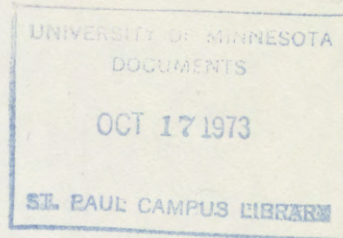


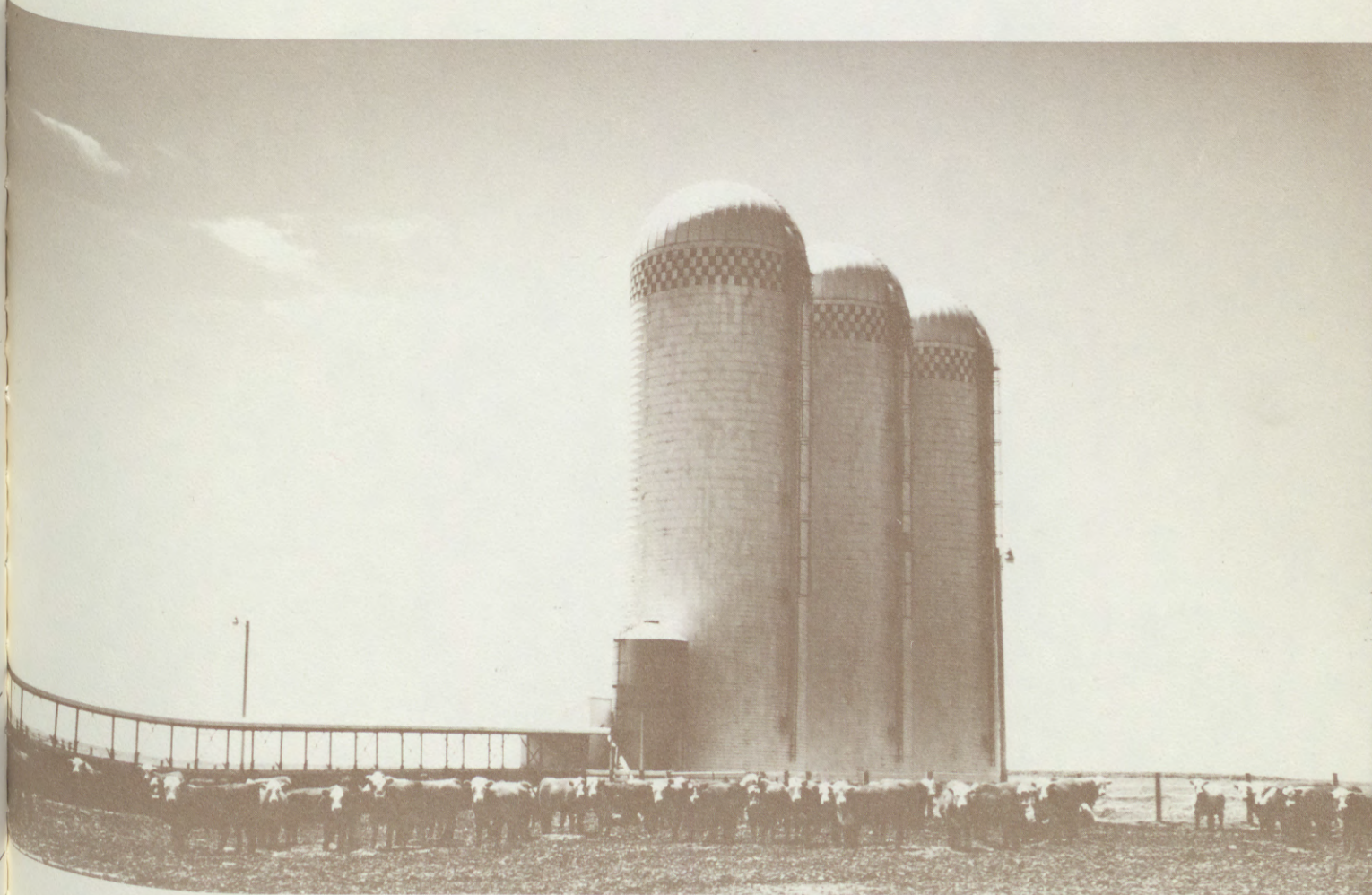
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MINNESOTA REGULATIONS For Animal Waste Control



Special Report 41

Agricultural Engineering

MINNESOTA REGULATIONS

For Animal Waste Control

By Philip R. Goodrich
Extension Agricultural Engineer

This publication presents Minnesota animal waste control regulations in a form operators can easily understand. The regulations were enacted in April 1971.

Throughout most of the publication, regulations are presented on the left columns and interpretations are presented on the right columns for easy reference.

Preamble

"An adequate supply of healthy livestock, poultry, and other animals is essential to the well being of Minnesota citizens and the nation. They provide our daily source of meat, milk, eggs, and fiber. Their efficient, economic production must be the concern of all consumers if we are to have a continued abundance of high-quality, wholesome food and fiber at reasonable prices.¹

"However, livestock, poultry, and other animals produce wastes which may, when improperly stored, transported or disposed of, affect Minnesota's environment. Where such wastes could add to air, water, or land pollution they must be controlled.

"The following regulations for the control of livestock, poultry, and other animal wastes are drafted to provide protection against pollution by domesticated animals. They are written with full understanding that animal wastes are often by-products beneficial to the economic production of agricultural crops.

"These regulations are written to provide the greatest safe latitude in compliance, taking into consideration that agriculture has 20 to 30 years of experience in successful soil and water conservation. Control measures, where deemed necessary, are to be individually designed and developed to provide the specific controls needed for the operation in question.

"These regulations comply with the specific policy and purpose of the State of Minnesota in regard to solid waste control as set forth in Laws 1969, Chapter 1046 (Codified as Minnesota Statutes, Section 116.07).

"Subd. 2. The Pollution Control Agency shall also adopt standards for the control of the collection, transportation, and disposal of solid waste for the prevention and abatement of water, air, and land pollution, recognizing that due to variable factors, no single standard of solid waste control is applicable to all areas of the State. In adopting standards, the Pollution Control Agency shall give due recognition to the fact that elements of control, which may be reasonable and proper in densely populated areas of the State, may be unreasonable and improper in sparsely populated or remote areas of the State, and it shall take into consideration in this connection such factors, including others which it may deem proper, as existing physical conditions, topography, soils and geology, climate, transportation, and land use. Such standards of solid waste control shall be premised on technical criteria and commonly accepted practices.

"Subd. 4. Pursuant and subject to the provision of Chapter 15, and the provisions hereof, the Pollution Control

Agency may adopt, amend, and rescind regulations and standards having the force of law relating to any purpose within the provisions of this act for the collection, transportation, and disposal of solid waste, and the prevention, abatement, or control of water, air, and land pollution, which may be related thereto, and the deposit in or on land of any other material that may tend to cause pollution. Any such regulation or standard may be of general application throughout the State or may be limited as to times, places, circumstances, or conditions in order to make due allowance for variations therein. Without limitations, regulations or standards may relate to collection, transportation, disposal equipment, location, procedures, methods, systems, or techniques, or to any other matter relevant to the prevention, abatement, or control of water, air, and land pollution which may be advised through the control of collection, transportation, and disposal of solid waste; and the deposit in or on land of any material that may tend to cause pollution.

"Wastes other than solid wastes are subject to control under the authority of Minnesota Statutes, Section 115.01-115.09, and other applicable standards, regulations, orders, or permits of the Agency relating to water pollution and disposal of sewage and industrial or other wastes."

¹Throughout this publication, text in quotations are from the Minnesota Pollution Control Agency Regulations For The Control Of Wastes From Livestock Feedlots, Poultry Lots, And Other Animal Lots unless otherwise indicated.

"SW 51 APPLICABILITY, DEFINITIONS, AND GENERAL CONDITIONS FOR HANDLING, STORAGE, TRANSPORTATION, AND DISPOSAL OF ANIMAL WASTES. SEVERABILITY AND VARIANCES.

Applicability

"These are regulations and standards the provisions of which govern the storage, transportation, and disposal of animal wastes and the registrations and

issuing of permits for the construction and operation of animal waste disposal systems for the protection of the environment in keeping with Minnesota

Statutes, Chapters 115 and 116 and Laws 1969, Chapters 847, 931, and 1046.

The following words are specifically defined in the regulations:

Definitions:

" 'Agency' shall mean the Minnesota Pollution Control Agency, its agents, or representatives."

Interpretations

The Section of Agricultural Wastes, Division of Solid Waste, has its headquarters at 717 Delaware Street S.E., Minneapolis. Regional offices are at Marshall, Rochester, Duluth, Fergus Falls, and Brainerd. These offices can answer many questions and provide needed forms.

The MPCA Board has nine members appointed by the Governor. This board represents a cross section of Minnesota residents. One member must be a farmer. Any staff member visiting a feedlot will identify himself if requested to by the feedlot operator.

" 'Animal manure' shall mean poultry, livestock, or other animal excreta or mixture with feed, bedding, or other materials."

" 'Animal wastes' shall mean animal manure which is stored, transported, or disposed of as an unwanted waste material and which poses a potential pollution hazard to the land, air, or waters of the State. This shall not include animal manure used as fertilizers."

This definition differentiates between animal manure to be recycled and manure to be discharged in the outside environment. Most animal manure in Minnesota is used as fertilizer. To treat animal manure for stream or river discharge is costly. A small amount of animal waste is deposited in sanitary landfills. In fact, such disposal will probably cease in the near future because of stricter federal regulations.

" 'Feedlot operator' shall mean an individual, a corporation, a group of individuals, a partnership, a joint venture, owner, or any other business entity having charge or control of one or more livestock feedlots, poultry lots, or other animal lots."

" 'Fertilizer' shall mean (a) animal manure which is put on or in the soil to improve the quality or quantity of plant growth, or (b) animal manure which is used as a compost, soil conditioners, or specialized plant beds."

This definition encourages use of animal manures as a crop resource. Such application must not contaminate ground water or severely depress crop growth. The crop utilizes the nutrients, and the soil micro-organisms break down the organic matter. Thirty to 50 wet tons per acre is not excessive on heavily cropped soils. Manure dumped in piles in road ditches, wetlands, or along streams cannot be classified as fertilizer applications.

Definitions

" 'Floodway' is defined in Minnesota Statutes, Section 104.02 Subdivision 4."

From the Minnesota Statutes:

"Subd. 4. 'Floodway' means the channel of the water-course and those portions of the adjoining flood plains which are reasonably required to carry and discharge the regional flood."

"Subd. 2. 'Regional Flood' means a flood which is representative of large floods known to have occurred generally in Minnesota and reasonably characteristic of what can be expected to occur on an average frequency in the magnitude of the 100 year recurrence interval."

" 'Land Pollution' shall mean the presence in or on the land of any solid waste in such quantities of such nature and duration, and under such conditions as would affect injuriously any waters of the State, create air contaminates or cause air pollution.

" 'Livestock' shall mean beef and dairy cattle, horses, swine, and sheep."

" 'Livestock Feedlot' shall mean the confined feeding, breeding, raising, or holding of livestock in enclosures specifically designed as confinement areas in which animal manure may accumulate. This shall not include areas normally used for pasture or crops."

" 'Odor' as stated in Minnesota Administrative Rules and Regulations APC 9 (c). The odor of growing vegetation, domestic fertilizers, insecticides, and other natural odors shall not be considered objectionable."

" 'Other Animal Lot' shall mean the confined feeding, breeding, boarding, or holding of any animal; except livestock; raised for its pelt, consumption as food, pleasure, or sport; including, but not limited to, rabbits, mink, dogs, ponies, buffalo, and deer.

" 'Pasture' shall mean areas where grass or other growing plants are used as food for grazing. A pasture shall be deemed a livestock feedlot or poultry lot when the concentration of livestock or poultry is such that a vegetation cover is not maintained except in the immediate vicinity of temporary supplemental feeding or watering devices.

Interpretations

This includes sale barns, holding lots, meat packing plants, exhibition barns, and fairgrounds.

Fertilizer (animal manure) odor is not considered objectionable. However, odor may be regulated by local nuisance ordinances. Odors can be minimized by proper management in many cases. Odors from land spreading may be managed by quickly incorporating manure into the soil. Spread downwind from residences. Odors from spreading can be minimized by applying the manure early in the day. Rising air currents in the morning tend to dissipate the odors.

Animals of all sizes generate waste problems. Research installations, veterinary offices, dog pounds, and pet shops are included in the above.

Pastures with direct access to streams and lakes are undesirable because animals can drop feces and urine directly into the water.

Definitions

" 'Poultry' shall mean all domestically raised fowl including but not limited to chickens, turkeys, ducks, geese, and game birds."

" 'Poultry Lot' shall mean (a) The place of confined feeding, hatching, raising, or holding of poultry in enclosures, yards, or pens where animal manure may be accumulated; or (b) Range areas not normally used for pasture or crops, in which animal manure may accumulate and be carried directly or indirectly to waters of the State or constitute a potential pollution hazard."

" 'Shoreland' is as defined in Minnesota Statutes, Section 105.485 Subdivision 2."

From the Minnesota Statutes:

"Subd. 2. 'Shoreland' means land located within the following distances from the ordinary high water elevation of public water (1) Land within 1,000 feet from the normal high watermark of a lake, pond, or flowage, and (2) Land within 300 feet of a river or stream or the landward side of the flood plain delineated by ordinance on such a river or stream, whichever is greater."

" 'Sinkhole' shall mean a hole worn through bedrock into which surface water drains to an underground channel."

" 'Solid Waste' is garbage, refuse, and other discarded solid materials, except animal waste used as fertilizer, including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities. Solid waste does not include earthen fill, boulders, rock, and other materials normally handled in construction operations, solid, or dissolved materials in domestic sewage of other significant pollutants in water resources, such as silt, dissolved materials in irrigation return flows, or other common water pollutants."

" 'Storage Area' shall mean an area associated with a livestock feedlot, poultry lot, or other animal lot in which animal manure is placed for storage until it can be utilized as fertilizer or removed to a permanent disposal site. This shall not include animal manure packs or mounding within the feedlot area."

" 'Potential Pollution Hazard' shall mean a condition which may in the reasonably foreseeable future cause pollution of the land, air, or waters of the State."

Interpretations

Manure tanks inside and outside buildings, detention ponds, sedimentation terraces, stacked manure piles, and manure catchment basins are storage areas.

This is subject to interpretation by authorities. Examples of potential pollution hazards include manure dumped near drainage ditches, feedlot tile inlets, manure stacked by a lake, or a stream flowing through a feedlot. An uncased well in a feedlot could contaminate a large underground water reservoir. So could a feedlot draining into a sink hole.

“GENERAL CONDITIONS

“All animal manure shall be stored, transported, and disposed of in a manner consistent with the requirements of these regulations. The Agency is responsible for enforcement of these regulations in cooperation with local governing bodies which may adopt these regulations for use in local laws, ordinances, or regulations.

Interpretations

Some local zoning ordinances and building codes include these regulations. Check local laws before planning construction.

“SEVERABILITY

“If any provision of any regulation or the application thereof to any person or circumstances is held to be invalid, such invalidity shall not affect other provisions or application of any other part of such regulations or any other regulations which can be given effect without the invalid provision of application, and to this end the provisions of all regulations and the various applications thereof are declared to be severable.”

“VARIANCES

“Where upon written application of the responsible person or persons the Agency finds that by reason of exceptional circumstances strict conformity with any provisions of the regulation contained herein would cause undue hardship, would be unreasonable, impractical, or not feasible under the circumstances, the Agency may permit a variance from these regulations upon conditions and within such time limitations as it may prescribe for prevention, control, or abatement of land, air, or water pollution in harmony with the intent of the State and any applicable Federal laws.

Variations provide some flexibility, but most circumstances in Minnesota don't warrant variances. Don't plan a variance for a new feedlot facility. Use a variance as a last resort. Some new buildings on existing layouts will need variances because of setback rules.

“SW 52 STORAGE, TRANSPORTATION, AND DISPOSAL OF ANIMAL WASTE

“1.The owner and operator of any livestock feedlot, poultry lot, or other animal lot shall be responsible for the storage, transportation, and disposal of all animal manure generated on the property in a manner consistent with the provisions herein.

“2.All animal manure shall be stored in such a manner as to prevent the creation of a potential pollution hazard to the land, air, or waters of the State.

“a.All storage areas shall be designed so as to restrict seepage, percolation, or other movement of animal manure to ground waters.

Suitable materials to restrict seepage are reinforced concrete, asphalt, steel, compacted clay, soil cement, and, in some instances, plastic or rubber liners. Ground water contamination can ruin well water for many years over a large area.

"SW 52 STORAGE, TRANSPORTATION, AND DISPOSAL OF ANIMAL WASTES" (continued)

"b. All storage areas shall be surrounded by a dike, wall, or curb of such dimensions or construction that the storage volume will contain all the animal manure generated and divert around and prevent the entrance and admixture of snow melt and surface runoff from the outside areas."

"c. All storage areas shall be sloped so that draining liquids can be collected and discharged from the area at one or more controlled discharge points."

"d. If animal manure is stored as a slurry, storage tanks shall be designed to restrict objectionable odors. This shall not apply where animals or poultry are kept on slatted floors over a pit or where outdoor holding ponds or lagoons are utilized."

"e. All storage areas shall be located so as not to pose a potential pollution hazard to local wells or sources of potable water and shall be located at least 100 feet from such wells or water sources."

"f. All stored fertilizer shall be utilized and all stored animal waste disposed of in a manner consistent with the provisions herein as soon as weather conditions and other factors permit. In no event shall fertilizer or animal wastes be stored for more than one year from the time of their generation unless animal manure packs or mounding is used as an operational technique."

"3. All fertilizer and animal wastes shall be transported in such a manner as to prevent the creation of a potential pollution hazard to the land, air, or waters of the State."

"a. All vehicles used to transport animal wastes on county, State, and interstate highways or through municipalities shall be covered and durable. This shall not apply to animal manure hauled to fields for use as fertilizer. Animal wastes in slurry form shall be transported in leak-proof vehicles or containers."

Interpretations

Terraces to divert clean water from feedlots, holding tanks, and detention ponds prevent mixing of clean water with manure.

Discharge to lakes, streams, and waters is not allowed. Because of color, nutrient content, and oxygen demand, animal wastes cannot meet State water effluent standards without extensive treatment.

Covers are needed on outside slurry tanks but not if these are under buildings. Continuously operating ventilation systems are needed in closed buildings with slatted floors or gutters. Accumulated gases from manure breakdown can be dangerous. These gases may also affect animal growth. Never enter manure tanks without an air breathing apparatus and a safety rope held by a person capable of pulling you out.

It is often difficult to meet these criteria. Yet this is important. Seepage, though slow, can travel through many soils. Wells penetrate many soil layers and may allow contamination of local and more distant supplies.

Winter spreading of animal manures as fertilizer is permitted. However, some manure runoff from frozen ground gets into lakes and streams. Good management can minimize runoff. Spread manure on flat land away from lakes and streams. Spread on terraced areas and areas with the least snow cover. Cover tile inlets in the fall. Leave these covered until the snow melts.

Good management can lessen manure lost on roads. Load within the capacity of the manure spreader and use end gates.

"SW 52 STORAGE, TRANSPORTATION, AND DISPOSAL OF ANIMAL WASTES" (continued)

"b. All fertilizer and animal wastes shall be transported in compliance with the regulations of Federal, State, and local governments and their regulatory agencies."

"4. All animal wastes shall be disposed of in such a manner as to prevent the creation of a potential pollution hazard to the land, air, or waters of the State."

"a. Open burning of animal waste is prohibited except as shall be allowed by the regulations of the Agency."

"b. All treatment works for the control of animal wastes shall be constructed, designed, and operated in accordance with statutes, regulations, or criteria as administered by the Agency's Division of Water Quality."

"c. Disposal of effluents from systems for disposal of animal wastes shall be conducted in conformance with applicable criteria, rules, regulations, or standards of the Agency relating to water pollution or disposal of sewage, industrial, or other wastes."

"d. Land disposal of animal wastes shall be conducted in conformance with Minnesota Administrative Rules and Regulations SW 1-11."

"e. Animal wastes or fertilizer containing dead animals or animal's entrails shall be disposed of in conformance with Minnesota Administrative Rules and Regulations SW 1-11, or regulations of the Minnesota Livestock Sanitary Board whichever may be applicable."

"SW 53 REGISTRATION, PERMIT ISSUANCE, DENIAL, AND REVOCATION

"It shall be unlawful for any person to establish, maintain, or operate a livestock feedlot, poultry lot, or other animal lot except as provided in these regulations."

"2. The Agency may, at its discretion, require registration of existing livestock feedlots, poultry lots, and other animal lots. Conditions requiring registration and registration procedures for the abatement of pollution of land, air, and waters of the State shall be determined by the Agency after public hearings have been held."

Interpretations

This portion applies to nonfertilizer. A landfill is the only alternative unless costly treatment is used. Stricter sanitary landfill regulations will exclude any animal and human excrement.

This does not apply to holding facilities for fertilizer, but only for unwanted waste.

Dead animals must not be put into holding ponds, tanks, or manure pits. Dispose of dead animals through proper burial, incineration, or rendering. Under no circumstances should dead animals be put into abandoned wells or into sinkholes. These have direct access to underground water supplies.

Registration may be required soon. Registration inventories all feedlots to determine potential problems. The Federal Government is encouraging registration.

"SW 53 REGISTRATION PERMIT ISSUANCE, DENIAL,
AND REVOCATION" (continued)

"2. A permit shall be required for all new livestock feedlots, poultry lots, and other animal lots beginning after the effective date of these regulations."

Interpretations

A lot built where no livestock had previously been fed is a new feedlot. An expansion is a new feedlot if it includes an area not previously used as a feedlot. Any new holding building in which manure accumulates is a new feedlot. A permit has advantages for the operator:

- a. He must plan for and evaluate management of runoff and manure.
- b. Operating under a permit will discourage frivolous complaints. A permit shows an attempt to keep things right.
- c. A problem situation or site will be found before money is invested in equipment and buildings. Manure management should have first priority in planning expansion and new facilities. Often, manure management is a costly afterthought.

"3. If the Agency determines that a livestock feedlot, poultry lot, or other animal lot is, in fact, polluting or constitutes a potential pollution hazard to the land, air, or waters of the State, the feedlot operator shall submit an application for permit and upon plan approval obtain a permit from the Agency for the pollution control devices to be installed."

Presently, the Agency is investigating complaints about feedlots. General inspections of all feedlots would consume more manpower than is available. When the Agency decides there is a potential pollution hazard, a certified letter of violation is sent to the operator. The operator has six months to reply with plans to abate the hazard. The MPCA will evaluate the plans and recommend changes or issue the permit. The specific plan is not spelled out by the MPCA. The operator must originate the plan.

"4. Permits shall be issued at no charge to the feedlot operator. Each permit application shall include the following:

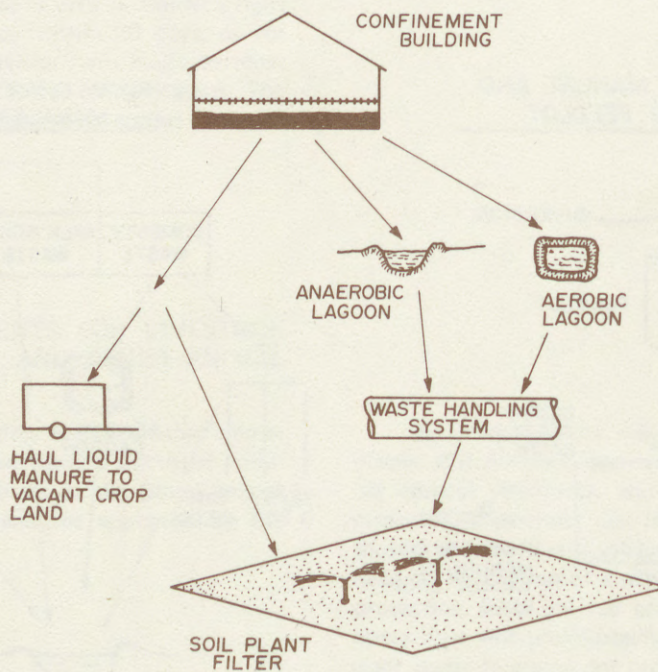
"a. A map or aerial photograph of the area showing all homes, buildings, lakes, ponds, watercourses, wetland, dry runs, rock out-croppings, roads, and applicable details and shall indicate the general topography with contours and drainage patterns. Wells should be indicated, a north arrow drawn, and location insert map included.

"b. A description of geological conditions, soil types, and ground water elevations; including high water table; to a depth of ten feet below the lowest elevation of the site.

"c. A plan indicating operational procedures, the location and specifications of proposed animal waste treatment works, land used for the disposal of animal wastes, and the quantity and type of effluent to be discharged from the site."

The permit application can be prepared by the operator. Maps and air photos are available through the Soil Conservation Service (SCS) or U.S. Geological Survey. Geological conditions and soils information are contained in soil surveys available in SCS offices. A simple operation may require management changes of the runoff and animal manure. Consultation with County Extension Agents, other operators, and Extension publications may be sufficient to develop a plan. The SCS personnel may be of assistance in more complicated cases. A number of agricultural engineers are qualified to deal with these problems on a consultation basis. Extension agricultural engineers can provide layout planning and guidance, but not construction supervision.

FLOW CHART FOR LIQUID MANURE HANDLING
IN CONFINEMENT FEEDING BUILDING



MINNESOTA REGULATIONS FOR ANIMAL
WASTE CONTROL

SPECIAL REPORT 41
AGRICULTURAL ENGINEERING

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