Guidelines for Alternative EAW Form for Animal Feedlots

This guidance is intended for feedlot proposers providing information to a Responsible Governmental Unit for a feedlot Environmental Assessment Worksheet using the Alternative EAW Form for Animal Feedlots. The Environmental Quality Board also publishes *EAW Guidelines* about the EAW process and preparation of an EAW in general. Information in the *EAW Guidelines* may be useful to feedlot proposers even though the feedlot EAW form is different than the standard EAW form. *EAW Guidelines* is available online at www.mnplan.state.mn.us.

General guidance. The project proposer is required to answer EAW questions by supplying any reasonably accessible data or information. For convenience, the proposer's information and data are usually provided to the RGU on a copy of the EAW form; however, the finalized EAW (the version reviewed by the public) is required by law to be prepared by the Responsible Governmental Unit or its agents.

In using the form to submit information to the RGU:

- If you are typing the information onto a paper form and a complete answer does not fit in the space allotted, attach additional sheets as necessary.
- If you are preparing the submission electronically, be sure to include the complete question as well as your response. An electronic version of the form is available at www.mnplan.state.mn.us.

Questions about how to respond to items not listed here should be referred to the RGU. Local officials such as county feedlot officers, zoning administrators or soil and water conservation district staff may be able to provide or refer you to information about features and conditions at and near the site. The appendix provides additional guidance:

- list of agency contacts and other resources
- glossary of karst terms
- acceptable feedlot air quality mitigation practices
- MPCA Commissioner's feedlot letter about revisions to feedlot air quality cumulative impacts analysis requirements.

Item-specific guidance

1A. The feedlot name should be the same or similar to the name used on applications for feedlot permits. The name listed on the EAW should indicate the animal species. If there could be confusion with another similarly named feedlot, a geographic reference should be added (township name and, if needed, section number). An example of a complete name is: *Joe Jones Hog Feedlot Expansion – Norway Twp*.

1B. The person listed as the contact should be familiar with the technical nature of the project and the data provided on the EAW form. The contact may be an engineer or other consultant if so desired by the proposer. Fax numbers and e-mail addresses are optional.

1C. The RGU should answer this item.

1D. The RGU should answer this item.

1E. If there are multiple quarter-quarter or section numbers, all should be listed. The proposer need not provide the watershed name and code number.

1F. Some sources for maps and aerial photos are given in the appendix.

When copying the USGS map, include sufficient area around the project site to include sensitive resources identified in item 2.

1G. The RGU should answer this item.

1K. If this project is an expansion of an existing feedlot, or if there may be future expansions, it may result in "phased actions." EQB rules require all parts of a phased action be reviewed, which could influence what is covered in the EAW. Rule provisions about phased actions are cited in the RGU Certification at the end of the form. Phased actions are also discussed in *EAW Guidelines*. Questions about the application of phased actions, should be referred to the RGU.

2B. Local planning and zoning officials should be consulted about the consistency of the project with any applicable local ordinances. It may be prudent to obtain a letter from the local unit documenting project consistency with local ordinances, and to attach a copy to the EAW submission.

2C. Generally speaking, "proximity" means within a mile or so of the project; however, the distance can be greater in specific instances. The RGU must exercise its discretion to ensure that all resources that may be impacted significantly are listed.

If information about Drinking Water Supply Management Areas is not available from a county feedlot officer, the Minnesota Department of Health has a Drinking Water Protection message center at 1-800-818-9318.

3C. A glossary of karst terms is included in the appendices.

5B. If there will be more than two species, provide additional species quantities as needed.

6B. If effective air emission or odor control measures are demonstrated in 6B, then 6C (air quality/odor modeling study) does not apply. This can normally be accomplished by one of the following methods:

- All manure is stored in a form that does not generate significant air or odor emissions; for example, solid manure storage; or
- Air or odor emission mitigations are used that are generally accepted as effective; a list of accepted odor management and air emission mitigations is included in the appendix

It should be noted that a few projects may require air/odor modeling despite fulfilling one of these options because of particular circumstances. Whether or not modeling is needed is ultimately the RGU's decision.

6C. If no mitigations or design features are proposed in 6B., or they are not considered sufficient by the RGU, then an air quality/odor modeling study must be performed to calculate emissions and impacts. The study and its results must be summarized in the EAW to provide information about the potential for significant air or odor impacts.

To address potential cumulative air impacts, the modeling must include appropriate background concentrations for hydrogen sulfide. Guidance on obtaining an appropriate background hydrogen sulfide concentration can be found in *Guidelines on Air Quality Models*, 40 CFR Ch. I (7–1–99 Edition), Appendix W to Part 51 (section 9.2). This document can be found at http://www.epa.gov/scram001/guidance/guide/appw_99.pdfl Appendix 4 is a letter from the Commissioner of the PCA providing further information about the current requirements for air quality cumulative impacts analysis.

It is recommended that a modeling protocol be developed by the proposer and reviewed by the RGU before the modeling study is undertaken.

9. For purposes of this question, a heavy truck is considered to weigh 5 tons or greater. Although it is not necessary to include costs in an EAW, it may be prudent to provide information about whether the proposer will pay for any improvement or repair costs for public roads.

10. The RGU should answer this item.

11. This item covers any environmental impacts not included elsewhere on the form, if there should be any noteworthy but unusual impacts associated with the particular project. It can also be used to address any potentially significant cumulative impacts, if those impacts have not already been covered under a specific item.

12. The RGU should complete this item.

Appendix 1. Agency Contacts and Other Resources

The following agencies may review an EAW or provide information on how to appropriately respond to questions on the EAW form.

State agencies

Environmental Quality Board 651-296-8253
or toll-free 1-800-657-3794
(ask for environmental review program)

Department of Agriculture 651-296-1488

Department of Health 651-215-0807

Department of Natural Resources 651-296-4796
(or the regional office indicated on the DNR map below)

Department of Transportation 651-779-5094

Metropolitan Council 651-602-1000
Data Center 651-602-1140
Environment Resource Planning and Management 651-602-1145
Environmental Services 651-602-1005

Minnesota Geological Survey 612-627-4780

Minnesota Historical Society 651-296-5462

Minnesota Planning 651-296-3985
Datanet 651-296-6866

Pollution Control Agency
Environmental review coordinator 651-296-7398

Federal agencies

Army Corps of Engineers 651-290-5200

Fish and Wildlife Service 612-713-5300

Natural Resources Conservation Service
(check local phone directory blue pages)

Other resources

Minnesota Department of Transportation county highway maps: These maps show all roads, national and state parks, forests, wildlife management areas and refuges.

MnDOT Map Sales 651-296-2216
http://www.dot.state.mn.us/maps.shtml

U.S. Geological Survey maps: These 7.5-minute maps are available for the entire state from local map dealers and government agencies.

Minnesota Geological Survey 612-627-4780
http://www.geo.umn.edu/mgs

U.S. Geological Survey 800-ASK-USGS
http://mapping.usgs.gov

Aerial photographs: Aerial photography of Minnesota is available for much of the state in several different scales.

For forested regions:

Department of Natural Resources
Division of Forestry 218-327-4449
http://www.ra.dnr.state.mn.us/photos

For Twin Cities metropolitan area:

Metropolitan Council
Regional Data Center 651-602-1140
http://www.metrocouncil.org

For all of state:

EROS Data Center 605-594-6151
Sioux Falls, South Dakota
http://edcwww.cr.usgs.gov

Soils and geological data: Soil surveys are available for many Minnesota counties. Soil survey information is available from the Natural Resources Conservation Service at 651-602-7891. For a report on the status of soil mapping in Minnesota, see http://www.mnplan.state.mn.us/press/soilsrpt.html.

The Minnesota Geological Survey has a variety of geological maps and publications that may be helpful for some EAWs. Contact the Minnesota Geological Survey at 612-627-4780 or the USGS at 612-783-3100; http://wwwmn.cr.usgs.gov

Appendix 2: Glossary of Karst Terms

The following definitions are extracted from *A Glossary of Minnesota Karst Terminology*, Jeffrey A. Green, MnDNR, and Calvin A. Alexander, Jr., University of Minnesota, May 1999.

Blind valley: A valley that terminates abruptly at a point where its stream sinks, or once sank, underground. As sinks develop higher up the blind valley, the original valley termination may be dry under most flow conditions.

Cave: A natural underground room or series of rooms and passages large enough to be entered by a man; generally formed by solution of limestone.

Dry valley: Valley that lacks a permanent surface stream. Dry valleys are common on carbonate rocks with good primary permeability, such as the chalk, and occur on other permeable rocks such as sandstone. Dry valleys on cavernous limestone were formed when streams flowed on the surface, either before secondary permeability and cave systems developed, or when caves were blocked by ground ice in periglacial climates. The valleys became dry when underground drains formed or were re-opened, capturing first part and then all of the surface drainage.

Karst: (noun): A landscape created on soluble rock with efficient underground drainage. Karst is characterized by caves, dolines, a lack of surface drainage and other climatically controlled features, and is mainly, but not exclusively, formed on limestone. The name derives from the German form of Kras – the Classical Karst straddling the border between Slovenia and Italy. In this original, temperate, karst the dominant landforms are dolines, but contrasting landscapes are the pinnacle, cone, and tower karsts of the tropics, and the fluviokarst and glaciokarst of colder climates. The uncapitalized term “kras” originally denoted bare, stony ground in the Slovene language. (adjective) Features, characteristics or functions produced by the solution of soluble geologic materials.

Karst window: Depression revealing a part of a subterranean river flowing across its floor, or an unroofed part of a cave.

Resurgence: Point at which an underground stream reaches the surface and becomes a surface stream. In European literature, the term is reserved for the reemergence of a stream that has earlier sunk upstream.

Sinkhole: General terms for closed depression. They may be basin, funnel, or cylindrical shaped.

Spring: Any natural discharge of water from rock or soil onto the surface of the land or into a body of surface water.

Appendix 3: Acceptable Feedlot Air Quality Mitigation Practices

This document is intended as guidance to assist producers and regulators in their review of various feedlot air quality control measures and practices. This information is compiled based on a review of scientific literature, demonstration projects and ongoing research efforts by the University of Minnesota Biosystems and Agricultural Engineering Department.

Production unit (livestock building and manure storage) odor control options			
System:	***Description:***	***Advantages:***	***Disadvantages:***
Oil Sprinkling	Vegetable oil is sprinkled daily at low levels in the animal pens.	Helps in the reduction of airborne dust and odors.	Creates an oily environment and greasy residue on the floor and pen partitions if too much oil is sprinkled.
Biofilters	Odorous gases are passed through a bed of compost and wood chips; bacteria and fungal activity help oxidize organic volatile compounds.	Reduces odor and hydrogen sulfide emissions effectively.	May need special fans because of pressure drop.
Biological and chemical wet scrubbers	Odorous gases are passed through a column packed with different media types; water (and/or chemical) is sprayed over the top of the column to help optimize biological and chemical reactions.	Reduces odors, H2S, and NH3 emissions effectively	Capital and operational costs; disposal of collected pollutants.
Washing Wall	A wetted pad is installed in a stud wall about 5 feet upwind of ventilation fans and downwind of hog in a tunnel ventilated building.	Dust reduction of 50% and 33% reduction of ammonia at medium ventilation rates.	For tunnel ventilated buildings only. No documentation on odor reduction.
Solid Composting	Biological process in which aerobic bacteria concert organic material into a soil-like manure called compost; it's the same process that decays leaves and other organic debris in nature.		

Natural Crust	Dairy and sometimes swine storage basins can form a natural crust. This crust will reduce odor emissions.	Effectively controls odors.	Techniques to produce and maintain a natural crust are elusive, but developing.
Straw Cover	Wheat, barley or other straw is floated on the manure surface.	Effectively controls odor.	Must be applied annually and maintained throughout the year. A geotextile cover or related material can be used to support the straw and keep solids from entering the basin.
Plastic Cover	Non-porous cover floated on the liquid surface. Cover traps gases before they escape. Gases must be drawn off and treated.	Nearly eliminates odor emissions.	Gases must be withdrawn from under the cover and treated. No good technologies developed for this process.
Anaerobic Digestion	Biological process where organic carbon is converted to methane by anaerobic bacteria under controlled conditions of temperature and pH	Reduces odor and organic matter; produces biogas which can be converted to heat or electricity; retains nutrients; easier handling of liquid.	Capital costs and requires skilled management.
Aerobic Treatment	Biological process whereby organic matter is oxidized by aerobic bacteria; mechanical aeration is required in order to supply oxygen to the bacterial population.	Reduces odor, organic matter and nutrients (if desired).	Capital and operating costs; separation step (liquid/solid) may be necessary for most slurries.

Appendix 4:

April 10, 2000

Dear Interested Party:

The District Court in the Hancock Pro Pork case found that the Minnesota Pollution Control Agency (MPCA) needed to better consider and evaluate air cumulative impacts when making environmental review decisions on feedlots. As a result of this decision, as well as other concerns being raised with air emissions from feedlots, MPCA staff developed evaluation guidance regarding cumulative air impacts. This staff guidance was discussed in a memorandum, dated January 5, 1999, titled "Cumulative Effects of Feedlot Air Emissions Guidance for Environmental Assessment Worksheets (EAWs) and Other Decisions." Subsequent air quality computer modeling and ambient air data collection have provided the MPCA with additional information which has resulted in the MPCA's decision to replace the January 5, 1999, interim guidance. This letter notifies you of MPCA's decision to replace the January 5, 1999, interim guidance with the information development procedures in the Environmental Quality Board's (EQB's) *Guidelines for Alternative EAW form for Animal Feedlots*.

Air Quality Modeling during the Environmental Review Process to Address Cumulative Effects
For the purpose of completing an EAW, a project proposer may have to conduct air emission and ambient air quality modeling for hydrogen sulfide (H_2S) to determine compliance with state ambient air quality standards. If a project proposer conducts air quality modeling during the environmental review process, the project proposer needs to employ a background number[1] value in the air quality modeling protocol and modeling exercise. The background number will account for the cumulative air quality effects of multiple feedlots and other H_2S sources and will be derived pursuant to the protocol of the Environmental Protection Agency (EPA) set forth in 40 CFR Part 51, Appendix W (section 9.2).

Also note that the *Guidelines for Alternative EAW form for Animal Feedlots*, provide the option of a facility proposer applying acceptable mitigation measures to address air quality concerns in lieu of conducting air quality modeling.

Future Evaluation
The MPCA will provide a copy of this letter and the *Guidelines for Alternative EAW form for Animal Feedlots* to the feedlot air quality stakeholders group (Stakeholders).[2] In approximately one year, the MPCA will request the Stakeholders to review and evaluate these documents taking

[1] Guidance on obtaining an appropriate background hydrogen sulfide concentration can be found in : Guideline on Air Quality Models (40 CFR Part 51, Appendix W (section 9.2). The document can be found on the Internet at: http://www.epa.gov/scram001/guidance/guide/appw_99.pdf

[2] The "Stakeholders" refer to the group of entities who entered into a Memorandum of Understanding in the fall of 1999. The members of the group are: the MPCA, the Minnesota Department of Agriculture, the University of Minnesota, the Minnesota Pork Producers Association, the Minnesota Milk Producers Association, and Land O' Lakes Corporation.

into account further air quality data collected by the Stakeholders and others. The MPCA will request the Stakeholders to provide the MPCA with feedback and recommendations regarding implementation of these documents, including possible modifications.

EQB's *Guidelines for Alternative EAW form for Animal Feedlots* are intended to provide additional assistance for project proposers in developing information that is needed to assess the potential for environmental effects from projects. These *Guidelines* are also consistent with EQB's continuing effort to provide more details and guidance on EAW preparation and evaluations for responsible governmental units (RGUs) as the RGUs evaluate the information in making final environmental review decisions. Of course, in carrying out its environmental review responsibilities, the MPCA remains open and flexible to adjusting information gathering methods and techniques depending upon the relevant facts of specific projects and new developments in the science and technology of predicting air quality effects. In that context, the MPCA believes the use of the EPA background protocol is one of the appropriate tools to use when needed to evaluate cumulative air effects from projects.

Sincerely,

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Karen A. Studders
Commissioner

KAS/SH:cad