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Brief Description of Subject Matter: To provide information used in the review process for applications submitted to the Indiana Department of Environmental Management (IDEM) for approval to construct and/or operate a confined feeding operation as defined by the Confined Feeding Control Law; and to provide guidance on the proper operation of a confined feeding operation.

This nonrule policy document is intended solely as guidance and does not have the effect of law or represent formal Indiana Department of Environmental Management (IDEM) decisions or final actions. This nonrule policy document shall be used in conjunction with applicable laws. It does not replace applicable laws, and if it conflicts with these laws, the laws shall control. A revision to this nonrule policy document may be put into effect by IDEM once the revised nonrule policy document is made available for public inspection and copying. IDEM will submit revisions to the Indiana Register for publication.

Confined Feeding Program Technical Guidance Document, AW-1

The purpose of this document is to:

- (1) provide information used in the review process for applications submitted to the Indiana Department of Environmental Management (IDEM) for approval to construct and/or operate a confined feeding operation as defined by the Confined Feeding Control Law IC 13-18-10; and
- (2) provide guidance on the proper operation of a confined feeding operation.

Confined feeding operations must be approved by the Indiana Department of Environmental Management in accordance with IC 13-18-10 prior to construction. Compliance with the public participation provisions under IC 13-18-10-2(b) and the Administrative Orders and Procedures Act under IC 4-21.5 is also necessary. Operations not requiring State approval may also follow

this guidance and should follow recommendations from their local United States Department of Agriculture (USDA) or Natural Resource Conservation Service (NRCS) office or County Extension Service Agent.

CONTENTS:

- A. Descriptions of the technical information required as part of the application process for confined feeding operation approval including:
 - 1. documents regarding the location of the confined feeding operation; and
 - 2. documents detailing the proposed or existing confinement facilities and associated manure storage structures.
- B. Manure storage structure construction standards.
- C. Manure disposal application rates for determining acreage requirements.
- D. Recommended manure disposal Best Management Practices information.

For the purposes of this Guidance Document, the following definitions apply:

"Confinement unit" means any lot, pen, pond, shed, or building where animals are confined, fed or maintained at a confined feeding facility.

"Construction" (as defined in IC 13-11-2-40.8 for the purposes of IC 13-18-10) means the fabrication, erection, or installation of a facility or manure control equipment at the location where the facility or manure control equipment is intended to be used. The term does not include the following:

- (1) The dismantling of existing equipment and control devices.
- (2) The ordering of equipment and control devices.
- (3) Offsite fabrication.
- (4) Site preparation.

"Intermittent stream" means any surface channel that carries a waterflow during the wet season of the year, per U.S. Geological Survey (USGS) definition.

"Lagoon" means an earthen or concrete outdoor storage structure of one or more interconnected cells where manure is accumulated, and that is purposely diluted to biologically treat the nutrients and organic material in order to reduce the amount of nutrients.

"Manure" means any animal excreta or any bedding, litter, or water runoff contaminated with animal excreta.

"Manure storage structure" means any pit, pond, lagoon, tank or building used to store or treat manure, including any portions of buildings used specifically for manure storage or treatment.

1. DESCRIPTION OF TECHNICAL MATERIALS FOR SUBMITTAL

A completed confined feeding application form must be submitted in order for the application to be processed. This section describes the technical materials required. A completeness checklist is provided in the application packet. If you have any questions relative to the application material, please call the Confined Feeding Program at 317/233-3111 or 800/451-6027 (Telefax 317/232-3403).

A. PLOT MAP

A soil survey map and a USGS topographic map must be submitted that shows the location of the animal confinement and manure storage structures, and boundaries of the property where the confined feeding operation and all manure application sites are located. Submitted copies of these maps must be legible and clearly show all applicable items. Soil survey maps may be obtained from your local Extension Service or NRCS office. USGS topographic maps may be purchased from the Division of Water, Indiana Department of Natural Resources, Indiana Government Center South, Indianapolis, Indiana 46204.

B. FARMSTEAD PLAN

A farmstead plan must show all existing and proposed confinement units, and the associated manure storage structures, and all features of concern within three hundred (300) feet of the confinement units and manure storage structures.

Features of concern include the following:

1. Residences.
2. Lakes, ponds, rivers, streams, and drainage ditches (intermittent and continuously flowing).
3. Public and private roads.
4. Water well locations.
5. Drainage patterns.
6. Property boundary line.
7. Known drainage tile lines. For the purposes of this guidance document, drainage tiles are not considered streams or intermittent or continuously flowing drainage ditches.
8. All outfalls of known drainage tile lines in 7 above (regardless of the distance of the outfall from the facility).
9. Tile surface inlets/standpipes.

The farmstead plan must be either drawn to approximate scale or show distances between the confinement units/manure storage structures and the features of concern that are within three hundred (300) feet of the existing or proposed confinement unit. The plan may be either hand drawn or generated by computer software, and must be submitted on paper no less than 8 ½ by 11 inches in size.

C. MANURE STORAGE STRUCTURE PLANS

The design and construction of manure storage structures and associated ancillary equipment, such as pipes, must be in accordance with the following standards from Section IV of the Indiana Field Office Technical Guide, except as noted:

| Topic | Standard | Issue Date |
|-------------------------------------|----------|--------------|
| Waste Storage Pond ¹ | 425 | March 1994 |
| Waste Storage Structure | 313 | March 1994 |
| Waste Treatment Lagoon ² | 359 | January 1995 |

¹ Except for the separation distance to lakes, ponds, rivers, streams, or drainage ditches (intermittent or continuously flowing) that must be at least three hundred (300) feet from a waste storage pond; and except for the freeboard that must be at least two (2) feet including the twenty-five (25) year twenty-four (24) hour storm event.

² Except for the freeboard that must be at least two (2) feet including the twenty-five (25) year twenty-four (24) hour storm event; and except for the reference under "Waste Production" to information in Chapter 4 of the Agricultural Waste Management Field Handbook (AWMFH) that must be to Bulletin ID 120, available from the School of Agriculture, Purdue University).

Plans and specifications for the design and construction of manure storage structures must show detailed views and necessary cross sections to define all dimensions and elevations of manure storage structures, diversions, terraces or any other structures that are essential to the containment or conveyance of the manure. Plans must show the diversion of uncontaminated surface water. A soil boring giving the description of the soil (unified classification system) from the surface to two (2) feet below the deepest excavation, and indicating the seasonal high water table, must be included if earthen storage structures are to be used.

Additional design standards and construction specifications can be found in the Appendix.

1. DETENTION TIME

In general, manure storage structures will need the following detention times:

- a. Manure storage structures approved after July 1, 1993 must provide one hundred twenty (120) days storage of the manure, contaminated runoff and wastewater generated at the operation.
- b. Manure storage structures constructed prior to July 1, 1993, must provide ninety (90) days of storage.

IDEM may require longer detention times or approve shorter detention times for certain structures based upon the information submitted. The manure storage structure detention time will be approved by IDEM based upon review of the site-specific criteria submitted in a detailed manure management plan.

2. WASTEWATER GENERATED

Wastewater generated at the operation, such as excess drinking water, clean-up water, contaminated livestock truck/trailer washwater, milking parlor wastewater and milk house washwater cannot be discharged directly to any lakes, ponds, rivers, streams, drainage ditches, or field tiles and must be discharged into the manure storage structures.

3. ANIMAL MANURE PRODUCTION

The following values should be used in calculating the manure produced when determining the minimum storage capacity needed for manure storage structures. If an unusual amount of drinking water spillage or clean-up water is involved, additional storage capacity may be necessary and should be provided. See example A-5, copy is available in the IDEM-OSHWB fileroom.

| | SOLID SYSTEM cubic ft/day | LIQUID SYSTEM cubic ft/day |
|--------------------|------------------------------|-------------------------------|
| SWINE | | |
| Nursery Pig | .02 | .05 |
| Grower/Finishing | .08 | .18 |
| Farrowing (S&L) | .21 | .51 |
| Breeding/Gestation | .09 | .16 |
| DAIRY | | |
| Calf | .13 | .26 |
| Heifer | .57 | 1.10 |
| Cow | 1.83 | 2.20 |
| Veal Calf | .10 | .15 |
| BEEF | | |
| Feeder Calf | .32 | .57 |
| Fattening Cattle | .54 | 1.14 |
| Mature Cow | .59 | 1.32 |
| POULTRY | | |
| Broiler | .001 | .004 |
| Pullet | .001 | .004 |
| Layer | .002 | .010 |
| Turkey | .003 | .011 |
| Duck | .003 | .011 |

Line up columns

Manure production values can be found in Bulletin ID 120 (available through the School of Agriculture, Purdue University).

4. RAIN WATER

Rain water from roofs and other uncontaminated water must be diverted away from the manure storage structures, unless the rain water has been accounted for in the design of the structures.

In calculating the additional storage volume that must be provided for rain water, the attached rainfall and runoff values should be used.

5. SEPARATION DISTANCE REQUIREMENTS

New construction for dry storage or liquid storage in beneath-the-building concrete, exterior covered or uncovered concrete pits and open steel tank manure storage structures and earthen or concrete confinement lots must be located so as to provide the following minimum separation distances:

- a. fifty (50) feet from any public or private road;
- b. one hundred (1 00) feet from any well; and
- c. one hundred (1 00) feet from any lake, pond, river, stream, or drainage ditch (intermittent or continuously flowing).

New construction for liquid storage in earthen storage structures must be located so as to provide the following minimum separation distances:

- a. fifty (50) feet from any public or private road;
- b. one hundred (1 00) feet from any well; and
- c. three hundred (300) feet from any lake, pond, river, stream, or drainage ditch (intermittent or continuously flowing).

Distances must be measured from the following:

- a. The edge of a road.
- b. The toe of a lagoon (the portion of the berm furthest from the lagoon).
- c. The well casing of any well.

D. MANURE MANAGEMENT PLAN

A manure management plan must be developed that identifies and describes specific practices to be employed to conduct an environmentally sound operation. At a minimum, the manure management plan must contain procedures for soil testing and manure testing, and maps of manure application areas. Maps of manure application areas that are submitted with the plot plan are sufficient for this requirement. A manure management plan must be submitted to IDEM at least one (1) time every five (5) years to maintain a valid approval for the confined feeding operation. If land application is not the primary method of handling or disposing the manure, an alternate method for handling or disposing the manure must also be addressed in the manure management plan. A copy of the manure management plan must also be maintained at the confined feeding facility.

E. RECORD KEEPING REQUIREMENTS

The purpose of record keeping is to allow IDEM and the confined feeding facility operator to verify that the application or disposal of the manure is conducted in an environmentally protective manner. The following records must be maintained at the confined feeding facility:

1. The type of manure.
2. The amount of manure generated.
3. The amount of manure applied to the land.
4. Methods of storage.
5. The type of application equipment used.
6. Application rates based on laboratory analyses.
7. Land application site soil analyses.
8. Locations of the application.
9. Dates the manure was applied.
10. Manure analyses.

Facilities approved as a result of an application submitted after January 1, 1998 must maintain records of the land application activities mentioned above as a condition of their approval. The documents must be made available during inspections by IDEM personnel. IDEM recommends that facilities approved prior to January 1, 1998 also maintain these records.

III. APPLICATION RECOMMENDATIONS

IDEM recognizes the importance of utilizing accepted Best Management Practices (BMP) to reduce the potential of manure being conveyed off the site via runoff and soil erosion, resulting in a negative impact to surface waters. Manure must not be applied to the land in a manner that causes run-off and water quality violations. The following practices address these concerns.

1. Manure should not be applied closer than two hundred (200) feet from any water well.
2. Manure should not be applied closer than fifty (50) feet from any road, or one hundred (100) feet from any open sinkhole, intermittent stream, drainage ditch, lake, pond, river or surface opening to any subsurface drainage system without immediate incorporation.
3. Manure should not be applied in any flood way without residue protection or crop cover unless incorporated into the soil by the end of the working day.

4. Ground with slopes in excess of six percent (6%) without residue protection or crop cover should not be used for application unless incorporated into the soil by the end of the working day.
5. Spray irrigation of manure to frozen ground is prohibited. Frozen ground with slopes in excess of two percent (2%) without residue protection or crop cover should not be used for application of liquid or solid manure unless incorporated into the soil by the end of the working day.

IV. APPLICATION LAND

- A. Sufficient acreage must be available for spreading the manure from the operation. Any acreage not owned by the operation that is or will be utilized for application must be documented via Land Use Agreements signed by the property owners on whose property the manure will be applied. If spreading is required during the growing season and sufficient acreage is not available, then the owner should consider additional storage to contain the manure throughout the growing season.

Site-specific exceptions may be approved by IDEM based upon review of the sitespecific criteria submitted with the application package. IDEM may allow for less acreage in situations where the manure is not to be applied to the land owned by the producer.

- B. REQUIRED ACREAGE

Based on application rates of one hundred fifty (150) pounds of available nitrogen per acre per year, a MINIMUM number of acres must be provided. Depending on the type of crop grown and soil fertility, acreage may vary for the proper utilization of nitrogen. The following chart is based solely on average manure nutrient content and is not; intended to be used as an earthen lot stocking rate.

| | <u>Animal Capacity/Acre/Year*</u> | | |
|--------------------|-----------------------------------|--------|--------|
| | Solid | Liquid | Lagoon |
| SWINE | | | |
| Nursery Pigs | 100 | 80 | 320 |
| Grower/Finishing | 22 | 17 | 65 |
| Farrowing (S & L) | 14 | 13 | 40 |
| Breeding/Gestation | 29 | 25 | 90 |
| DAIRY | | | |
| Dairy Calves | 29 | 23 | 105 |
| Heifers | 6 | 5 | 18 |
| Cows | 3 | 2 | 9 |
| Veal Calves | 28 | 21 | 100 |
| BEEF | | | |
| Feeder Calves | 11 | 9 | 40 |
| Fattening Cattle | 5 | 4 | 16 |
| Mature Cows | 7 | 5 | 20 |
| POULTRY | | | |
| Broilers | 720 | 490 | 2,725 |
| Pullets | 600 | 500 | 2,660 |
| Layers | 420 | 300 | 1,745 |
| Turkeys | 365 | 165 | 700 |
| Ducks | 500 | 465 | 1,975 |

*Based on a one time facility capacity, not animals produced per year.

Acreage values can be found in Bulletin ID 120 (available through the School of Agriculture, Purdue University). Dilution ratio recommendations can be found in Bulletin ID 120 (available through the School of Agriculture, Purdue University), NRCS Agricultural Waste Management Field Handbook, or Pork Industry Handbook (PIH) 63.

APPENDICES

CAN BE OBTAINED FROM THE IDEM-OSHWM FILEROOM

- A-1. RAINFALL MAP IMPERVIOUS SURFACE
- A-2. EARTHEN STORAGE LAGOON AND TREATMENT LAGOON DEPICTIONS
- A-3. FARMSTEAD MAP (2 EXAMPLES)
- A-4. END VIEW DRAWING OF CONFINEMENT UNIT AND WASTE STORAGE PIT
- A-5. EXAMPLE CALCULATION OF MANURE PRODUCTION AND STORAGE DETENTION TIME
- A-6. OTHER REGULATIONS THAT MAY APPLY TO CONFINED FEEDING OPERATIONS
- A-7. REFERENCE MATERIALS LIST

*out of
manure*

Expired

OTHER REGULATIONS THAT MAY APPLY TO CONFINED FEEDING OPERATIONS

Additional regulations or laws may apply to specific confined feeding facilities. This list identifies some of the other laws or regulations that could be applicable. This is not meant to be a complete list of all other possible requirements, but is provided for information only.

The Flood Control Act, IC 13-2-22, requires the prior approval of the Indiana Department of Natural Resources (IDNR) (317/232-4160) for construction, excavation, or filling in on a flood way.

Section 404 of the Federal Water Pollution Control Act, or Section 10 of the Rivers and Harbors Act, may require a permit from the Corps of Engineers (502/5825607).

Endangered Species laws at IC 14-22-34, and IDNR regulations at 310 IAC 3.1-2-7.

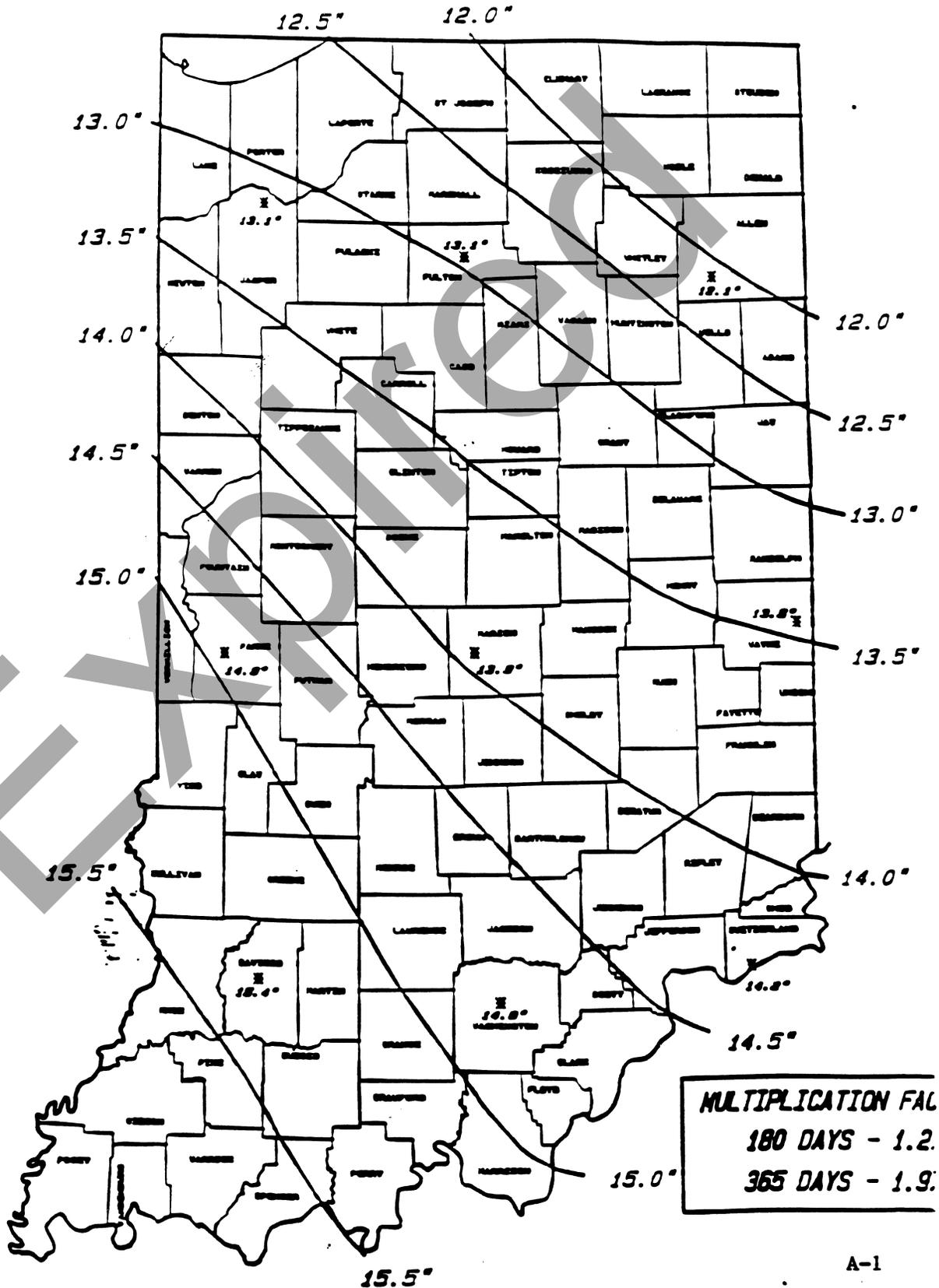
Wellhead Protection. Any person who applies manure to land in a delineated Wellhead Protection area shall comply with any applicable requirements under 327 IAC 8-4.1.

Storm Water Run-off Associated with Construction Activity at 327 IAC 15-5.

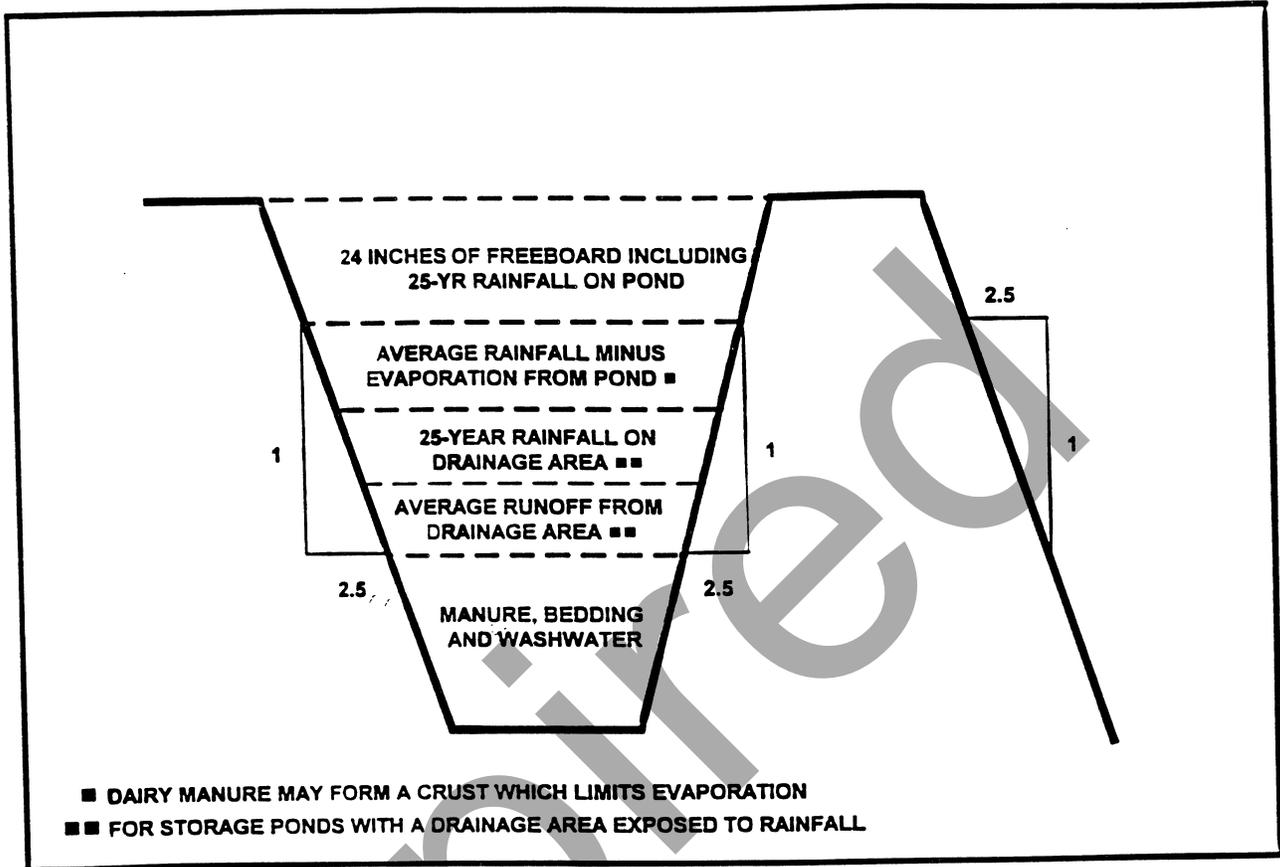
The Indiana Board of Animal Health at IC 15-2.1 and 345 IAC addresses dairy standards and procedures for handling dead animals.

New construction must meet any applicable requirements of local health and zoning agencies.

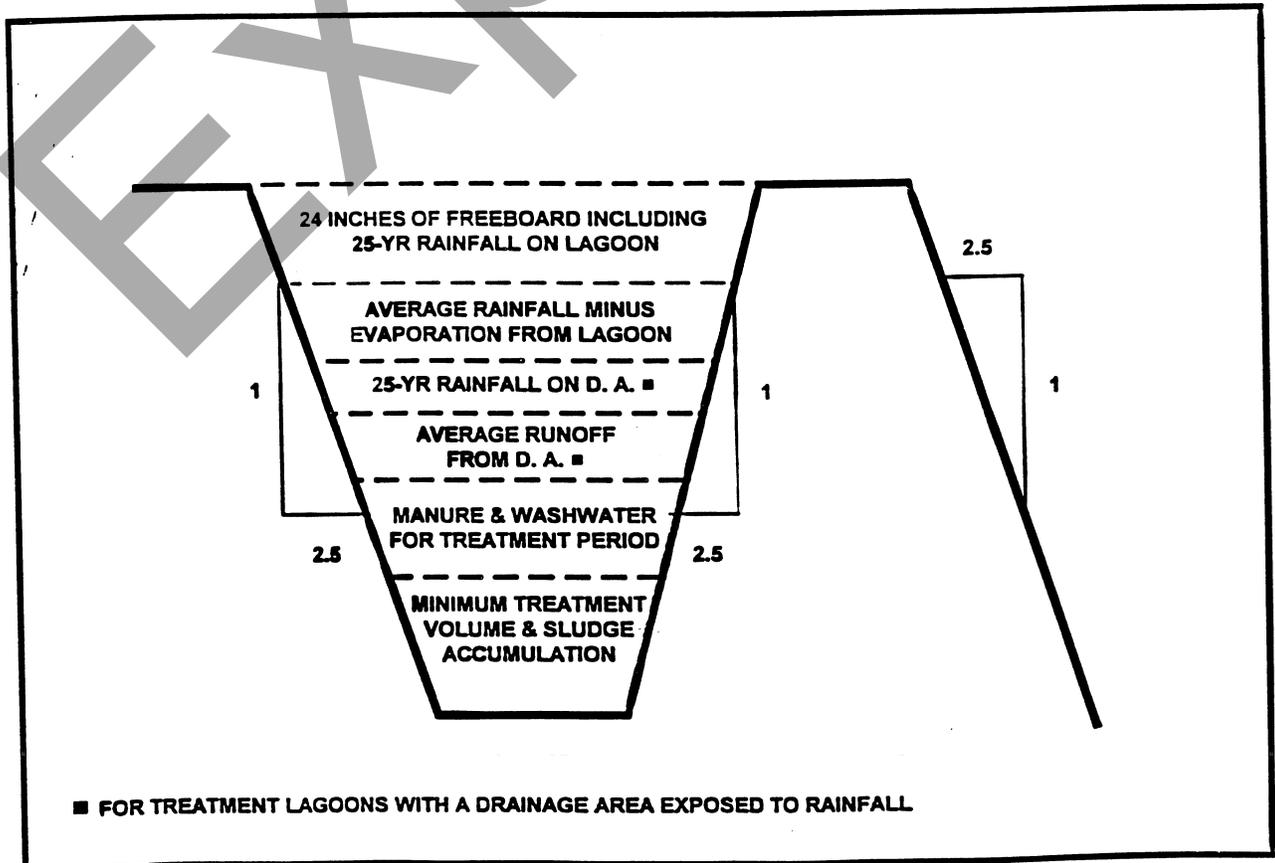
RUNOFF FROM 120 DAYS OF AVERAGE RAINFALL PLUS 25 YEAR STORM ON A PAVED LOT

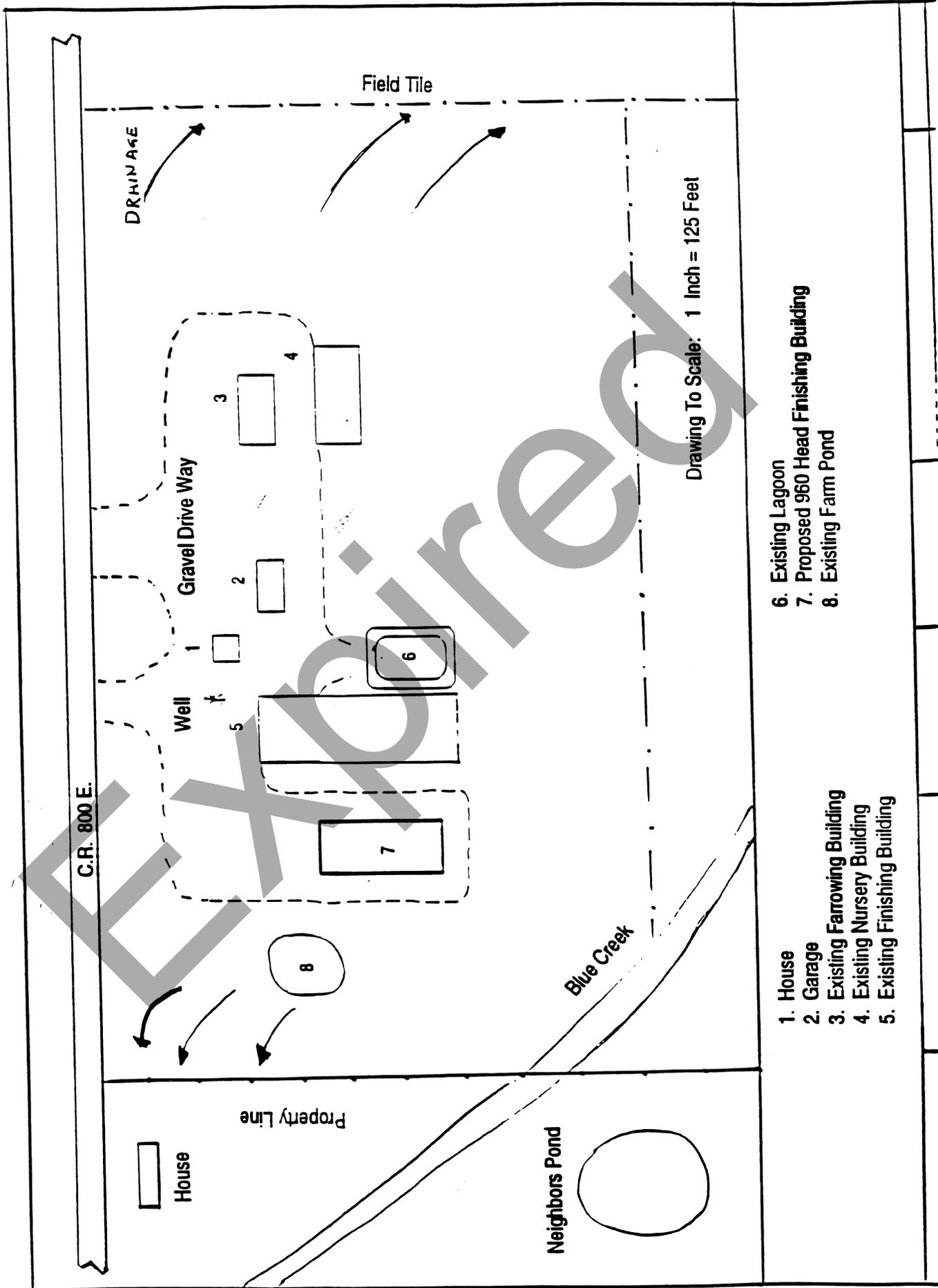


Volume Requirements for Waste Storage Pond

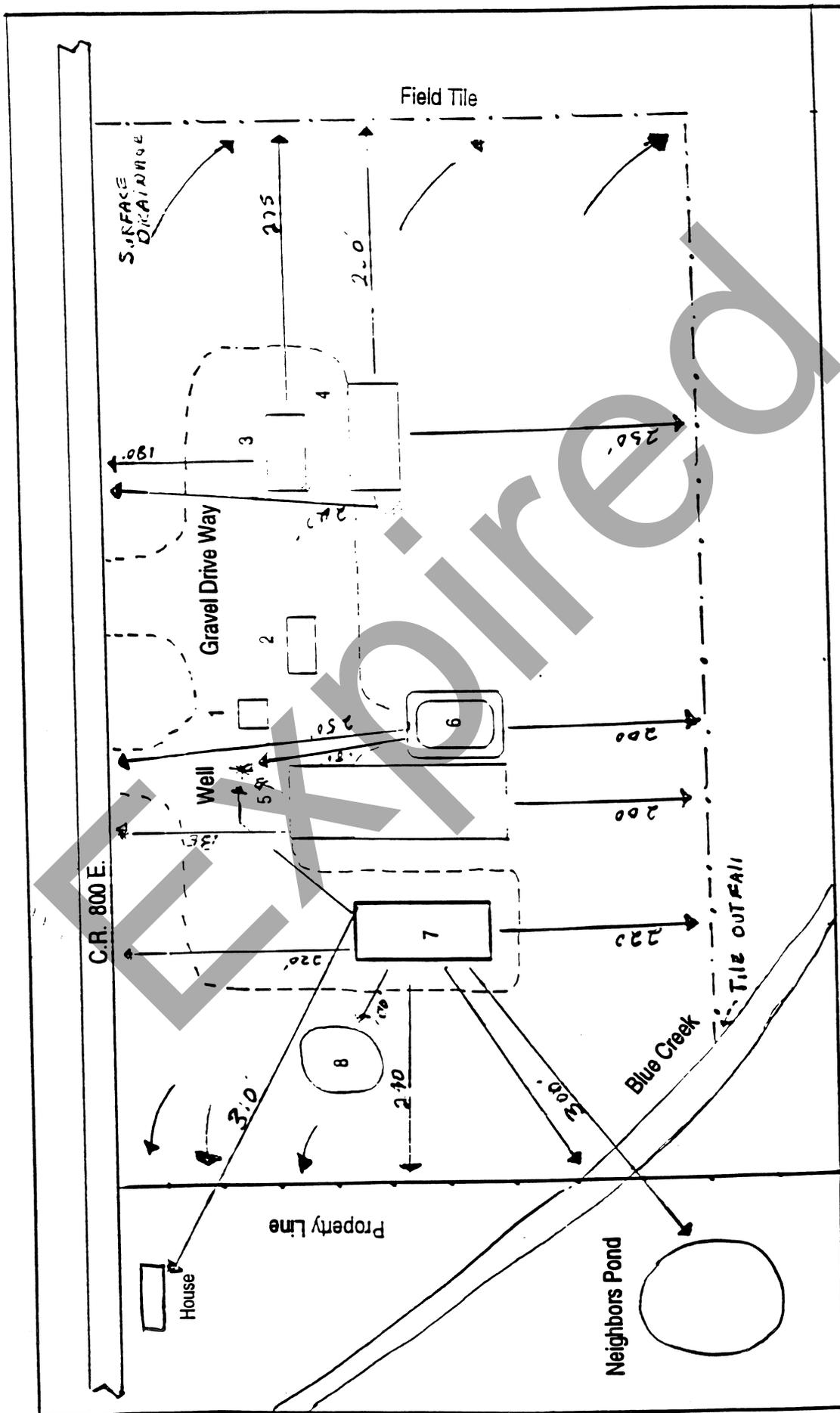


Volume Requirements for a Treatment Lagoon





Drawing To Scale: 1 Inch = 125 Feet



- 6. Existing Lagoon
- 7. Proposed 960 Head Finishing Building
- 8. Existing Farm Pond

- 1. House
- 2. Garage
- 3. Existing Farrowing Building
- 4. Existing Nursery Building
- 5. Existing Finishing Building

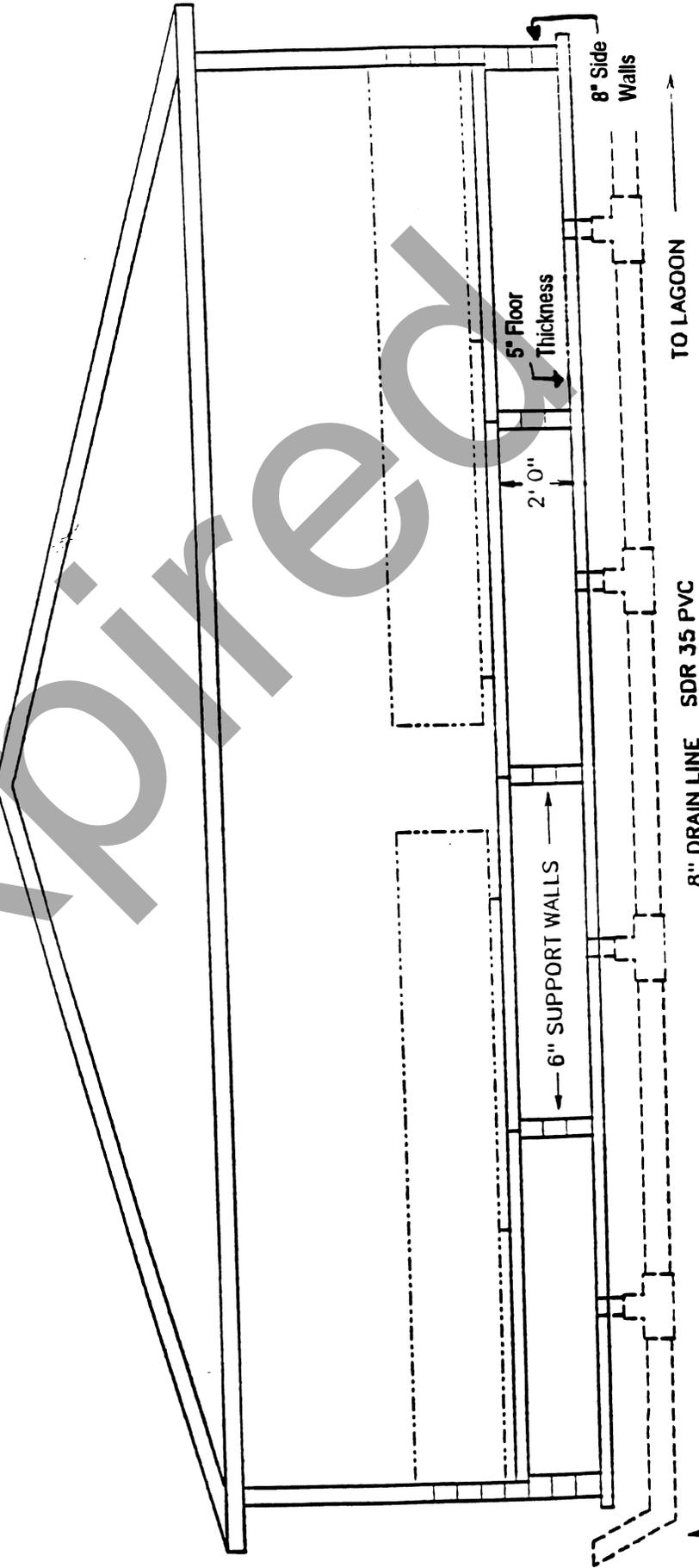
Proposed farmstead plan

PROPOSED FINISHING FACILITY
960 HEAD TOTAL CAPACITY
480 HEAD PER ROOM
30 HEAD PER PEN
8 s.f. PER HEAD
13' x 18'6" pens

41' x 221'-8"

Note: Facility to use existing 76,800 c.f. lagoon

TOTAL SLAT BUILDING 41' WIDE 4' x 10' GANG SLATS
PULL PLUG GUTTER SYSTEM
8" PLUGS
2' DEEP GUTTER



5' Floor Thickness

2' 0"

8" Side Walls

TO LAGOON

8" DRAIN LINE SDR 35 PVC
LINE RUNS ON 1% SLOPE

6" SUPPORT WALLS

CLEAN OUT

A-4

Method to calculate the manure storage detention time for the proposed 960 head finishing unit utilizing a 17,263 cubic foot pit beneath slotted floors that will flush to an existing previously approved earthen storage basin that is currently serving a previously approved 2,000 head finishing unit with a flushing gutter manure conveyance system.

The existing lagoon has 76,800 cubic feet of effective storage capacity after subtracting one foot of freeboard, 120 days of average rainfall and a 25 year 24 hour storm event.

Manure generated by :Existing 2,000 finishing hogs = $2,000 \times .16 \text{ c.f./day} = 320 \text{ c.f./day}$
Proposed 960 finishing hogs = $960 \times .16 \text{ c.f./day} = 153.6 \text{ c.f./day}$
Total = 473.6 c.f./day

Excess water sources:

Cleaning water 200 gallons per week total from both existing and proposed units.
 $200 \text{ gallons/week} \div 7.48 \text{ gal/c.f.} = 3.8 \text{ c.f./day}$

Flush water for existing finishing unit is 500 gal/day.
The source of the flush water is a well.
 $500 \div 7.48 \text{ gal/c.f.} = 66.9 \text{ c.f./day}$

Total manure and excess water: $473.6 + 3.8 + 66.9 = 544.3 \text{ c.f./day}$

Storage Detention Time: Effective storage capacity equals the capacity of the shallow pit plus the effective capacity of the earthen lagoon divided by the total daily manure and excess water production:

$$17,263 \text{ c.f.} + 76,800 \text{ c.f.} \div 544.3 \text{ c.f./day} = 173 \text{ days}$$

| | | | | | |
|---------|--|--|-----------|----------|---|
| CLIENT: | Example calculation of manure storage detention time | | DATE: | SCALE: | NOTE: CONTRACTOR IS RESPONSIBLE FOR DETAILS OF CONSTRUCTION |
| | | | DRAWN BY: | CHD. BT. | FILE NAME: |

REFERENCE MATERIALS LIST

Purdue Cooperative Extension bulletins which may be helpful:

| | |
|-----------|---|
| CES - 227 | "How and Where to Get a Livestock Manure Analysis" |
| MWPS - 18 | "Livestock Waste Facilities Handbook" |
| NCH - 2 | "The Philosophy of Soil Testing" |
| NCH - 12 | "Managing Animal Manure as a Source of Plant Nutrients" |
| PIH - 21 | "Systems of Runoff Control" |
| PIH - 25 | "Swine Manure as a Plant Nutrient Resource" |
| PIH - 33 | "Controlling Odors from Swine Buildings" |
| PIH - 35 | "Legal Guidelines for Swine Manure Management" |
| PIH - 62 | "Lagoon Management" |
| PIH - 67 | "Swine Waste Management Alternatives" |
| PIH - 76 | "Methane Gas from Swine Manure" |
| PIH - 91 | "Pumping Liquid Manure from Swine Lagoons and Holding Ponds" |
| PIH - 95 | "Gravity Drain Gutter Systems" |
| PIH - 105 | "Scraper Systems for Removing Manure for Swine Facilities" |
| AE - 87 | "Gutter Flushing Systems for Swine Buildings" |
| AY - 277 | "Calculating Manure and Manure Nutrient Application Rates" |
| AY - 278 | "Estimating Manure Spreader Capacity" |
| E - 2567 | "Tri-State Fertilizer Recommendations for Corn Soybean, Wheat and Alfalfa" |
| ID - 101 | "Animal Manure as a Plant Nutrient Resource" |
| ID - 120 | "Design & Operation of Livestock Waste Lagoons" |
| ID - 205 | "Swine Manure Management Planning" |
| ID - 206 | "Poultry Manure Management Planning" |
| ID - 208 | "Dairy Manure Management Planning" |
| WQ - 1 | "Water Testing Laboratories" |
| WQ - 2 | "What Is Ground Water?" |
| WQ - 3 | "How To Take A Water Sample" |
| WQ - 4 | "Why Test Your Water?" |
| WQ - 5 | "Interpreting Water Test Results Part One: Inorganic Materials" |
| WQ - 6 | "Buying Home Water Treatment Equipment" |
| WQ - 7 | "Animal Agriculture's Effect on Water Quality Pastures and Feedlots" |
| WQ - 8 | "Animal Agriculture's Effect on Water Quality Waste Storage" |
| WQ - 9 | "Water Quality for Animals" |
| WQ - 10 | "Wetlands and Water Quality" |
| WQ - 11 | "Sulfur Water Control" |
| WQ - 12 | "Distillation for Home Water Treatment" |
| WQ - 13 | "Home Water Treatment Using Activated Carbon" |
| WQ - 14 | "Reverse Osmosis for Home Treatment of Drinking Water" |
| WQ - 15 | "Bacterial Contamination of Household Water" |

Computer Programs

The following computer program can be ordered from ^{Farm} Fan-n Building Plan Service, II 46 Ag Engineer Building, Purdue University, West Lafayette, IN 47907-1146, phone 765-494-1172.

AMANURE "Utilization of Animal Manure as a Plant Nutrient"

MBUDGET "Manure Management Planning for Fan-n Animal Production"

Cooperative Extension work in Agriculture and Home Economics, state of Indiana, Purdue University, and U.S. Department of Agriculture cooperating; H.A. Wadsworth, Director, West Lafayette, IN. Issued in furtherance of the acts of May 8 and June 30, 1914. The Cooperative Extension Service of Purdue University is an affirmative action/equal opportunity institution.

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The following reference books and construction specifications are available from the Natural Resources Conservation Service:

- Indiana Field Office Technical Guide
- Engineering Field Handbook
- Construction Specifications:

Construction Specification

Issue Date

| | |
|--|---------------|
| Bentonite Sealant | November 1994 |
| Concrete Construction | November 1994 |
| Concrete Pipe | December 1994 |
| Corrugated Metal Pipe Conduit Installation | November 1994 |
| Diversion | November 1994 |
| Drain Fill | November 1994 |
| Earthfill | November 1994 |
| Excavation | December 1994 |
| Fences | August 1994 |
| Geotextile | November 1994 |
| Loose Rock Riprap | November 1994 |
| Metal Fabrication and Installation | November 1994 |
| Mulch Netting | November 1994 |
| Plastic Pipe | November 1994 |
| Reinforced Concrete Block Construction | November 1994 |
| Seeding | December 1994 |
| Site Preparation | November 1994 |
| Sodding | November 1994 |

| | |
|-------------------------------------|---------------|
| Spreading Topsoil | November 1994 |
| Structure Removal | December 1994 |
| Surface Drainage Ditch | November 1994 |
| Subsurface Drainage Systems | December 1994 |
| Timber Fabrication and Installation | November 1994 |
| Water and Sediment Control Basin | November 1994 |
| Grassed Waterway | November 1994 |
| Well | November 1994 |

The following design standards from Section IV of the NRCS Indiana Field Office Technical Guide are available from the Natural Resources Conservation Service:

| <u>Standard</u> | <u>Topic</u> | <u>Issue Date</u> |
|-----------------|---------------------------------|-------------------|
| 560 | Access Road | June 1989 |
| 310 | Bedding | June 1989 |
| 317 | Composting Facility | July 1995 |
| 326 | Clearing and Snagging | July 1995 |
| 397 | Commercial Fishponds | September 1981 |
| 327 | Conservation Cover | November 1988 |
| 328 | Conservation Cropping Sequence | November 1990 |
| 329 | Conservation Tillage | November 1988 |
| 330 | Contour Farming | August 1981 |
| 340 | Cover and Green Manure Crop | April 1984 |
| 342 | Critical Area Planting | September 1995 |
| 344 | Crop Residue Use | November 1988 |
| 402 | Dam, Floodwater Retarding | June 1990 |
| 349 | Dam, Multiple-Purpose | June 1990 |
| 356 | Dike | November 1989 |
| 362 | Diversion | June 1989 |
| 380 | Farmstead and Feedlot Windbreak | June 1995 |
| 382 | Fencing | November 1983 |
| 386 | Field Border | February 1985 |
| 392 | Field Windbreaks | December 1996 |
| 393 | Filter Strips | March 1997 |
| 394 | Firebreaks | January 1987 |
| 395 | Fish Stream Improvement | January 1993 |
| 399 | Fishpond Management | March 1985 |
| 400 | Floodwater Diversion | June 1990 |
| 410 | Grade Stabilization Structure | October 1990 |
| 412 | Grassed Waterway | June 1989 |
| 411 | Grasses and Legumes in Rotation | April 1975 |
| 561 | Heavy Use Area Protection | February 1982 |

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| | | |
|-------|--|----------------|
| 422 | Hedgerow Planting | December 1992 |
| 552A | Irrigation Pit and Regulating Reservoir, Irrigation Pit | June 1990 |
| 552B | Irrigation Pit and Regulating Reservoir, Regulating Reservoir | June 1990 |
| 436 | Irrigation Storage Reservoir | June 1990 |
| 441 | Irrigation System, Trickle | May 1988 |
| 442 | Irrigation System, Sprinkler | May 1988 |
| 443 | Irrigation System, Surface and Subsurface | September 1982 |
| 430AA | Irrigation Water Conveyance, Pipeline, Aluminum Tubing | November 1979 |
| 43ODD | Irrigation Water Conveyance, High Pressure, Underground, Plastic Pipeline | June 1989 |
| 430EE | Irrigation Water Conveyance, Low Pressure, Underground, Plastic Pipeline | June 1989 |
| 449 | Irrigation Water Management | September 1982 |
| 451 | Land Reclamation, Fire Control | July 1980 |
| 456 | Land Reclamation, Highwall Treatment | July 1980 |
| 453 | Land Reclamation, Landslide Treatment | July 1980 |
| 452 | Land Reclamation, Shaft and Audit Closing | July 1980 |
| 454 | Land Reclamation, Subsidence Treatment | July 1980 |
| 455 | Land Reclamation, Toxic Discharge Control | July 1980 |
| 543 | Land Reconstruction, Abandoned Mined Land | September 1981 |
| 544 | Land Reconstruction, Currently Mined Land | September 1981 |
| 466 | Land Smoothing | November 1989 |
| 468 | Lined Waterway or Outlet | August 1992 |
| 472 | Livestock Exclusion | September 1981 |
| 484 | Mulching | January 1982 |
| 590 | Nutrient Management | April 1992 |
| 582 | Open Channel | June 1989 |
| 510 | Pasture and Hayland Management | April 1984 |
| 512 | Pasture and Hayland Planting *Permanent Vegetative Cover (interim) | April 1984 |
| 595 | Pest Management | February 1997 |
| 516 | Pipeline | November 1989 |
| 378 | Pond | August 1992 |
| 521A | Pond Sealing or Lining, Flexible Membrane | March 1982 |
| 521B | Pond Sealing or Lining, Soil Dispersant | March 1982 |
| 521C | Pond Sealing or Lining, Betonite | March 1982 |
| 521D | Pond Sealing or Lining, Cationic Emulsion Waterborne Soalant | March 1982 |
| 521E | Pond Sealing or Lining, Asphalt-Sealed Fabric Liner | March 1982 |

*Line up
column*

A-7c out

| | | |
|------|--|----------------|
| 521F | Pond Sealing or Lining, Gleization (interim) | January 1979 |
| 338 | Prescribed Burning | June 1996 |
| 533 | Pumping Plant for Water Control | March 1974 |
| 562 | Recreation Area Improvement | February 1971 |
| 566 | Recreation Land Grading and Shaping | September 1982 |
| 568 | Recreation Trail and Walkway | September 1982 |
| 554 | Reg. Water in Drainage System | November 1989 |
| 570 | Runoff Management System | November 1979 |
| 350 | Sediment Basin | November 1989 |
| 572 | Spoil Spreading | June 1990 |
| 574 | Spring Development | June 1989 |
| 580 | Streambank and Shoreline Protection | August 1992 |
| 584 | Stream Channel Stabilization | August 1992 |
| 585 | Stripcropping, Contour | December 1981 |
| 586 | Stripcropping, Field | September 1981 |
| 589 | Stripcropping, Wind | November 1981 |
| 587 | Structure for Water Control | November 1989 |
| 606 | Subsurface Drain W/N-16 | June 1990 |
| 607 | Surface Drainage, Field Ditch | June 1990 |
| 608 | Surface Drainage, Main or Lateral | June 1990 |
| 600 | Terrace | November 1989 |
| 612 | Tree Planting | August 1992 |
| 614 | Trough or Tank | June 1989 |
| 620 | Underground Outlet | June 1990 |
| 312 | Waste Management System | July 1977 |
| 425 | Waste Storage Pond | March 1994 |
| 313 | Waste Storage Structure | March 1994 |
| 359 | Waste Treatment Lagoon | January 1995 |
| 633 | Waste Utilization | June 1980 |
| 638 | Water and Sediment Control Basin | November 1989 |
| 641 | Water Table Control | June 1989 |
| 642 | Well | November 1989 |
| 657 | Wetland Development or Restoration | August 1991 |
| | *Wildlife Food Plots (interim) | January 1993 |
| 645 | Wildlife Habitat Appraisal | April 1993 |
| 645 | Wildlife Upland Habitat Management | March 1988 |
| 648 | Wildlife Watering Facility | January 1993 |
| 644 | Wildlife Wetland Habitat Management | March 1993 |
| 650 | Windbreak Renovation | August 1992 |
| 652 | Woodland Direct Seeding | April 1995 |
| 654 | Woodland Improved Harvesting | September 1981 |
| 666 | Woodland Improvement | September 1981 |

A-7d

660
490

Woodland Pruning
Woodland Site Preparation

September 1981
January 1987

A-7e

out

Expired