundwater system.

### **5.7.1 Impacts of the Canterbury Earthquakes on the Dairy Sector**

The Canterbury earthquakes resulted in a number of queries around the sealing status of a farm’s storage system, mainly from dairy farms in the Selwyn, Christchurch and Waimakariri districts. Many of the storage systems inspected had effluent that had been initially thrown out of the sump/saucer onto land during the quake. After inspection and monitoring of the sump/saucer levels, it was noted that a majority of the farm’s sump/saucer integrity had not been damaged. In the case of the Fonterra farms, all those known to have damaged or cracked systems had Environmental Improvement Plans in place to improve their system. In most cases new storage systems have either been built or are underway. For Synlait farms, while there was significant earthquake damage in milking sheds, there was very little damage to effluent systems.

Environment Canterbury adopted a policy that no enforcement or compliance monitoring action would occur as a result of incidents caused by the earthquake where action has been, and is being taken to address any resulting adverse environmental effects and all reasonable efforts are being made to achieve compliance. Environment Canterbury’s field staff worked closely with Fonterra, Synlait, Federated Farmers and Dairy NZ to assist in offering practical advice on managing environmental risk post-earthquake. None of the non-compliance was as a result of earthquake damage.

## 6 INITIATIVES

Environment Canterbury and the dairy industry have developed a series of initiatives to improve consent compliance and manage environmental effects.

### 6.1 Environment Canterbury initiatives

#### 6.1.1 National audit of compliance monitoring

National reporting on the Dairy and Clean Streams Accord highlighted variability in reporting compliance rates in farm dairy effluent rules between regions in New Zealand. Compliance and regulatory managers from around the country developed a set of standardised compliance reporting grades, consistent with those shown in this report, with set criteria outlining what constituted minor non-compliance and significant non-compliance. These criteria and grades were used from the 2007-2008 season onwards. Environment Canterbury was one of the six regional councils that developed an audit process, in December 2008, to check the effectiveness of the standardised grading system. In June 2010 the second audit was undertaken of the 14 regional councils and unitary authorities undertaking dairy effluent inspections. Environment Canterbury was found to be following the guidelines consistently.

Possibly the most important Environment Canterbury initiative has been its involvement in the joint task force, set up with industry to implement initiatives aimed at improving awareness of dairy effluent management and compliance with resource consent requirements (see section 6.3 below).

### 6.2 Dairy industry initiatives

The dairy industry has been active on a number of fronts in its efforts to reduce the environmental effects from dairy farming.

#### 6.2.1 DairyNZ

DairyNZ, (a levy-funded industry organisation) continued to promote the Farm EnviroWalk self-assessment checklist to help farmers identify practices on their farms that may lead to contamination of waterways<sup>8</sup>. This self-assessment is accompanied by a technical support manual that provides information about effluent, nutrient and land management issues.

Farm Dairy Effluent Design Code of Practice and Design Standards were released in February 2011 to guide designers through the process of developing a fit-for-purpose farm dairy effluent system. The standards provide a set of criteria against which to measure the adequacy of farm dairy effluent systems in New Zealand. The code guides designers through a thorough process for developing a farm dairy effluent system which is fit for purpose.

DairyNZ has also taken a lead role in the group of industry representatives and Environment Canterbury, who have established a plan of action to raise levels of dairy effluent compliance in the Canterbury region. This group was established during the 2008-2009 season and has continued to implement its action plan throughout the 2010-2011 season. The key outcomes from the formation of this group are:

- Increased farmer action to ensure compliance with the conditions of their resource consents;
- Increased farmer awareness that Environment Canterbury and the dairy industry are united in their efforts to improve performance in this area;

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<sup>8</sup> [www.dairynz.co.nz/farmenviowalk](http://www.dairynz.co.nz/farmenviowalk)

- Farmers having better information on what Environment Canterbury will be checking during compliance visits;
- Environment Canterbury and industry reviewing consent conditions to ensure they are fit for purpose.

Throughout 2010-2011 and beyond, a number of other programme components have been developed including:

- The release of a series of 'Let's get it right' farmer-to-farmer cards with examples of what farmers are doing to 'get it right.' These will be distributed to all dairy farmers in the region;
- Staff training programmes;
- Initiatives to reduce system failures and improve maintenance levels including discussions with suppliers and designers;
- DairyNZ will be releasing the final version of the IPENZ<sup>9</sup> Practice Note on Effluent Ponds in September 2011 together with a farmer guide on effluent pond construction. This will be supported by a series of workshops across the country aimed at up skilling rural contractors and farmers on pond construction, which has been identified as an issue in Canterbury.

### **6.2.2 Dairying and Clean Streams Accord**

The Dairying and Clean Streams Accord<sup>10</sup> is a voluntary agreement between Fonterra, the Ministry for the Environment, the Ministry of Agriculture and Forestry, and regional councils. It was established in May 2003 and is essentially an industry initiative to achieve positive environmental outcomes.

The Accord aims to minimise the impact of dairying on New Zealand's streams, rivers, lakes and wetlands so that they are suitable, where appropriate, for fish, for providing drinking water for stock and for swimming. The Accord specifies targets to keep dairy cattle out of streams, lakes and wetlands, to treat farm effluent, and to manage the use of fertilisers and other nutrients.

Environment Canterbury remains supportive of the Accord as one of the tools available to assist in maintaining and enhancing water quality in the region. It also needs to be acknowledged that the water quality issues being faced today are often the results of decades of land use, and improvements in water quality may take longer to achieve.

### **6.2.3 Fonterra**

Fonterra's main focus in the area of effluent management is the checking of "every farm every year" and the subsequent provision of support and advice to farmers to achieve ongoing compliance and best practice with farm dairy effluent. From the start of the 2010-2011 season there has been additional initiatives commencing that will provide for financial deductions or the non-collection of milk under certain circumstances.

Fonterra's Canterbury Sustainable Dairying Team has additional staff available in the 2011-2012 season to provide one-on-one support to farmers. This team help farmers address environmental issues on farm, while also supporting a range of initiatives to continuously reduce the industry's environmental footprint.

These initiatives include:

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<sup>9</sup> The Institution of Professional Engineers New Zealand (IPENZ) is the professional body which represents professional engineers from all disciplines in New Zealand.

<sup>10</sup> <http://www.mfe.govt.nz/issues/land/rural/dairying-accord-may03.pdf>

- All permitted activity holders supplying Fonterra will receive a one-on-one visit to offer assistance in becoming compliant with the operative Natural Resources Regional Plan (NRRP).
- 'Every Farm, Every Year' is an initiative announced in April 2010, that will result in the effluent system on every farm that supplies Fonterra being checked on an annual basis, during the annual shed inspection;
- The Effluent Improvement System imposes financial deductions on farmers where the regional council issues an infringement notice or prosecutes a farmer for a significant or major breach of their effluent disposal requirements. A deduction of \$1500 or \$3000 respectively will be made from the farmer's milk payments. The farmer can apply to put this money towards advice, training or upgrades to the effluent disposal system instead of paying it to Fonterra;
- The Sustainable Dairying Team follows-up with all farmers who are either found to have significant or major non-compliance in regard to effluent disposal, or who are identified as being at risk through the 'every-farm every-year' check. This will usually involve a site visit and in most cases the development of an effluent improvement plan;
- In cases of serious or persistent non-compliance where the farmer is unwilling to address the issue, the collection of milk from the farm may be suspended until the issue is addressed;
- Fonterra requires full compliance with the Clean Streams Accord requirements for all existing and new suppliers.

#### **6.2.4 Synlait**

Synlait Milk has implemented or is planning to implement the following initiatives.

For the 2010-2011 season the following programmes have been implemented:

- A penalty scheme which sees non-compliance penalised financially. Where there is repeated non-compliance the farmer will develop a work programme in consultation with Synlait. If after two years it is not met and/or there is still non-compliance, then the contract will be terminated. Any fines will be put into training and education programmes;
- Completion of on-farm, farm by farm, training programme, including effluent training days for all staff on farms;
- Farm Operational Plans and Guidelines prepared and implemented for all farms;
- Farmers were strongly encouraged to complete the Farm EnviroWalk;
- Lincoln University students and Synlait worked together to develop on-farm reporting and an environmental accreditation programme.

For the 2011-2012 season the following programmes will be implemented:

- Having completed the Farm EnviroWalk becomes a compulsory term of supply;
- Compliance with the Clean Streams Accord will be a compulsory term of supply;
- Reporting and monitoring requirements under Synlait Farm Dairy Quality Manual;
- Environmental Awards for Synlait Suppliers;
- Progress towards environmental accreditation for the factory and Synlait Farms.

### **6.2.5 New Zealand Dairies Limited**

NZ Dairies Ltd has implemented for the 2010-2011 season and plans to continue with the following initiatives:

- A program to deliver the Farm EnviroWalk program to all suppliers;
- Checks of effluent systems and consents during farm visits to gauge compliance;
- All non-complying farms contacted and supported in achieving full compliance;
- Environmental performance considered in contract negotiations.

### **6.2.6 Primary Sector Water Partnership**

The Primary Sector Water Partnership is a group of major primary sector organisations, including Federated Farmers, Fonterra, DairyNZ and Irrigation New Zealand.

The main goal of the Primary Sector Water Partnership plan in the agricultural sector is to improve water quality and quantity within 5 years. This is to be achieved through working in partnership with central and local government to develop sustainable water strategies and implement nutrient management budgets.

## **6.3 Joint initiatives**

The 2007-2008 dairy report was discussed at length with the dairy industry, to formulate initiatives to improve compliance levels. This meeting was held in conjunction with representatives of Fish and Game and Forest and Bird, in recognition of the fact that all stakeholders have a strong interest in achieving a sustainable dairy sector, which can deliver on the key environmental outcomes.

The Canterbury Dairy Effluent Group was set up with representatives from DairyNZ, Federated Farmers, NZ Dairies Ltd., Synlait, Fonterra, South Island Dairying Development Centre (SIDDC) and Environment Canterbury. This group has progressively implemented initiatives that are aimed at improving awareness of dairy effluent management and compliance with resource consent requirements. Environment Canterbury has supported and actively been involved in these initiatives, providing technical support and regional dairying data where appropriate. In addition Environment Canterbury is undertaking a review of all consent conditions on farm dairy effluent consents to ensure that they are fit for purpose. Sessions were run with industry and Environment Canterbury field officers to broaden their understanding of infrastructure and technology capabilities on farm.

Environment Canterbury's work in assessing compliance over several seasons has resulted in a clarification of the common issues facing dairy farmers with respect to complying with resource consent conditions, and the typical obstacles to achieving full compliance. The task force has adopted an industry-wide approach to developing practical solutions to the issues and overcoming the obstacles. This has resulted in industry and Environment Canterbury establishing clear and consistent messages when communicating the nature of the issues and the options available to resolve them. This has resulted in farmers knowing clearly what is required and industry representatives and Environment Canterbury officers all giving consistent and practical advice. Following on from this, industry has committed additional resources to help farmers implement the right solutions on site.

## 7 2011-2012 DAIRY SEASON STRATEGY

Environment Canterbury will continue to support industry initiatives to educate and assist dairy farmers to dispose of dairy effluent appropriately, and will be working closely with dairy industry representatives to address individual significant and major issues of non-compliance.

Table 8 shows the type of response likely to be recommended by a Resource Management Officer. Where non-compliance is not rectified by the end of the dairy season (see Section 5.5), and this non-compliance is repeated in the 2011-2012 dairy season, there is likely to be an increase in the use of prosecution as the most appropriate enforcement option.

**Table 8, Probable enforcement action.**

Probable enforcement action	
Non-compliance	Probable response
Significant or major non-compliance where there is no history of similar breaches in the past.	<ul style="list-style-type: none"> <li>• Formal warning; or</li> <li>• Abatement and/or infringement notices in severe cases; and</li> <li>• Re-inspection to ensure compliance achieved.</li> </ul>
Repeated significant or major non-compliance.	<ul style="list-style-type: none"> <li>• Abatement and infringement notices; or</li> <li>• Prosecution; and</li> <li>• Re-inspections with repeated infringement notices until compliance is achieved.</li> </ul>
Ongoing significant or major non-compliance where multiple infringement notices have not resulted in compliance being achieved.	<ul style="list-style-type: none"> <li>• Prosecution; and</li> <li>• Continued increased monitoring frequency in coming seasons until such time as history of compliance is established.</li> </ul>
Discharge which results in a direct discharge to a surface water body or to groundwater (i.e. via a soak hole)	<ul style="list-style-type: none"> <li>• Prosecution; and</li> <li>• Continued increased monitoring frequency in coming seasons until such time as history of compliance is established.</li> </ul>

In all cases of non-compliance above, the farmer's milk company is alerted when this occurs. This allows direct input from environmental specialists within the milk companies. The approaches that Environment Canterbury will take to address the different levels of non-compliance are detailed below.

### **7.1.1 Minor non-compliance**

The majority of non-compliance identified by Environment Canterbury Resource Management Officers falls into the minor category. These minor breaches, however, can often be an indicator of actions, which in time, may lead to a more significant breach of resource consent conditions. Addressing minor non-compliance is extremely important. By proactively addressing minor non-compliances, resource consent holders can reduce the risk of a significant or major non-compliance in upcoming dairy seasons. Environment Canterbury will therefore be providing clear guidance to dairy farmers on what is required to rectify minor non-compliances, and where appropriate undertaking an increased level of follow-up inspections to ensure that they are rectified.

A letter will also be sent to all dairy farmers reminding them to check that they are complying with all the conditions on their consent(s) at the start of the 2011-2012 dairy

season to ensure that any issues are dealt with early. This letter will also include a template effluent management plan.

### **7.1.2 Significant and major non-compliance**

The use of the enforcement tools available to Environment Canterbury will be continued in the 2011-2012 dairy season to address significant and major non-compliances.

During the 2011-2012 dairy season, dairy farms that are assessed as having significant or major issues of non-compliance will be monitored with increasing frequency until there is confidence that a level of compliance can be maintained. Where compliance is not achieved, Environment Canterbury will take enforcement action against farm employees, owners, companies and directors. Abatement notices will continue to be issued where it is appropriate to do so. Environment Canterbury will issue infringement notices for breaches of abatement notices.

Environment Canterbury will also recommend prosecutions if applicable. Recommendations to prosecute will be made in extreme cases of non-compliance. An example includes, but is not limited to, non-compliances such as direct discharges to water. However, these incidents remain relatively infrequent in Canterbury, and one was observed during the 2010-2011 season.

## **7.2 Requirements of the operative Natural Resources Regional Plan (NRRP)**

Following the Natural Resources Regional Plan becoming operative from 11 June 2011, there are now new rules that affect dairy farming activities, on all existing and proposed new dairy farm operations in Canterbury. A summary of all the new rules associated with managing dairy effluent, including key points of the rule conditions, are listed below.

The nature of dairy farm storage and discharge activities means these rules relate closely to each other. Where resource consent is required for discharges covered by any of the permitted rules, the discharge consent required by rule WQL25 will generally include all the different activities into the one consent. It should also be noted that for all rules relating to permitted activities, resource consent is required if compliance with the basic conditions of the rule cannot be met, with existing dairy farms required to make application by 11 December 2011.

The full conditions identify the requirements and are available on-line<sup>11</sup> and advice is available from Environment Canterbury's Customer Services Section. Environment Canterbury and the Canterbury Dairy Effluent Group are carrying out educational and advisory initiatives to help the dairy farming community with the transition to an operative plan. There may also be requirements under other, catchment specific, regional plans - advice is available from Environment Canterbury's Customer Services Section.

### **7.2.1 Rule WQL25: Discharge of animal effluent onto land.**

The discharge of effluent from dairy yard effluent collection and storage systems must be authorised by resource consent. This now includes smaller dairy farms previously authorised by the permitted activity rules of the Transitional Regional Plan. Farmers operating by this previous authority need to make application for resource consent by 11 December 2011 to be able to continue their activity.

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<sup>11</sup> <http://ecan.govt.nz/publications/Plans/nrrp-chapter-4-operative-110611.pdf>  
<http://ecan.govt.nz/publications/Plans/nrrp-chapter-3-operative-no-maps-110611.pdf>

**7.2.2 Rule WQL23: Discharge of solid dairy waste and vegetative material containing animal solids from holding pads and barns, onto land.**

The discharge of this solid material is allowed as a permitted activity, subject to conditions including maintaining buffer zones from waterways, bores, soak holes, sensitive areas and when soil moisture conditions do not exceed field capacity,

**7.2.3 Rule WQL24: Use of land for a stockholding area.**

The use of a stockholding area is a permitted activity subject to conditions including the base of any stockholding area being made of impervious material, and effluent from cows standing on the pad, along with any washdown water and rainwater, being disposed and discharged from an authorised collection and storage system (see WQL25 above)

**7.2.4 Rule WQL26: Storage of dairy effluent.**

The storage of dairy effluent is allowed as a permitted activity, subject to conditions including the storage facility holding a minimum of three days effluent (including rainwater), the facility being made of, or lined with material that ensures any seepage is no more than one millimetre per day; and the storage facility being located outside buffer zones to waterways, bores and land prone to flood. Storage ponds which cannot hold three days effluent (including rainwater) or which are greater than 1500 m<sup>3</sup> in size, or cannot comply with other conditions of the rule will require resource consent.

**7.2.5 Rule WQL27: Storage of solid dairy effluent and decomposing vegetative material containing dairy effluent.**

Storage of solid dairy effluent and decomposing vegetative material containing dairy effluent is a permitted activity, subject to the material being stored on an impervious surface with seepage no more than one millimetre per day and the facility is located outside buffer zones to waterways, bores, drinking and supply bores.

**7.2.6 Rule AQL63: Discharge of odour or particles to air from storage of animal waste**

The discharge of odour and particles into the air from the storage of effluent is a permitted activity provided the facility was established prior to 1 June 2002 and other conditions are met.

If the storage facility was not established prior to this time, or other conditions are not met, consent is required under Rule AQL69. Generally this will be included on the consent issued under Rule WQL25.

**7.2.7 Rule AQL65: Discharge of odour and liquid particles into the air from the discharge of effluent to land.**

The discharge of odour and liquid particles into the air from the discharge of effluent to land is a permitted activity subject to any odour not being offensive or objectionable beyond the property boundary and spray drift is contained within the property boundary where the discharge is made. A record of all discharges is to be maintained, detailing where the discharges were made, the volume of the discharge and wind direction.

The above rules relate directly to the discharge and storage of dairy cow effluent. The newly operative plan also contains other rules affecting dairy farms in Canterbury relating to stock access to waterways and the use of ofal pits.

### **7.2.8 Rule WQL21: Stock access to water ways.**

From 11 June 2012, discharges to water or disturbances to beds and banks will be prohibited by intensively farmed livestock or by cattle, farmed deer and farmed pigs in areas of significant fish spawning, on beds of identified spring fed plains rivers or within one kilometre upstream of identified freshwater bathing and public drinking water supply.

Prior to 11 June 2012 the discharge of contaminants into water in rivers, lakes, or wetlands from access by livestock in or near water or disturbances by livestock the beds of rivers, lakes and wetlands is permitted subject to the access not resulting in significant adverse effects, such as discoloration of water, damage to the banks and beds and an abundance of effluent discharged by the livestock.

### **7.2.9 Rule WQL22: Use of offal pits**

The discharge of dead animals, animal parts and refuse into land is a permitted subject to pits being developed according to base conditions including maintenance of buffer zones to surface water and groundwater aquifers

### **7.2.10 Rule AQL67: Discharge of odour from offal pits**

The discharge to air of odour from the disposal and decay of dead livestock in offal pits as a permitted activity provided all the conditions of the permitted rule are complied with, including the odour not being offensive or objectionable beyond the property boundary.

## **7.3 Audited Self Management – Dairy Farm Monitoring Beyond the 2011–2012 Season**

This report covers the level of consent compliance for the storage and discharge to land of dairy effluent collected in the milking shed in Canterbury in 2010-2011. Effluent collected in the milking shed typically makes up around 10% of dairy effluent – see Section 2. The remaining 90% of dairy effluent on farms is deposited directly on pasture by the herd as they graze in paddocks. These other aspects of the dairy farm's operations that are not covered by the resource consent need to be managed to ensure sustainable use of the resources involved.

When on the farm carrying out routine monitoring inspections, Resource Management Officers also check other areas not included in the resource consent or permitted activity rules. Some of these areas may have the potential to result in effluent discharges into water, such as stock in waterways and track run-off. To check every aspect of a farm operation while undertaking a compliance monitoring visit would require a significant increase in resources. Much of this work is undertaken either by the farmers themselves, or by their industry representatives.

The Canterbury Dairy Effluent Group, comprising Dairy NZ, Federated Farmers, New Synlait, Fonterra and Zealand Dairies, has been working together on the issues surrounding the disposal of dairy effluent since it was formed in 2008 (see section 6.3 above). While this group is still focused on the issues of consent compliance, industry representatives are indicating a desire to move beyond compliance and into best practice. This is signalled with the creation of specialist dairy positions within the industry to provide on-farm expertise and advice to farmers, regarding effluent treatment and disposal systems. The majority of these positions have been filled with people who have an intimate knowledge of regulatory requirements and expectations. This has happened at a time when Environment Canterbury is working hard to find ways to get better, more widespread and more environmentally sustainable outcomes with its limited resources. The increased on-farm presence from the dairy industry, with comprehensive compliance knowledge, has the potential to provide an

opportunity to allow Environment Canterbury to become more targeted with its resources to those higher risk farms with known problems. The ongoing work of the Canterbury Dairy Effluent Group, and increased knowledge and resource to address dairy effluent issues, provides confidence that the industry can take on more self management of these issues, to ensure they are addressed. To this end, Environment Canterbury is giving careful consideration to the use of Audited Self Management, as a means of achieving wider environmental management on farm. The concept of audited self-management involves entities developing their own policies, procedures and plans to achieve agreed environmental outcomes, agreement on those outcomes, and involves third party involvement in the certification of their environmental systems and auditing of their environmental performance. The key will be to move into this model of compliance operation carefully and with appropriate checks and balances to continue to hold the industry to account.

## 8 CONCLUSION

Monitoring of 917 dairy effluent resource consents and permitted activities, conducted by Environment Canterbury during the 2010-2011 dairy season, showed an improvement in full compliance and a commensurate reduction in minor non-compliance with resource consent and permitted activity conditions. Both methods of analysis used in this report, resource consent-based compliance and condition-based compliance, showed improvements in comparison with the previous four monitoring seasons in these areas. The rate of significant non-compliance did not improve from the previous season, but remained lower than in the preceding four seasons.

An analysis of compliance by territorial authority showed the majority of Canterbury's dairy farms (52.4%) are in either the Ashburton or Selwyn districts. This breakdown by geographical area will help to focus and refine education and outreach efforts to improve dairy effluent resource consent and permitted activity compliance.

There were still several common issues found during compliance monitoring site inspections. Exceedence of undiluted dairy effluent limits, nitrogen loading, and dairy effluent ponding were among the most common reasons for non-compliance, although these were lower than in previous seasons. Discharge of dairy effluent within buffer zones were found to a lesser extent than in previous seasons and there was one observed instance of direct discharges to water.

Resource Management Officers also recognised many good practices on dairy farms during the monitoring season. Many farm owners or managers go beyond their consented conditions to improve their environmental performance. Environment Canterbury appreciates the ongoing efforts and cooperation of these dairy farms.

The number of abatement notices and infringement notices issued was below last year's levels. The higher level of full compliance contributed to achieving this, as well as the combined Environment Canterbury / Industry Group initiatives to increase awareness of the importance of good farm dairy effluent management. Prosecutions for serious offences remained static in comparison to previous seasons.

Where there was significant or major non-compliance and/or enforcement action taken, a re-inspection was conducted. Following re-inspection, a majority of dairy farms attained full compliance. Again, this level of successful resolution was an improvement on previous years. Those that did not will be a priority for the 2011-2012 dairy season. Due to the seasonality of the industry, no action can be taken until the next dairy season.

Environment Canterbury and the dairy industry both continue initiatives and working together to improve compliance within Canterbury. Efforts will continue into and beyond the 2011-2012 dairy season.

## 9 ACKNOWLEDGEMENTS

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## Appendix 1, Standard Compliance Grades

Non-compliance issue	Typical grade	Typical causes	Resolution advice	Likely Environment Canterbury follow-up
Minor ponding identified	2	<ul style="list-style-type: none"> <li>Travelling irrigator speed setting too low.</li> <li>Failure to shift travelling irrigator.</li> </ul>	Reduce rate of application. Assess system for faults. If fault found repair.	Advice given in Compliance Monitoring Report (CMR). Possible re-inspection.
Significant ponding identified	3	<ul style="list-style-type: none"> <li>Travelling irrigator malfunction.</li> <li>Hose breakages.</li> </ul>		Advice given in CMR. Farm will be re-inspected. Possible infringement and/or abatement notices issued.
Severe ponding identified	4	<ul style="list-style-type: none"> <li>Poor equipment maintenance.</li> <li>Storage facility overflow</li> </ul>		Possible major system fault. Have system assessed by qualified advisor.
Nitrogen overload	2, 3 or 4 depending on severity	Insufficient disposal area used for the number of cows being milked.	Extend the disposal area to ensure that nitrogen application does not exceed 200 kg/ha/yr. (approximately 3.3 ha/100 cows), <u>or</u> reduce number of cows being milked.	Advice given in CMR. Date given before which the disposal area is to be extended or herd size reduced. The size of the disposal area will be fully assessed the following season to ensure that it has been extended.
Undiluted effluent exceeded (applies to resource consents only, not permitted activities).	2, 3 or 4 depending on severity	Failure to apply for a change in consent conditions when increasing herd size.	Application to be made to change the relevant consent condition. This will require an assessment to ensure that the environmental effects of the increase are nil or minor.	Advice given in CMR that undiluted effluent volume has been exceeded. An application to change the relevant condition of the resource consent, or a new consent, is required to be made prior to a specified date.
Any increase in effluent volume where the disposal is being carried out as a permitted activity.	2, 3 or 4 depending on severity	Failure to apply for resource consent when increasing herd size.	Apply for a resource consent to discharge effluent onto land.	Advice given in CMR that a resource consent is now required. An application is required to be made prior to a specified date.
Effluent discharge to water (including where effluent is running off into surface or ground water).	4	<ul style="list-style-type: none"> <li>Effluent application rate on disposal area too high, resulting in runoff to surface water or soak-hole.</li> <li>Storage facility overflow</li> <li>Pipe breakage</li> </ul>	Cease discharge immediately.	Enforcement action will be taken, likely to result in prosecution.
Effluent disposal within buffer distance around a watercourse, groundwater bore or soak-hole.	3	Failure to identify location of waterway, bore or soak hole when setting up travelling irrigator.	Move irrigator to outside the restricted area.	Advice given in CMR. Likely to be re-inspected. Enforcement action may be taken such as abatement notice.
Failure to provide evidence that effluent storage facility is sealed.	2	Failure to provide evidence that effluent storage facility is sealed.	Either: <ul style="list-style-type: none"> <li>Provide documentation showing that the storage facility is appropriately lined; or</li> <li>Test the storage facility to show that it is sealed to the required standard; or</li> <li>Have the storage facility lined and provide evidence that it has been completed.</li> </ul>	Advice given in CMR that evidence needs to be provided. Continued failure to provide information may result in enforcement action. Continued non-compliance may result in higher severity of non-compliance.
Failure to install adequate backflow prevention where effluent is being injected into irrigation water.	3	Failure to identify the requirement on the resource consent for a backflow prevention device to be installed.	Install an appropriate backflow prevention mechanism recognised as acceptable by Environment Canterbury.	Advice provided in CMR that an appropriate backflow prevention system is to be fitted to the bore. Failure to have a system fitted within a specified timeframe may result in enforcement action.