

Bill Graham



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

May 30, 1996

Mr. Steve Nicholson
Clear Lake Sanitary District
PO Box 282
Clear Lake, Iowa 50428

RE: Clear Lake Sanitary District
CS192066 03

Dear Mr. Nicholson:

The Iowa Department of Natural Resources has considered your April 15, 1996, request for a variance from design standard 17.3.4.3. This design standard requires installed mixing and aeration equipment for all sludge holding tanks regardless of sizing and detention. The Iowa Department of Natural Resources is approving your request for a variance from design standard 17.3.4.3 for the covered holding tanks under the following conditions:

1. Aeration equipment shall be added if the covered tanks do not contain the odors from the sludge or the sludge is not adequately or reliably stabilized by the aerobic digesters. The proposed sludge holding tank shall be designed and constructed to easily accommodate the installation and maintenance of this equipment.
2. The Sanitary District shall comply with state sludge rules at all times.

Additional sampling and more stringent disposal requirements may be necessary without installed mixing equipment. Sludge sampling prior to land application must assure a representative sludge sample is taken for analysis.

Should you have any questions, please call Terry Kirschenman at 515-281-8885.

Sincerely,


Darrell McAllister, Chief
Water Quality Bureau

cc: Field Office 2
Rust Environment and Infrastructure, Minneapolis, MN

VARIANCE REQUEST

Iowa Department of Natural Resources

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9-8-06

1. Date : 5-29-96 13. Decision: Approved
2. Review Engineer : Terry Kirschenman Date: 4/3/96
3. Date Received : April 16, 1996
4. Facility Name : Clear Lake S.D. 14. Appeal:
5. County Number : 17 Date:
6. Program Area : CP
7. Facility Type : CO9
8. Subject Area : 366
9. Rule Reference : 64.2(9)a
10. Design Std. Ref. : 17.3.4.3
11. Consulting Engr. : Rust Environment
12. Variance Rule : 567-64.2(9)c

15. Description of Variance Request

Allow the Clear Lake S.D. to construct covered sludge storage tanks without installed aeration mixing equipment.

16. Consulting Engineer's Justification

The tanks are covered.

There is a growing number of plants that successfully store and thicken WAS in covered, unaerated, and unmixed tanks.

Mixing would cause the thickening process to fail.



Rust Environment & Infrastructure Inc.

A Rust International Company
3033 Campus Drive North
Suite 175
Minneapolis, MN 55441

Phone 612.551.1001
Fax 612.551.2499

April 15, 1996

Terry L. Kirschenman, P.E.
Project Manager, Wastewater Section
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50319

Re: Clear Lake Sanitary District
Clear Lake, Iowa
Wastewater Treatment Facilities, Phase II Improvements Project
RUST Project No. 43302

Dear Mr. Kirschenman:

We are submitting this request for a variance from Iowa Wastewater Facilities Design Standards, Chapter 17, Sludge Handling and Disposal, design standard number 17.3.4.3, Mixing and Air Requirements for sludge holding tanks, on behalf of the Clear Lake Sanitary District (CLSD). The standard requires sludge holding tanks to be designed for mixing by satisfactory aeration equipment. The sludge storage tanks designed for the CLSD wastewater treatment plant do not include an aerated mix system.

Design of the CLSD plant includes new liquid and solids treatment facilities. The liquid treatment facilities include screening, grit removal and secondary treatment with a sequencing batch reactor (SBR) process. Solids treatment includes aerobic digestion of the waste activated sludge (WAS) produced in the SBR's. Long-term sludge storage of the digested sludge is provided to coordinate the production of sludge with the availability of land for sludge application. The storage tanks are covered and designed with decant facilities to take advantage of gravity sludge thickening that occurs with long-term storage of sludge.

Design of the sludge storage tanks is based on the experience of a growing number of plants that successfully store and thicken digested WAS in covered, unaerated, unmixed tanks. Essential to the success of the storage tank as a thickener is long-term, quiescent sludge settling and adequate decanting facilities that include multiple drawoff points over the depth of a tank. Mixing the sludge will cause the thickening process to fail and inadequate decanting facilities will not allow removal of supernatant.



Mr. Kirschenman
April 15, 1996
Page 2

Clear Lake's existing primary and secondary clarifier basins are being reused for sludge storage. The basins are below grade with the walls extending to just above grade. Each tank will be provided with new decanting facilities and a new precast concrete cover system. The covers prevent the sludge from freezing (essential for decanting), contain odors, and present a neat-and-clean appearance. The at-grade covers are also designed to accommodate sludge removal equipment.

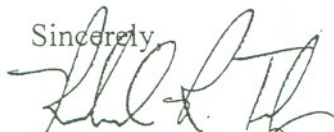
Removal and land application of the sludge will be performed by a contract hauler. All of the removal and hauling equipment will be provided by the contract hauler. The contract hauler will remove the sludge with a submersible agricultural (manure) pump immersed directly into the sludge through an equipment hatch located at the center of each tank. The pump will be powered by a farm tractor driven onto the cover. Use of a submersible manure pump immersed in the sludge is the most reliable and trouble-free means of removing thick sludge from a storage tank. Its use eliminates the problems and failures associated with plugging of pump suction lines.

Before pumping from the storage tank through a flexible hose to a truck-tanker parked adjacent to the storage tank, the pump will recirculate sludge from the pump inlet to a pump discharge nozzle to mix the tank. Sampling and analysis for each truckload will be performed until such time that it is demonstrated that the contents of a sludge storage tank are homogeneous.

The design of the sludge storage facilities for the CLSD plant applies established and acceptable technology in a manner not covered by the current standard. Please consider and grant this variance request.

If you have any questions or need additional information, please contact us at your convenience.

Sincerely,



Richard R. Tubesing
Project Manager

Enclosures: As Noted

cc: Mr Steve Nicholson
Mr. James Hagley
Mr. Gary Cressey

16. Consulting Engineer's Justification (cont.)

Odo-rs will be contained.

The covers will prevent freezing of the sludge.

Sludge will be recirculated prior to disposal for mixing. Sampling will be conducted to verify that the contents of the tank are homogeneous.

17. Department's Justification

See Proposed Approval Letter.

Also, this storage follows an extended aeration activated sludge plant with a low F/M ratio and aerobic digestion with an SRT of 20 days.

This facility is being designed to allow for the covering of the aerobic digester if necessary to get better stabilization in the winter.

18. Precedents Used

Johnston Sludge Storage Tank 12-1-94
(Johnston's tank was not built however).

19. Staff Reviewer

: Terry Kinghorn

Date: May 29, 1996

20. Supervisor

: Jim [Signature]

Date: 5/31/96

21. Authorized by

: [Signature]

Date: 6/3/96