

## **APPENDIX D TO FIELD SERVICES SUBMISSION**

### **Applications Experience with Roller Compacted Concrete (Andy Cumming)**

- Approval officers have had limited experience with RCC as AOPA liners. Only one decision has been issued allowing this. To understand this decision the specifics of the application information should be looked at as every application is unique.
- Approval officers have had a fair amount of experience with RCC as a pen floor amendment (installed on top of a liner) to minimize wear and tear on the liner. Liners in this case are normally comprised of compacted soil or naturally occurring protected layers. This does not require a permit or permit amendment under AOPA because it is not being used as a liner. Operations which do this require additional runoff control capacity, which may require a permit if additional capacity is required to be constructed.
- We have followed a recent study of RCC use in feedlots in Southern Alberta. Presentations were given to NRCB staff on this study on several occasions by Agriculture and Forestry.
- NRCB staff have had several site visits to feedlots which have used RCC as pen amendments (placed on top of existing liners) including a Board tour of the Kolk feedlot which had pens with RCC placed on top of existing liners as well as pens without the RCC liner topping.
- Approval officers have had discussions with staff from AF regarding RCC and its potential use as a liner (especially for feedlots) at different times.
- Staff have shared and read quite a number of articles and studies on RCC. Many of these articles were for RCC which was used for a non-agricultural purpose.
- NRCB management have had discussions regarding RCC and its potential use as a liner. Agreement at the management table was that until there was clear guidance that RCC can meet AOPA requirements that it should be the applicants' responsibility to show how AOPA requirements could be met.
- Discussions at TAG regarding the desire by some operators and livestock industry sectors to use RCC as a liner for AOPA permitting purposes have been had. This led to the TAG project to investigate what information was available on RCC and the possibility of developing a TAG guideline for the use of RCC as a liner under AOPA. The report for TAG on this project was completed in December 2020.

## **Compliance & Enforcement Experience with Roller Compacted Concrete (Kevin Seward)**

Inspectors do not deal directly with determining the technical requirements of RCC as a liner for confined feeding operations. This is mainly done through the application process.

We have seen and heard of numerous feedlots that have placed RCC in their pens either over a grandfathered liner or an AOPA approved clay liner. Some of the benefits operators have claimed from the RCC are:

- allows them to better protect and manage their pen liners during pen cleaning operations so that the clay base is not removed with the manure.
- reduces their annual manure volumes by reducing the amount of clay mixed into the manure.
- reduced feedlot pen dust from pens lined with RCC.
- improved animal health
- increased stocking density

Some disadvantages:

- increased pen runoff which leads to catch basin capacity issues
- the product must be placed and installed correctly
- costs of installation

Inspectors always encourage and promote new technology to CFO operators to minimize or diminish environmental impacts and nuisance impacts to neighbors.

I did participate in a meeting with a RCC supplier and a NRCB approval officer to determine the proper process for installing RCC in feedlot pens for application LA18053 (now LA18053B). It is my understanding that condition #9 was included in permit LA18053 (now condition #4 in LA18053B) as a result of the discussions at that meeting.

## Sci-Tech Experience with Roller Compacted Concrete (Walter Ceroici)

Sci-Tech staff:

- Are familiar with the few instances where roller compacted concrete (RCC) has been used as a pen floor amendment at CFOs in Alberta. Generally the RCC was placed over an existing, AOPA approved liner, or over surficial deposits that tend to have a low hydraulic conductivity (e.g., glacial till).
- Understand the general composition of RCC, including variability of the material, and the data gaps that exist for determining if this material could be used as a primary liner that meets AOPA requirements at CFOs. Much of this knowledge was acquired through involvement in work conducted by the Technical Advisory Group (TAG) which has representation from the NRCB, Alberta Agriculture and Forestry (AF), and the livestock industry.
- Were involved in the preparation of the TAG concrete guideline. TAG considered including RCC in the June 2015 guideline but chose not to and to address RCC as a separate issue.
- Are not aware of a consistent, effective method for determining the average calculated hydraulic conductivity or permeability of RCC. This information is important for assessing the use of RCC as a primary liner. More Alberta-specific research is required in this area.
- Are familiar in assessing groundwater vulnerability at CFO sites which is an important consideration in determining liner requirements. These assessments involve the use of published information (e.g., maps) and more site-specific information (e.g., water wells data, site testholes).
- Are aware that AF has done some research on the use of RCC at CFOs in Alberta. The research focused more on economics and animal health. More research is required on the potential environmental issues (e.g., potential impacts to surface water and groundwater) related to the use of RCC.
- Are aware that CFO pens with RCC installed have increased surface water runoff.
- Are aware of RCC use for some other applications (e.g., associated with “permeable, or pervious, pavement”, where the intent is to reduce the amount of storm water runoff in some urban areas).