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December 16, 2019

Department of Environmental Protection
Clean Water Program
Attn: Mr. Scott Arwood, P.E.
Southcentral Regional Office Building
909 Elmerton Avenue
Harrisburg, PA 17110-8200

Re: Response To Technical Review Comments For Bivouac Sow Farm, WQM Permit Application No. 2919201, Authorization ID No. 1279394, Ayr Township, Fulton County

Dear Mr. Arwood:

In response to the technical review comments issued by The Department of Environmental Protection (DEP) for the above referenced Water Quality Management (WQM) permit application, I am providing the following information to explain how the review comments were addressed. Revised manure storage plans and revised design engineer's report are included with this letter to address the technical review comments.

Comment #1:

It appears structural fill zones and non-structural fill zones with differing placement criteria and testing requirements are proposed. Clarification is needed on the differentiation of the fill zones. Specifically, the Manure Storage Facility Subgrade General Notes (hereafter referred to as "Notes") included on page 7 of the engineer's report (and reproduced on drawings BIVC202AP, BIVC302BP, BIVC402CP) refers to "subgrade" and "building subgrade" without defining the terms relative to the extents of the buildings and/or their footings. Please define subgrade and building subgrade, or provide alternative descriptions related to testing zones and structural/non-structural fill zones discussed below.

Response #1:

The structural fill zones are now clarified in the Manure Storage Facility Subgrade General Notes on the plans and in the design engineer's report (note 1). A letter has been included from the geotechnical engineer explaining the differentiation of fill zones. For fill depths less than 6' structural soil fill is proposed and for fill depths over 6' rock fill is proposed for the lower one half of the fill. For the purpose of the subgrade notes on the plans it was intended for subgrade or building subgrade both to refer to the subgrade under

the building. This has been changed to only reference building subgrade since the manure storage is under the building.

Comment #2:

Item #3 of the Notes refers to an "upper" area and a "lower" area in reference to fill gradation requirements. Please clarify what differentiates the two areas.

Response #2:

The upper and lower areas are now clarified in the Manure Storage Facility Subgrade General Notes on the plans (note 3) and in the design engineer's report. A letter has been included from the geotechnical engineer explaining the differentiation of fill zones. For fill depths less than 6' structural soil fill is proposed and for fill depths over 6' rock fill is proposed for the lower one half of the fill.

Comment #3:

Item #5 of the Notes refers to compaction density testing of fill within a 1:1 slope of the building footings. Please clarify what zones of fill this 1:1 slope defines (i.e., 1:1 upward or downward, testing above or below that line, etc.).

Response #3:

Compaction density testing is required at and below a 1:1 downward slope from the building footings. In the lower areas of rock fill, compaction density testing will not be possible so visual non-movement testing will be completed as described in the letter provided by the geotechnical engineer. Manure Storage Facility Subgrade Notes (note 6) have been updated to clarify this.

Comment #4:

The specifications do not require structural fill to be free of deleterious materials. Also, the allowable USCS classifications of the structural fill materials are not specified. Please add these requirements to the specifications or provide justification as to why it is not warranted.

Response #4:

Structural fill USCS classifications have been added to the Manure Storage Facility Subgrade Notes (note 4) on the plans and design engineer's report. Clarification has been provided for structural fill to be free of deleterious materials.

Comment #5:

In Item #4 of the Notes, the "slightly higher" moisture content specified, should rather be defined numerically as a certain percentage above optimum moisture content.

Response #5:

This item has been updated to specify up to 2% higher moisture content in the Manure Storage Facility Subgrade Notes (note 5) on the plans and design engineer's report.

Comment #6:

In Item #10 of the Notes, a soil separation layer is proposed only when bedrock with open joints, fractures, or solution channels are encountered, in accordance NRCS Practice Code 313.

To decrease the potential for differential settlement, DEP suggests that all bedrock encountered under the footings or floor slabs should be over-excavated and replaced with a minimum 1-foot thickness of soil selected and placed according the structural fill requirements. Please address.

Response #6:

This item has been updated to require the soil separation layer for all bedrock encountered under footings or floor slabs. The Manure Storage Facility Subgrade Notes on the plans and design engineer's report have been updated for this change (note 11).

Comment #7:

Test pit locations are shown on drawing S1/E010-14. However, no logs, soil profiles, or discussion of findings are included in the report or drawings. Please provide information to verify an adequate investigation of soils at least 2 feet (3 feet in areas of fractured bedrock or permeable soils) below building subgrades, as required by NRCS Practice Standard Code 313. Please include information on groundwater levels. A discussion of the site geology, based in published information and/or site observations and investigations, should also be included.

Response #7:

Soil test pit logs have been added to the site plan page (page S1) of the plans and to the design engineer's report. A discussion of site geology has also been added to the design engineer's report in the soils investigation section.

Comment #8:

The Engineer's Report should include a discussion of the minimum required setback distances (required by 25 Pa. Code Chapter 83) from the manure storages to wells, property lines, bodies of water, etc.

Response #8:

A discussion of minimum required setback distances for the manure storage facilities has been added to the design engineer's report in a required manure storage facility setbacks section.

Comment #9:

Page 16 of the Engineer's Report refers to an Operation and Maintenance Plan within the CAFO permit application. The Operation and Maintenance Plan should be included in the certified WQM application Engineer's Report so that it may be incorporated into the WQM permit conditions.

Response #9:

An operations and maintenance plan for the manure storage facilities has been added to the design engineer's report in the operation and maintenance plan section.

Comment #10:

Please provide gradation specifications for the rockfill surrounding the pipes in the foundation/leak detection drains.

Response #10:

The rockfill surrounding foundation and leak detection drain pipes is AASHTO #57 crushed stone (1.5" top size). A gradation chart for AASHTO #57 stone has been added to the design engineer's report in the soils investigation section.

Comment #11:

For the gravity manure transfer pipes from the Farrowing Barn to the Gestation Barn, please provide more detailed specifications regarding the backfill around and above the pipes, the type of joints if needed, and the minimum cover.

Response #11:

Gravity manure transfer pipe installation notes have been added to the pit plan page of the farrowing barn plans and are included in the design engineer's report to provide additional pipe specifications.

Comment #12:

Please note that in accordance to NRCS Practice Code 634, the minimum diameter pipe for swine manure shall be 10 inches for pipe slopes between 0.5 to 1.0 percent, and 6 inches for pipe slopes greater than 1.0 percent. Please address.

Response #12:

The manure transfer pipe slopes have been adjusted to be greater than 1% slope to meet the PA634 requirement with 8" diameter pipe. This has been updated on the farrowing barn pit plan page and cross sections.

Thank you for your time in reviewing this information, if you have any further questions please feel free to contact me.

Sincerely,



Timothy R. Royer, P.E.
Timber Tech Engineering, Inc.

TRR:elw
Attachments