

				DATA ENTERED	
FACILITY NAME		COUNTY NO.	PROGRAM AREA CODE	FACILITY TYPE CODE	SUBJECT AREA CODE
4 West Union WWTF C191017 02		5 33	6 CP	7 C09	8 Digester Access Openings 334
RULE REFERENCE	DESIGN STANDARD REFERENCE	DECISION		APPEAL ACTION	
9 567-64.2(a)a	10 Sludge Handling & Disposal 17.3.1.1.c.2	11 Approved 3-18-87		12	
ENGINEER		VARIANCE RULE			
13 TeKippe Engineering, P.C.		14 567-64.2(a)c			

15. DESCRIPTION OF VARIANCE REQUESTED: \_\_\_\_\_

The design standard requires that at least two access manholes not less than 24"  $\phi$  be provided in the top of sludge digesters. Also, stairways or attached ladders must be provided to reach the access openings.

It is proposed to only provide one access manhole of 20"  $\phi$  on top of the digester, but also provisions to remove the whole digester cover will be provided, which is 5 feet  $\phi$ . Stairways or ladders will not be permanently fixed to the digester.



**16. ENGINEER'S JUSTIFICATION:** The engineer feels that his proposal to provide only one access manhole & provisions to remove the entire digester cover which is 5 foot in diameter will be equally effective in providing for safety and convenience in maintaining the digester. The proposed tank is similar to the two existing tanks which have had no previous problems in operation & maintenance. He feels that providing one 5 foot diameter opening to the digester will provide ample clearance for any maintenance equipment or grit removal equipment. In the past, all maintenance at the existing digesters has been through the 5 foot diameter cover (after removal). He feels a ladder should not be permanently fixed to the digester side since it is a cone type digester with sloping sides which have exterior insulation. A permanent ladder would be a hindrance to the application & periodic maintenance of the insulation. Access will be obtained by laying a ladder down against the sloped roof.

**17. DEPARTMENTS JUSTIFICATION:**

It is felt that equivalent effectiveness has been shown in providing only one 20"  $\phi$  access manhole and provisions to remove the entire top cover of the digester. Two openings of 24"  $\phi$  are required by the design standard to allow for safety and convenience in maintenance of the digester. The proposed type of digester is not a conventional type in that it is cone shaped. The walls slope inwards to a cover that is smaller than the middle diameter of the digester. Since the top of this cone-shaped digester is much smaller than of the conventional type, it can be removed entirely to provide access for men & equipment. Also, since the sides do slope inwards to the opening & are periodically re-insulated, fixing a permanent ladder would be a hindrance. A ladder could just as easily be layed down on the side to allow personnel to reach the opening.

**18. PRECEDENTS USED:** None

1. STAFF REVIEWER:

20. SUPERVISOR:

21. AUTHORIZED BY:

Ray G. Smith 3/9/87  
John J. Jaramila 3/9/87  
Daniel McAllister 3/10/87



3/9/87  
DB.

17.3.1.1C 2 requires access manholes for maintenance. The West Union digester in question is a secondary unit of a 2-stage system. Supernatant from the two (existing) primaries will be discharged to the new one for storage and further minor thickening. Although the unit is not a true egg shape, the floor is similarly steep ( $45^\circ$ ) with suction drawoff at the very bottom (see attached) to remove any grit that may bleed into the unit. In short:

1. Very little grit should enter the unit
2. Small amounts that do enter should end up on bottom @ the suction drawoff and sub'dly removed
3. No equipment in the unit, no grit removal/cleaning anticipated — almost no maintenance.
4. Since cleaning rarely necessary, 20" hatch provided is adequate for visual inspection and very infrequent access provided by the 5' gas tight top.
5. Ladder access <sup>not</sup> necessary as grade only 5' below top elev.



# TeKIPPE ENGINEERING, P.C.

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March 5, 1987

Mr. Perry Gjersvik  
Iowa Department of Natural Resources  
Henry A. Wallace Building  
900 East Grand  
Des Moines, Iowa 50319

Re: Variance Request  
Wastewater Treatment Improvements  
West Union, Iowa C191017 02  
Project No. 8624

Dear Perry:

The purpose of this letter is to make a formal request for a variance from the Iowa Wastewater Facilities Design Standards. Specifically, Section 17.3.1.1c of the design standards for new facilities requires anaerobic sludge stabilization tanks to be provided with certain access and safety features and equipment.

The existing two digesters at the West Union plant will remain in full use and will be supplemented by one new secondary-holding tank of similar design. The existing tanks have fixed covers with only one 20-inch diameter access manhole on the top of each. No access ladder is attached to either unit. Special tools, lights, shoes, harnesses, and gas detectors were not provided. Multiple self-contained breathing units are readily available at the municipal fire station with other emergency gear.

The standards were obviously written with the safety and convenience of the operators in mind, as they should have been. Considerations were made toward the normal design of digester units and their operation. At West Union, the proposed tank is to be similar to the two existing tanks in construction and operational features. The operators are not to open the access manholes unless a problem with the digester is apparent. During the previous 10 years of operation, the two units have been opened for a foaming problem and for a cleaning to remove grit. Access to the manholes is obtained by either walking up the sloped roof or laying a ladder down against the roof for frequent trips during cleaning efforts. An attached ladder over the sloped roof would be a hindrance to the application and periodic maintenance of the insulation and surface coating.

Mr. Perry Gjeravik

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March 3, 1987

Size of the access manholes at the top of the digesters has not been a problem. Foaming or any scum problem can be viewed through a 20-inch opening fully as well as a 24-inch opening and provides less of a hazard for the operator when he is around the open cover. The operator is never to enter the access manholes.

Cleaning of the digester units is accomplished only after the top is removed. The units are designed for relatively easy removal of the metal cover over each tank to provide more than adequate access for cleaning or any significant internal activity. With the cover removed, a five-foot diameter clear opening is exposed at the center of each unit. The same access features are included in the design of the new unit. In addition, the new unit has a 20-inch diameter clear access opening through the side of the tank. A similar opening has not been needed yet in the operation of the existing tanks. Digester cleaning of these units is to be done only by specialists on a contract services base. Contractors doing such work always supply their own safety equipment. Supplying safety harnesses, lights, shoes, tools, and self-contained breathing units would probably only tempt the operators to disregard the operation manual and enter the digester at some time.

Considering the access features incorporated into the design of the new tank, and the fact that the operators are familiar with the same features in the existing tanks, we request a variance from the requirements for maintenance provisions as described above. A gas detector is being provided for inflammable and toxic gases under this project.

Sincerely,

TeKIPPE ENGINEERING, P.C.

  
George TeKippe

GT:kf

CC: City of West Union





department of water, air and waste management

RECORD COPY

File Name

New Hartford - 5

Senders Initials

LH

Lavoy  
Haag

May 7, 1986

George Tekippe  
Tekippe Engineering  
128 South Vine St.  
West Union, IA 52175

Dear George:

Enclosed is a copy of the financial statement form I referred to in our telephone conversation yesterday. Actually, this form is to be completed when a community is claiming inability to meet the 1988 deadline for full compliance because of financial hardship thus it is not necessary to submit the form when requesting a variance. However, if the justification for a variance includes a claim of financial hardship, then we would be looking at essentially the same factors as those listed on the form. Thus, it may provide guidance to you in preparing your request.

We must emphasize that variance determinations are based primarily on technical factors regarding equivalency and economics are not the prime consideration. Many times the technical factors are in the "gray" area and if the economic differences are significant, we will consider them.

Sincerely,

PROGRAM OPERATIONS DIVISION

Joseph E. Obr, P.E.  
Director

JE0:mla/POW127F09.01

Enclosure