Seriously new thinking...

Effluent pond size calculations

Here's what we take into account:

Storage Volume

The required storage volume for Farm Dairy Effluent (FDE) ***shall be the greater of***:

A: Regulatory requirements, OR

B: The calculated storage requirement determined by taking all of the following factors into account (see Figure 1 for an illustration of these requirements):

- **Contingency for breakdowns and maintenance**

The minimum storage period shall allow enough time for breakdowns and routine maintenance of land application equipment and will depend on your location and access to necessary service industries.

- **FDE Volume**

FDE includes dung and urine, washwater, bedding, feed, and any other material potentially located within contained animal areas and which must be captured and stored.

- **Storage Time**

This must account for local climate, the potential for periods of high soil moisture levels and periods of limited staff availability (e.g. calving), and meet the criteria in Table 1 in at least 9 out of every 10 years, based on a statistical analysis.

- **Average Expected Rainfall**

This is the rain that falls directly onto the *storage pond surface* during the storage period.

- **Average Expected Runoff**

This is the runoff from rainfall onto all areas that drain into the storage pond during the storage period.

- **Climatic Conditions and Soil Temperature**

These must take into account periods when conditions may reduce or prevent nutrient attenuation or uptake by plants.

- **Contingency for Large Storm Events**

This is the volume of rainfall and runoff from a 25-year, 24 hour storm event directly onto the storage, and onto all areas that drain into the storage.

- **Expected Leachate and Runoff Volume from Solids Storage**.

- **Expected Solids Accumulation**

This must take into account the diminishing effective liquid storage volume that results from the accumulation of solids in the pond.

- **Minimum Freeboard**

(The height from the full pond liquid level to the top edge of the pond) Maintain a minimum freeboard of 0.5m.

- **Future Stock Numbers**

Account for potential future increases in stock numbers.

[Acknowledgement: Farm Dairy Effluent (FDE) Design Standards © Aqualinc Research Ltd. Prepared for DairyNZ Ltd (Report No C09104/2, February 2010) See p5 Amended by Spitfire Irrigators Ltd as and where appropriate]

An illustration:

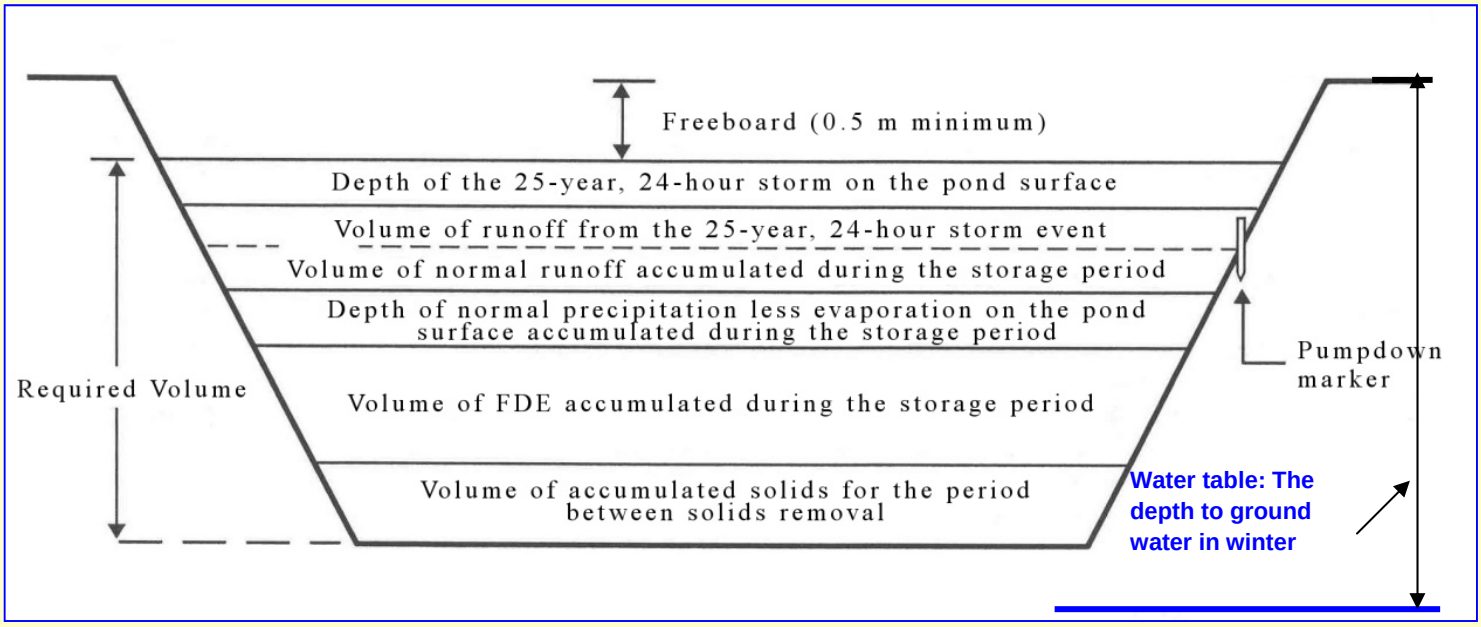

Figure 1: Cross section of liquid FDE storage pond with a watershed (modified from: USDA, 1997, Figure 10-15).

What we do for you:

- We provide you with a *questionnaire* that you complete and then return to us. It will enable us to calculate the pond size according to the procedure laid out above.
- If you have correctly completed the questionnaire (including mention of the NIWA, Metservice or regional council weather station nearest to you) this sorting of the data, with perhaps a phone call to you, and then the preparation of a short report will take us about 6 hours, total, for a cost to you of $450 plus GST. You must pay this before we give you the report. ***The fee is refundable if you purchase at least 60% of our quoted system, later.***
- If you want to consider water recycling options (and you should, because they reduce pond size, cost, irrigating time and expense, as well as water savings) then we will quote you for the additional time to take water recycling into account.
- Note that **we will guarantee the accuracy of the report**. You may well have to use this report to justify the pond size to a regional council and so you will need to have the formal details to hand. The report will catalogue the data you gave us, it will contain a schematic drawing of the yards and other drainage areas or effluent collection zones, it will include the summarized calculations and conclusions.

Contact us now:

Ask for :

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