

NEW MEXICO ENVIRONMENT DEPARTMENT (NMED)
POLICY FOR STORAGE AND DISPOSAL OF DAIRY WASTES
AS THEY RELATE TO GROUND WATER
DECEMBER 13, 1996

PURPOSE: The following policy regarding storage and disposal of dairy wastes has been developed for the protection of public health and the environment. The policy sets forth best management practices for the handling of dairy wastes. This policy does not supersede federal, state, or local regulations. All applicable New Mexico Water Quality Control Commission (WQCC) Regulations and federal Clean Water Act requirements regarding the discharge of dairy wastes must be met.

NOTE: Any variation from this policy must be pre-approved by NMED.

AUTHORITY: NMWQA 74-6-4, 20 NMAC 6.2 3106.C.7, 3107.A, 3109.C.2

I. General Requirements

A. A 100 foot horizontal setback shall be maintained between lagoons, land application sites and private drinking water supply wells. Public drinking water supplies will require a 200 foot setback.

B. New storage lagoons, expansion of existing storage lagoons, and land application of wastes shall not occur within 100 feet of any watercourse as defined by 20 NMAC 6.2 1101.GGG. A departure from this requirement for existing lagoons may be requested. Existing lagoons within 100 feet of a watercourse will be inspected for structural integrity and sound engineering practices during the discharge plan review process.

C. The dairy facility must be constructed in such a way as to divert runoff water from confinement pens and manure storage areas to storm water runoff retention areas in a manner which minimizes potential impacts to ground or surface water.

D. Runoff water that is present in unlined storm water runoff retention areas 14 days after the storm event has ceased, shall be pumped to a designated land application area or lined effluent lagoon. Dairies that exceed recommended holding times may be required to line runoff retention areas (see II.A of this policy).

E. If effluent is to be applied to land not owned by the permittee, an agreement signed by the permittee and the landowner shall be submitted to NMED which defines responsibility should there be a violation of the discharge permit requirements or Water Quality Control Commission Regulations, including any exceedence of ground water

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standards. The agreement shall also specify the party responsible for any monitoring and/or corrective action if required.

F. The volume of effluent being discharged shall be measured directly or indirectly by a method to be approved by NMED. Acceptable methods include the use of flow meters or volumetric calculations of effluent releases from lagoons.

G. The number of cows to be milked at the dairy shall be reported at the time of permit approval, renewal and/or modification.

II. Effluent Storage Lagoons

Effluent storage lagoons shall be constructed using the criteria listed below. Effluent and storm water runoff may be stored in the same lagoon.

A. Liners

All liners shall meet NMED guidelines for the construction and installation of lagoon liners.

1. All effluent storage lagoons shall be lined. Clay-lined lagoons shall be designed and installed so that the saturated hydraulic conductivity (K_{sat}) of the liner is no greater than 1×10^{-7} cm/sec up to 90% of Standard Proctor Density. Site specific conditions, including depth to ground water, depth of wastewater in the lagoon, soil and geologic conditions in the subsurface, and concentration of contaminants in the wastewater, shall be considered by NMED in determining variances in the thickness, type and saturated hydraulic conductivity of the liner material.

2. Pre-existing lagoons that do not meet NMED guidelines for the construction of clay or synthetic liners may be permitted if the discharger demonstrates, and NMED concurs, that ground water beneath or adjacent to the site is not being contaminated and will not be contaminated in the reasonably foreseeable future. Site specific conditions, including historical ground water quality, depth to ground water, depth of wastewater in the lagoon, migration of contaminants in soil, liner construction specifications, soil and geologic conditions, and concentration of contaminants in the wastewater may be factors considered by NMED in determining whether existing lagoons and lagoon liners are acceptable.

3. Clay liners shall be installed with a minimum of two

six inch compacted lifts each of which meets the prescribed proctor compaction to achieve the saturated hydraulic conductivity (K_{sat}) requirement of 1×10^{-7} cm/sec. Clay liners shall be tested by an independent testing firm, after installation, to ensure that they meet the requirements of this policy including documentation of the required Standard Proctor Density. Reports of all laboratory and field tests shall be submitted to NMED prior to discharge. All clay liners should be kept moist to avoid drying and cracking.

4. Synthetic liners shall be constructed of a material that has an appropriate tear resistance, strength, thickness, protection from UV radiation and chemical resistance for the application for which it is being used. Liners shall be installed in accordance with the manufacturers specifications, including sub-grade preparation. Seam integrity of synthetic liners shall be verified by a qualified independent party, contractor or professional engineer. Dairies shall inspect synthetically-lined lagoons for signs of degradation each time the lagoon is emptied to remove solids. Dairies may be required to empty synthetically-lined lagoons for inspection if confirmation sampling suggests ground water contamination attributable to the lagoon is occurring. NMED shall be notified within 48 hours of any sign of liner degradation.

5. As-built plans for all lagoons shall be submitted within 30 days of completion of construction. The as-built plans should be certified to be true and correct by a licensed independent party, contractor or professional engineer.

B. Manure/Solids Management

A manure separation/solids removal technique must be employed which minimizes accumulation of manure sludge and other solids in lagoons. Appropriate systems include commercial manure separators, settling basins, microbiological treatment or other systems which are designed for this purpose. A manure/solids management plan shall be submitted to NMED which includes measures to ensure liner integrity.

C. Capacity

1. Storm water runoff retention areas shall be capable of containing the rainfall and rainfall run-off from a 25 year, 24 hour rainfall event.

2. Effluent storage lagoons shall be capable of containing the maximum daily discharge allowed by the discharge permit for a minimum of 60 days to allow for periods when land application is impractical or impossible due to weather conditions, crop transitions, etc.

3. Combined effluent disposal and storm water runoff lagoons shall be capable of containing the combined flow from 1 and 2 above.

4. Wash water sumps must be constructed of concrete materials and sealed with an impermeable coating. The seal should be reapplied as necessary to maintain impermeability.

5. Dairies using sumps and direct application with no lagoon shall demonstrate to NMED that there is adequate acreage for land application and a properly designed effluent delivery and management system before approval can be granted. This shall include an emergency effluent collection system for the temporary storage of wastewater in the event of pump failure, pipeline breakage, adverse weather conditions or other emergencies.

III. Land Application of Dairy Effluent

A. Land application of effluent and manure shall adhere to the appropriate nitrogen application rate for the crop planted, pursuant to 20 NMAC 6.2 3109.C.3.a.3. Both the total nitrogen supplied by land application of effluent and spreading of manure shall be used in nitrogen loading calculations.

B. Land application of dairy effluent shall be conducted in a manner which minimizes excessive ponding and prevents runoff of effluent and shall be managed in a manner consistent with the effluent uptake of the crops grown.

IV. Ground Water and Effluent Monitoring at Dairies and Land Application Areas

A. A ground water monitoring plan will be developed which determines the direction of ground water flow and monitors each potential contamination source. At least three monitoring wells will be included in the monitoring plan. Existing wells and/or wells shared by other facilities may be used for monitoring purposes if they are appropriately located and are completed at appropriate depths. The use of existing wells and/or the proposed locations of new wells shall be pre-approved by NMED. Under certain site specific conditions, giving consideration for the agricultural practices to be employed, the depth to ground water and the subsurface geological regime, land application at or below the agronomic rate as specified in 20 NMAC 6.2 3109.C.3.a(3) for the crops

being grown will be considered in determining whether the land application areas are considered as potential contamination sources.

B. Wells shall be constructed in accordance with the Ground Water Section's Monitor Well Construction and Abandonment Guidelines. Construction logs and lithologic logs shall be submitted to the Ground Water Pollution Prevention Section after well installation. Prior to discharging, all monitoring wells at new dairies shall be sampled for a minimum of the constituents listed in IV.F to determine background water quality conditions. For existing dairies, all monitor wells shall be sampled as soon as practicable after installation to determine existing ground water quality conditions.

C. The elevation at the top of the casing of all monitoring wells shall be surveyed to a common permanent benchmark. Surveying the wells with respect to each other and using one of the wells as the benchmark is acceptable. The survey shall be accurate to the nearest hundredth of a foot. Survey data shall be used in conjunction with water level measurements to calculate the ground water flow direction and gradient.

D. Before purging and sampling wells, the depth to ground water (DTW) in each well shall be measured using a steel tape and chalk, a well sounder, or another method capable of measuring to the nearest hundredth of a foot. Measurements, purging and sampling shall be conducted in a manner consistent with NMED's Recommended Protocol for Sampling Monitor Wells. Reports of water depths in each well shall be included in all monitoring reports submitted to NMED.

E. Wells shall be purged, sampled and analyzed quarterly. Ground water samples shall be analyzed by EPA approved methods for nitrate as nitrogen ($\text{NO}_3\text{-N}$), total Kjeldahl nitrogen (TKN), chloride (Cl), and total dissolved solids (TDS). Additional parameters may be required depending on specific dairy practices. Monitoring reports summarizing the results shall be submitted to the Ground Water Pollution Prevention Section on a quarterly basis. Depending on hydrological conditions and ground water quality, dairies may request a reduction to semi-annual monitoring on a site specific basis. All new dairies shall monitor ground water quarterly for a minimum of one year to establish a baseline for ground water quality.

F. Dairy effluent shall be sampled and analyzed semi-annually for nitrate as nitrogen ($\text{NO}_3\text{-N}$), total Kjeldahl nitrogen (TKN), Chloride (Cl) and total dissolved solids (TDS) using EPA approved methods. Volumes discharged to lagoons and to land application sites shall be submitted semi-annually

with the monitoring reports. Effluent samples shall be representative and shall not be collected at times when concentrations are expected to be low. All new dairies shall monitor effluent quarterly for a minimum of one year to establish a baseline for effluent quality.

G. Samples shall be analyzed by a qualified laboratory which participates in EPA proficiency testing and has passed the tests for the parameters listed above. Chain of custody forms shall be maintained throughout the sample collection and transportation process and submitted with the laboratory test results.

H. Monitoring reports shall include completed Land Application Data Sheets (LADS) which calculate the amount of nitrogen that is applied to the land. The LADS shall incorporate the average total nitrogen concentrations of effluent analyzed during the previous two monitoring periods. The LADS shall be submitted semi-annually with dates to be agreed upon depending on the geographical location and land application and/or cropping practices.

Signed: _____

Secretary
Environment Department

Date: _____

12/13/96