



AGENCY OF AGRICULTURE, FOOD & MARKETS
Agricultural Resource Management Division
James H. Leland, Director

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Mr. David Conant
Conant's Riverside Farms, LLC
2258 West Main Street
Richmond, Vermont 05477

June 27, 2013

Dear Mr. Conant,

The Agency has received project descriptions and designs from Tate Jeffries, P.E., Natural Resources Conservation Service (NRCS), for two manure storage structures to be constructed at Conant's Riverside Farm on Route 2 in Richmond, so the Agency can render its opinion on whether the structures would be considered "farm structures".

Because the structures are proposed to be built in the 100-year floodplain, the proposal also had to be reviewed by the Floodplain Management Office of the Vermont Department of Environmental Conservation (VT DEC) for compliance with National Flood Insurance Program (NFIP) standards. Structures constructed in the 100-year floodplain must be constructed in accordance with NFIP standards in order to be in compliance with the Accepted Agricultural Practices Regulations (AAPs). [See Section 4.07(a) of the AAPs.]

Based on the information provided in Mr. Jeffries submission of May 6, 2013, and subsequent clarifying emails of June 24 and 25, it is the Agency's understanding that the following structures are proposed for construction:

Temporary manure storage tank - a 12' by 50' by 9' deep temporary concrete manure storage tank will be constructed on the northeastern end of the heifer barn with the top wall elevation at 304.5 feet. This height translates into 0.7' above base flood elevation (BFE).

Main Manure Storage Pond – a 225' diameter, 12' deep concrete manure storage pond will be constructed to replace the existing lined earthen manure pond. The top of the wall of the concrete storage structure will be at 310.5, or 5.4' above BFE.

Conant's Riverside Farm is engaged in farming and accepted agricultural practices as you are a functioning medium farm dairy operation [see AAP Sections 2.05(a) and 3.2(d)]. In addition, the proposed manure storage structures listed above meet the definition of "farm structure" as they will be used in connection with the sale of \$1,000 or more of agricultural products in a normal year [see AAP Section 2.06(a)].

Rebecca Pfeiffer of VT DEC, reviewed the information provided in Mr. Jeffries' submission of May 6, 2013 and has determined that, if the structures are built according to the following recommendations they will be in compliance with the NFIP standards, and consequently with the AAP regulations. If the structures are not built in accordance with NFIP standards, the

Intervale Center's eligibility for coverage under NFIP flood insurance may be compromised and the Agency may take enforcement action under the AAP regulations.

The following is a summary of Ms. Pfeiffer's comments contained in her email of June 21, 2013:

One temporary manure storage tank is proposed to be located just behind (NE side) of the heifer barn and existing main manure storage pond will be replaced with a proposed 12' deep circular concrete storage pit. Both storage areas are located within the Special Flood Hazard Area, but are located outside of the regulatory floodway.

Of note is the date of the current effective FEMA Flood Insurance Rate Map (FIRM) for this area of Richmond. Although Chittenden County has a new effective FIRM date of 7/18/2011, the Town of Richmond was not included with the rest of the county because of a possible appeal by the Town to the new floodplain delineation. Although the 2011 map is not currently effective for the Town of Richmond, it is preferable for use over the current effective 1982 FIRMs, as the 2011 maps show a greater flooding hazard (higher base flood elevations (BFEs) and a more extensive floodway) than the effective 1982 FIRMs. Although the final updated FIRM for Richmond may differ from the draft 2011 maps, it will most likely be closer to the final map and actual flooding conditions than the floodway/floodplain delineation shown on the 1982 maps.

General Comments

VTDEC emphasizes the importance of having the structures built as proposed to help minimize the risk of structure failure over time, including failure from flood damage. Failure from flood damage could occur from:

- the hydrostatic force of flood water on the walls of the structure if the tanks are relatively or completely empty at the time of flooding;
- hydrodynamic flood forces creating scour or carrying flood debris (which can be quite large in this part of the Winooski River floodplain); or
- ice chunks that can be carried onto the floodplain during ice break-up in the winter or spring.

If there has been scour or ice damage caused by flooding in the past, the Conants and/or NRCS may want to consider some protection at the toe of the fill slope to prevent damage to the manure storage tank/pond.

Any mechanical or electrical equipment would need to either be elevated above the BFE or to be floodproofed and protected from flood damage if it is to be located below the BFE.

Temporary Manure Storage Tank:

The smaller temporary tank is proposed to be 12'x50'x9' deep with the top wall elevation of 304.5' (NAVD 1988). The Base Flood Elevation from the draft 2011 FIRM (BFE, or the height of the 1% annual chance flood event) at this location is reported to be 303.8' (NAVD 1988). The BFE on the current effective 1982 FIRM for the area around the farm structures where both of the proposed tanks will be located is between 300.3'-302.7' (NGVD 1929, converted to a height of approximately 299.86'-302.26' NAVD 1988). Therefore, the top wall of the temporary manure tank would be 0.7' above the 2011 draft BFE. While this will help to keep flood waters out of the tank during many flood events, we would encourage the Conants and NRCS to raise the top of the wall up as high as practical while still being able to resist hydrostatic and

hydrodynamic flood forces on the wall. This would help to minimize the chance of flood waters from getting into the manure pit during a flood that may exceed the 1% annual chance flood event or if flood waters are locally higher due to a site specific occurrence, such as a debris jam on the surrounding buildings.

Replacement Main Manure Storage Pond:

The proposed 225' diameter, 12' deep replacement concrete storage pond is proposed to have a finished top wall elevation of 310.5', while the proposed 2011 draft BFE is reported to be 305.1' (NAVD 1988). Again, the BFE on the current effective 1982 FIRM for the area around the farm structures where both of the proposed tanks will be located is between 300.3'-302.7' (NGVD 1929, converted to a height of approximately 299.86'-302.26' NAVD 1988). Therefore, the top of the finished wall would be 5.4' above the draft 2011 BFE at the site. Additionally, the land immediately surrounding the manure pond will also be filled to an elevation greater than the draft 2011 BFE. While this elevation of the pond wall and the land immediately surrounding the pit will help to ensure that flood waters and stored manure will be less likely to mix during a flood event, the NRCS pond design should ensure the structure can withstand the hydrostatic force of flood water that may act on the wall in the event of a flood when the manure pond is empty (for a factor of safety).

It is VTDEC's understanding is that the replacement manure pond will also have a line being directionally bored underneath the Winooski River in order to carry manure to fields on the other side of the River or that this work may have already been completed. If this is the case, then I would recommend that NRCS and the Conants develop an emergency procedure if flooding is anticipated to ensure that there will be minimal damage to the storage tank infrastructure.

In summary, if the manure storage structures have been designed to withstand hydrostatic flood forces acting against the tank walls in the event of a base flood while the tanks are empty and any of the mechanical and electrical equipment is protected from at least the base flood, then it would appear that the project would meet the minimum requirements of the National Flood Insurance Program (NFIP). Again, it is also recommended that the NRCS/Conants consider the protection of the filled slope from flood scour and ice from flood events.

As always, other State, Federal or local permits may be required for this project.

End of Rebecca Pfeiffer's email summary

In response to the issues raised by Ms. Pfeiffer, Mr. Jeffrey has offered the following clarification in email dated June 24 and 25:

Mr. Jeffrey is not aware of the Conant's experiencing any scour around the existing manure structure. He has designed the circular manure storage with a flattened 5:1 slope and feels that once vegetation is established, it should be fine. Rip rap could be put in place to prevent scour if necessary. In addition, the pump at the heifer barn is designed to be installed above the BFE. There are no current plans to install the manure transfer pipe under the Winooski. The currently planned transfer between the heifer and new circular waste storage will have both ends above

BFE. Lastly, the top elevation of the heifer manure storage tank can be raised to one foot above BFE.

Also note that Section 4.07(e) of the AAPs requires that structures “shall be constructed so that a minimum distance of 50 feet is maintained between the top of the bank of the adjoining waters and the farm structure.”

This project proposal has also been review by Martha Abair with the US Army Corps of Engineers. She has confirmed that the proposed work will not take place in any of the wetland areas she identified on the farm during her visits in 2011.

This letter outlines the Agency’s position based on the information provide by you. Although the Agency’s position on whether the proposed structures are “farm structures” may carry some weight, ultimately the application and enforcement of municipal zoning law and the exemption in 24 VSA §4413(d) rests with each town.

Best regards,

A handwritten signature in blue ink that reads "Wendy Anderson" followed by a long horizontal flourish.

Wendy Anderson
Enforcement Coordinator

Cc: Tate Jeffrey, P.E.
NRCS, Williston

Neal Leitner
Zoning Administrator
Town of Richmond

Rebecca Pfeiffer
Floodplain Management Office
VT DEC

Martha Abair
USACOE