

✓ 9-14-06

Ch. 12 variances  
Variance File**VARIANCE REQUEST**

Iowa Department of Natural Resources

1. Date: February 3, 2006  
2. Review Engineer: Satya Chennupati  
3. Date Received: December 5, 2005  
4. County Number: 91  
5. Facility Name: Liberty Center  
6. Program Area: CP (Wastewater)  
7. Facility Type: CO1  
8. Subject Area: 305, minimum sewer size  
9. Rule Reference: 507-64.2(9)a  
10. Design Stds Ref: 12.5.1  
11. Consulting Engr: Bartlett & West  
12. Variance Rule: 507-64.2(9)c

13. Decision: *approved*  
Date: *2/2/06*

14. Appeal:  
Date:

**15. Description of Variance Request:**

The city requests a variance from the design standard which requires "a minimum sewer diameter of 8 inch with the exception of 6 inch sewer for last 800 feet of sewer in an unsewered community". The city is proposing to use 6 inch sewer where sufficient hydraulic capacity exists.

**16. Consulting Engineer's Justifications**

Cost Savings = \$8,200. Will provide reasonable monthly sewer rates for residents  
This Department has approved several variances from this design standard for the Small Community Wastewater Pilot Projects. This proposal will provide equivalent effectiveness while meeting effluent limits.

**17. Department's Justifications**

Recommend **approval**.

This variance has been approved many times in the past for unsewered communities under the Small Community Pilot Projects Program even though they are not owned and operated by a Rural Water District. Departmental approval is recommended since this project is for an unsewered community because there has been no documented evidence of problems in the past approved projects.

**18. Precedents Used**

Previous small community pilot projects

19. Staff Reviewer: *Satya Chennupati*

Date: *2/6/06*

20. Supervisor:

Date:

21. Authorized by: *Don Jacob*

Date: *2/8/06*



## STATE OF IOWA

THOMAS J. VILSACK, GOVERNOR  
SALLY J. PEDERSON, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES  
JEFFREY R. VONK, DIRECTOR

February 6, 2006

Mr. Brian Anderson  
Warren County Board of Supervisors  
301 N. Buxton Street, Suite 214  
Indianola, IA 50125

Subj: Department Response to Variance Requests

RE: Wastewater Improvements, Liberty Center, Iowa

Dear Mr. Anderson:

The Department has received a request for several variances from the Iowa Wastewater Facilities Design Standards from your Engineer in a letter dated December 5, 2005. This letter transmits the Department's comments regarding the variance request for the above referenced project. The responses are grouped in the same order as they were requested.

### 1. Collection System

- A. Design Standard 12.5.1 – request variance to allow 6-inch diameter sewer pipe where sufficient hydraulic capacity exists.

The above variance is **approved** based on the small community pilot project concept as providing equivalent effectiveness for the small collection system that is proposed to serve 42 users.

- B. Design Standard request variance to allow cleanouts to be placed at the end of lines greater than 150 feet.

Variances to allow cleanouts instead of manholes greater than 150 feet are **not required** for unsewered communities. If the sewer is ever extended, the cleanout must be removed and a sewer manhole must be constructed at that point if the maximum distance between manholes has been reached. Cleanout lids shall be bolted down to prevent entry of foreign objects.

- C. Design Standard 12.5.7.1b – request variance to allow maximum manhole spacing of up to 600 feet.

The above variance is **approved** based on the small community pilot project concept as providing equivalent effectiveness for the small collection system that is proposed to serve 42 users. However, for the spacing greater than 400 feet, the city will be **required to give written assurance** that appropriate sewer cleaning equipment suitable to clean the distances between manholes will be made available when necessary.

- C. Design Standard 18C.7.4.6 – request variance to eliminate saucer –shaped depressions at the discharge point of the influent piping.

The above variance is **approved** based on the small community pilot project concept as providing equivalent effectiveness for the small system that is proposed to serve 42 users with the following conditions:

- a. The influent discharge lines shall rest on a suitable concrete apron which is large enough such that the terminal influent velocity at the end of the apron does not cause soil erosion as required by the Iowa Wastewater Facilities Design Standards 18C.7.4.6. The apron must have a lip or baffle at the opposite end of the discharge point.

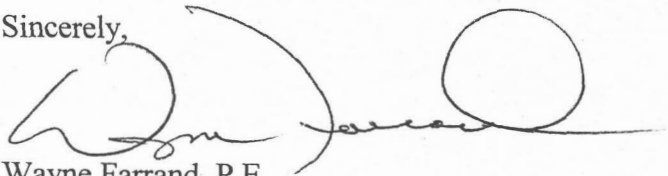
- D. Design Standard 18C.10.6 – request variance to allow pond level measurements to be accomplished in riser piping in lieu of pond level gauges.

The above variance is **approved** based on the small community pilot project concept as providing equivalent effectiveness for the small system that is proposed to serve 42 users with the following conditions:

- a. The riser piping shall be arranged so that independent level measurement from all lagoon cells can be obtained.
- b. Another acceptable means of cell depth measurement will be installed if freezing proves to be a problem.

If you have any questions, please call Satya Chennupati, P.E. at 515-281-8995.

Sincerely,

A handwritten signature in black ink, appearing to read 'Wayne Farrand', with a large circular flourish at the end.

Wayne Farrand, P.E.  
Wastewater Construction Section Supervisor

Cc: Brian Hollein, P.E. – Bartlett & West  
DNR Field Office #5  
DNR Sewage File 6-91-44-5-00

**BARTLETT & WEST**  
**ENGINEERS**  
SERVICE. THE BARTLETT & WEST WAY.

*1/26/06 Called AS to  
discuss or lagoon out  
features*

December 1, 2005

Satya Chennupati, P.E.  
Wastewater Section  
Iowa Department of Natural Resources  
Wallace Building  
502 East 9<sup>th</sup> Street  
Des Moines, IA 50319

Re: Liberty Center, IA Wastewater Improvements  
Facility Plan Review Response

Dear Satya:

This letter is a follow up to your review of the Facility Plan and also the variance requests for the Liberty Center Wastewater Improvements project. I understand that you have recently discussed the project with Brad Pleima and are requesting comments on the following:

1. Provide documentation showing Warren County will own and operate the system.
2. A geotechnical report needs to be submitted.
3. Is the entire community being served by the collection system? Will basement service be provided?
4. Address the lagoon influent flow monitoring provisions.
5. Revise the school flows based on recent conversations.
6. Address the variance requests.

Below is our response to your inquiries:

1. You should be receiving a letter from Dave Mineart, Chairman of the Warren County Supervisors, stating Warren County will be the owner/operator of the sanitary sewer system for Liberty Center.
2. We understand a geotechnical report is needed. Team Services will be completing the soil borings very soon, weather permitting of course. It will be submitted as soon as it becomes available.
3. Liberty Center is an unincorporated community therefore no city limits exist. However, the sanitary sewer system will serve all homes within the community. Surrounding farmsteads will not be served. All homes with basements will also be served by the system.
4. Influent flow from the community to the lagoon will be monitored using an hour meter on the north lift station (which will pump all of the community's waste to the lagoon). The school will continue its current flow monitoring routine. This will be finalized during final design.
5. You have stated the school's 180 day average wet weather (AWW) design volume cannot be calculated over 128 days (which are the number of school days per 180 days) and must be calculated over a 180 day period. Therefore, we have adjusted the Design Year 2025 AWW flow to 5,440 gpd and the Peak Hour WW Flow to 23,400 gpd for the school. The 180 day AWW volume will remain 0.98 million gallons. The design parameters for the community are not being altered. This will not change the preliminary lagoon dimensions.

6913 VISTA DRIVE ■ WEST DES MOINES IA 50266-9309

515.440.2856 ■ FAX 515.440.2858 ■ 888.200.6464

WWW.BARTWEST.COM



Sincerely,

*Brian L. Hoellein*

Brian L. Hoellein, P. E.

cc: Brian Anderson – Warren County Environmental Health  
Randy Campbell – Rural Development  
Jim Carroll – Rural Development

Enclosure

**Engineer's Opinion of Probable Cost**  
**TABLE 1 - COST SAVINGS**  
**Liberty Center Wastewater System Variance Requests**  
**Warren County**  
B&W Project No. 12619.002

Schedule A - Collection System			Estimated Cost	Estimated Cost
Item	Description	Quantity	Unit	Differential Savings
<i>Gravity Sewer Line Installation</i>				
A	6" SDR-35 PVC Sewer Replacing 8" PVC	4100	LF	\$2.00 \$8,200.00
<i>Manholes/Cleanouts</i>				
B	Cleanout Replacing Manhole	5	EA	\$1,600.00 \$8,000.00
C	Manholes Eliminated w/ 600 ft vs 500 ft spacing	1	EA	\$2,000.00 \$2,000.00
Subtotal:				\$18,200.00
+5% Contingencies:				\$910.00
<b>Estimated Cost Savings</b>				<b>\$19,110.00</b>

Schedule B - Expand School Lagoon Facility				
Item	Description	Quantity	Unit	Unit Cost Total Cost
D	DIP Above Lagoon Liner	190	LF	\$3.00 \$570.00
E	Eliminate Inter-Cell Structures	3	EA	\$3,000.00 \$9,000.00
F	Eliminate Depression	300	CY	\$2.00 \$600.00
G	Riser Piping vs. Pond Level Gauges	3	LS	\$300.00 \$900.00
Subtotal:				\$11,070.00
+5% Contingencies:				\$550.00
<b>Schedule B - Expand School Lagoon Facility</b>				<b>\$11,620.00</b>

**Total Project Savings \$30,730**

**Debt Service Reduction(annual) \$1,641**  
**Debt Service Reduction(monthly per customer)(42) \$3.26**