

✓ 9-11-06

VARIANCE REQUEST

Iowa Department of Natural Resources

1. Date: October 19, 2005	13. Decision:
2. Review Engineer: Larry Bryant	Date:
3. Date Received: July 21, 2005	
4. Facility Name: Watkins WWTF	14. Appeal:
5. County Number: 6 (Benton)	Date:
6. Program Area: CP (Wastewater Construction)	
7. Facility Type : C02 (Pumping)	
8. Subject Area : 327 (Valve Pit)	
9. Rule Reference: 567-64.2(9)a	
10. Design Std Ref: 13.10.4	
11. Consulting Engr: Bartlett & West Engineers	
12. Variance Rule: 567-64.2(9)c	

15. Description of Variance Request:

Project Background

Watkins is an unsewered community with an existing population estimate of 109 people. A wastewater collection and treatment system consisting of a gravity collection system (a few homes may use individual grinder pumps), a single lift station and a recirculating gravel filter treatment system is proposed. The Poweshiek Water Association (PWA) will own and operate the collection and treatment system. Design and construction costs are to be funded through an IDED block grant, a USDA-RD grant/loan and user fees. The initial number of service connections to the facilities will be 57 with an anticipated monthly billing per connection of \$39. Modest growth is anticipated with a design population of 131.

Variance Request

A variance to allow the pump station check valves to be attached to the pump, which can be removed as a single unit and to allow installation of buried shut off valves outside of the wet well. Design Standard 13.10.4 requires that shutoff and check valves for submersible pump stations be located in a separate valve chamber.

16. Consulting Engineer's Justifications

Cost savings, equivalent effectiveness. This variance has been investigated under the unsewered community pilot program.

17. Department's Justifications

Recommend variance denial:

Previous variances from this standard have been granted for the small community pilot program. In addition, the 10-States Standards do provide that check valves that are integral to the pump do not need to be located in a separate valve chamber (however, it does not provide that if this is the case a valve chamber for the shut off valves is no longer required).

Alternative pumping arrangements under the pilot program have not been entirely successful, possibly due to lack of a separate valve chamber in conjunction with other items. In Floris, Tingley and Arispe (no valve chambers) problems with air entrainment, plugging and sticking check valves were reported. The variances for the pilot projects were conditioned such that the check valves could be removed with the pump from the wet well. Although the problems noted may be due to factors other than the lack of a separate valve chamber, access to the check or isolation valves for maintenance or replacement when such problems occur is facilitated by placement of those valves in a separate chamber. Also, the pump isolation valves are unlikely to be exercised frequently unless the operator does this as part of a regular maintenance schedule. This increases the chance that they may fail when called upon and need to be replaced. Access to these valves in a chamber reduces the down time of the lift station in the event that they do fail

and require maintenance or replacement.

18. Precedents Used

Floris (Wapello RWA) - Approved 8/1/95

Tingley (Southern Iowa RWA) - Approved 7/11/96

Arispe (Southern Iowa RWA) - Approved 7/15/96

Kinross (RUSS) - Denied 6/8/01

Martinsburg (RUSS) - Denied 10/6/03

Webster (RUSS) - Denied 10/6/03

19. Staff Reviewer:

Ang Bryant

Date: 10/19/05

20. Supervisor:

Date:

21. Authorized by:

[Signature]

Date: 10/19/05

S2005-0566

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

July 20, 2005

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

Re: Watkins, IA Wastewater Improvements
Request for Variance

Dear Satya:

Poweshiek Water Association (PWA) is proceeding with the development of a new wastewater collection system and treatment facility in the unincorporated community of Watkins, Iowa. Currently, Watkins is unsewered. The project is being funded by a Community Development Block Grant (CDBG), a USDA Rural Development (USDA-RD) grant, and a 40-year USDA-RD loan.

Watkins has a population estimated at 109 people with 57 anticipated connections. The proposed improvements are a gravity collection system (a few homes may use an individual grinder pump and force main), a main lift station on the west side of the community, and a new recirculating gravel filter located west of the community. The treatment site will be purchased from Barry Warney once the treatment process is approved. A preliminary review of projected monthly user fees has indicated that requesting variances from the Design Standards in order to reduce the costs to construct the wastewater improvements is in the community's best interest. These variances are for the collection system and the lift station. We will need to meet and discuss the design parameters for the recirculating gravel filter and determine if any variances will be beneficial to the community.

The following variances are being requested:

1. Collection System/Lift Station
 - A. Design Standard 12.5.1 – request variance to allow 6-inch diameter sewer pipe where sufficient hydraulic capacity exists. Estimated Cost Savings = \$10,800
 - B. Design Standard 12.5.7.1 – request variance to allow cleanouts to be placed at the end of lines up to 400 feet. Estimated Cost Savings = \$9,600
 - C. Design Standard 12.5.7.1b – request variance to allow maximum manhole spacing of up to 600 feet. Estimated Cost Savings = \$2,000
 - D. Design Standard 13.10.4 – request variance to allow the check valve to be attached to the pump, which can be removed as a single unit and to allow installation of buried shut off valves outside of the wet well. Estimated Cost Savings = \$3,000

Not a
variance →

6913 VISTA DRIVE ■ WEST DES MOINES IA 50266-9309

515.440.2856 ■ FAX 515.440.2858 ■ 888.200.6464

The attached spreadsheet (Table 1) is an estimate of cost savings for each requested variance. The estimated cumulative project savings (including a 5% contingency on savings) of the requested variances is \$26,670. Assuming this will be deducted from the 40-year, 4.5% USDA RD loan, this will reduce the annual debt service by \$1,424 and each customer's monthly usage bill by approximately \$2.08.

Many of the requested variances have been investigated for the small unsewered community pilot program and the Iowa DNR has agreed with many of the requested variances in a March 8, 1995 letter from Darrell McAllister to IRWA.

It is our opinion that the requested variances for the collection system will provide equivalent effectiveness in the transportation of wastewater from each home to the lift station. The 6" collection mains have been designed with a 0.8% minimum slope to maintain 2.0 ft/sec velocities. The smaller diameter pipelines will adequately serve the small community of Watkins. In addition, it is our opinion that the requested variances will provide equivalent effectiveness in transporting the effluent to the treatment facility.

With a small community of only 57 anticipated users, each cost reduction is significant. These variance requests are important in maintaining reasonable monthly sewer rates for the residents of Watkins.

Sincerely,

Brian L. Hoellein

Brian L. Hoellein, P. E.

cc: Chad Coburn – Poweshiek Water Association
Dave Vermedahl – Benton County Board of Supervisors
Roger Stoakes – USDA Rural Development
Jim Carroll – Rural Development
Amy Peterson – East Central Iowa Council of Governments
Hank Manning – Iowa Department of Economic Development

Enclosure

Engineer's Opinion of Probable Cost
TABLE 1 - COST SAVINGS
Watkins Wastewater System Variance Requests
Poweshiek Water Association
B&W Project No. 12614.001

Schedule A - Collection System

Item	Description	Quantity	Unit	Estimated Cost Differential	Estimated Cost Savings
<i>Gravity Sewer Line Installation</i>					
A	6" SDR-35 PVC Sewer Replacing 8" PVC	5400	LF	\$2.00	\$10,800.00
<i>Manholes/Cleanouts</i>					
B	Cleanout Replacing Manhole	6	EA	\$1,600.00	\$9,600.00
C	Elimination of Manhole for 500 ft Spacing	1	EA	\$2,000.00	\$2,000.00
<i>Lift Station</i>					
D	Buried Valves vs. Valve Vault	1	LS	\$3,000.00	\$3,000.00
Subtotal:					\$25,400.00
+5% Contingencies:					\$1,270.00
Estimated Cost Savings					\$26,670.00

Debt Service Reduction(annual)	\$1,424
Debt Service Reduction(monthly per customer)(57)	\$2.08



File 6-26-22-000

STATE OF IOWA

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

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R. VONK, DIRECTOR

October 5, 2001

Lee Asher
Wapello Rural Water Association
P.O. Box 538
Ottumwa, IA 52501

SUBJECT: Wastewater Inspection Report
City of Floris Wastewater Lagoon
Facility No. 6-2622000

Dear Mr. Asher:

We have enclosed one copy of the inspection report prepared by Jeff Varboncoeur of this office.

You will find the inspection report self-explanatory. Please note the summary of requirements and recommendations listed at the end of the report. Detailed comments are found throughout the report.

If you have questions about this report or letter, please contact this office.

Sincerely,

COMPLIANCE AND ENFORCEMENT BUREAU

A.L. Goldberg
A.L. Goldberg
FIELD OFFICE SUPERVISOR

ALG:JTS:SHARED\JSIEVER1\WW\FLORISLETTER.DOC

Encl. Inspection Report

xc: Wastewater Section, DNR, Des Moines
File

**IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
WASTEWATER TREATMENT FACILITY INSPECTION**

NPDES Permit #: 6-26-22-0-00

Page 1 of 2

FACILITY	NAME: City of Floris WWTP		OWNER: Wapello Rural Water Association		
	ADDRESS: WRWA C/O Lee Asher P.O. Box 538	CITY: Ottumwa	STATE: IOWA	ZIP: 52501	PHONE: 641-682-8351

RECEIVING STREAM	STREAM NAME: Soap Creek
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INSPECTION	DATE THIS INSPECTION: 9-19-01	DATE LAST INSPECTION: 3-10-99
PURPOSE	Compliance Evaluation	

DESIGN CAPACITY	MGD: 0.026	POUNDS BOD/DAY: 30	PE (BOD) : 180
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NOW TREATING	MGD (average daily) : 0.014	POUNDS BOD:	PE (BOD) :
	POPULATION SERVED:		

SAMPLES COLLECTED	TYPE: None as lagoon was not discharging at time of inspection	LAB DATA ATTACHED? [] Yes [X] No
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ATTACHMENTS	PLANT DESCRIPTION CARD: [X] On File [] Attached to DNR copy	CERTIFICATION UPDATE MEMO: [] Attached [X] No change in Responsible Op
	SIGNIFICANT INDUSTRIAL CONTRIBUTOR FORM: [] Attached [] On file [] No Sig. Contr.	

RESPONSIBLE OPERATOR	NAME: Crae Smith(Employed by Wapello Rural Water)	GRADE: II	CERTIFICATION NUMBER: 17889
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PERSONS INTERVIEWED	NAME: Crae Smith	TITLE: Operator
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TREATMENT PROCESS	[] TRICKLING FILTER [] ACTIVATED SLUDGE => MODIFICATION: [X] LAGOON [] AERATED LAGOON [] OTHER/SUPPLEMENTARY:
PROCESS WASTE DESCRIPTION	Domestic

PERMIT COMPLIANCE SUMMARY			
EFFLUENT LIMITATIONS	SELF-MONITORING RESULTS: [X] Sat. [] Marg.* [] Unsat.*	SAMPLES THIS INSPECTION: [] Sat. [] Marg.* [] Unsat.* [X] None Collected	
	VISUAL APPEARANCE OF EFFLUENT: Not discharging at time of inspection	VISUAL APPEARANCE OF RECEIVING STREAM: Clear	

SELF-MONITORING	Operation Reports submitted: [X] Sat. [] Marg.* [] Unsat.*	REQUIRED DATA ON REPORT: [X] Sat. [] Marg.* [] Unsat.*	TESTING ADEQUACY: [X] Sat. [] Marg.* [] Unsat.*
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COMPLIANCE SCHEDULE	COMPLIANCE WITH SCHEDULE: [] Sat. [] Marg.* [] Unsat.*	NEXT ITEM DUE:	DATE DUE:
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* Explain in Comments and Recommendations Section

AUTHENTICATION	INSPECTOR: Jeff Varboncoeur	DATE: 10-5-01	REVIEWER: James T. Sievers	DATE: 10/5/01
	<i>James T. Sievers FOR</i>			

GENERAL INFORMATION

The City of Floris is served by a two-cell waste stabilization lagoon. One lift station, located northeast of the city park, lifts wastewater from the city up to the lagoon. Lagoon discharge is to Soap Creek.

Wapello Rural Water owns and operates the wastewater treatment facility.

EFFLUENT LIMITATIONS

Monthly operation reports submitted by the city of Floris for the months of March 1999 through August 2001 were reviewed for comparison with the effluent limitations in your NPDES permit. No violations of permit limitations were noted.

SELF-MONITORING REPORTS

Monthly operation reports submitted for the months of March 1999 through August 2001 were reviewed for comparison with the self-monitoring reporting requirements in your NPDES permit. No instances of incomplete reporting were noted.

SAMPLES THIS INSPECTION

Grab samples of the plant effluent were not collected as the lagoon was not discharging at the time of the inspection.

COLLECTION SYSTEM LIFT STATIONS: Operation & Maintenance

This facility has had previous problems with the pumps in the lift station. New pumps of similar design but from a different manufacturer have been installed. The new pumps appear to have solved reliability issues.

LAGOON STRUCTURES: Physical Condition

The lagoon berms were well cared for. Adequate rip-rap was present along the lagoon banks.

STAFFING, OPERATOR CERTIFICATION: Operator, Direct Responsibility

Crae Smith from Wapello Rural Water is the responsible operator for this facility. Mr. Smith is taking over the responsibilities formally assigned to Jim Cravens.

REQUIREMENTS

- Continue to meet all effluent limitations specified in your NPDES operation permit. [Subrule 567 IAC 64.3(1)]
- Continue to comply with all monitoring and reporting requirements specified in your NPDES operation permit. [Rule 567 IAC 63.9(455B)]
- Continue to submit monthly operation reports by the 15th of the month following the close of the reporting period. [Rule 567 IAC 63.7(455B)]

DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Field Office 6,
1004 West Madison, Washington, IA 52353

REPORT OF INVESTIGATION

INVESTIGATION DATES: Current: March 10, 1999
Last Inspection: 4/14/98

TO: City Clerk
City Hall
Floriss, IA 52501

PERSONS CONTACTED:
Jim Cravens/WRWA

RE: Wastewater Inspection
6-26-22-0-01

Fig: C

INSPECTOR: Kenneth Marsengill *Kenneth Marsengill* DATE 4/1/99

REVIEWER: Paul Brandt *Paul Brandt* DATE: 4-2-99

DISTRIBUTION: FIELD OFFICE: ☒ CENTRAL OFFICE: INSPECTED FACILITY : Wapello Rural
Water Association (Jim Cravens)

OBSERVATIONS/RECOMMENDATIONS:

On March 10, 1998, an inspection was conducted at the Floriss Wastewater Treatment Facility. During this survey, Jim Cravens, operator was contacted.

Self-Monitoring Results - Effluent Limitations

Monthly reports for the period March, 1998 thru February, 1999 were reviewed. The monthly operating reports show one discharge since the start-up of this facility. The discharge occurred in October 1998 and the effluent met the flow limitations. The C-BOD was not reported at the time of the discharge.

All parameters listed for monitoring location **Final Effluent** on the page titled **Monitoring and Reporting Requirements**, are to be sampled on the third day after the discharge begins.

Samples this inspection

During this survey there was no discharge, therefore no samples were collected.

Lift Station

The previous survey reported at times the lift station pumps are not pumping design capacity due to air being trapped in the pumps. Continuing problems are being encountered. The pumps are running more hours due to plugging ect. This appears to be the fault of a poor design.

Lagoon Structure

The lagoons are near capacity and pre-discharge samples are scheduled in the near future. The water in the lagoons is very clear at this time.

kmarsen/florissww

Arispe Sewage
6-88-09-0-01
TUK

g

DATE: JANUARY 30, 1998

TO: DARRELL McALLISTER

FROM: PAUL DOHLMAN, WASTE WATER FIELD TECHNICIAN,
IOWA RURAL WATER ASSOCIATION

RE: IRWA/RURAL DEVELOPMENT/INFORMATION CONFERENCE, FOUR POINTS HOTEL,
WEST DES MOINES, TUESDAY DECEMBER 2, 1997.
RURAL WATER PILOT PROJECTS, FOLLOW-UP OF SELECTED PROJECTS
SHORTFALLS.

A brief summary with follow-up

EXLINE- Rathbun RWA

FO not aware of responsible operator? name Frank Olinger

AVERY-Rathbun RWA

No FO reports or MOR data exist? Dec 1, 1997 started operation.

PERSIA-Regional Water

FO responsible operator in charge? name Ryan Peatson
FO freeboard was 6 inches? typing error, should be 6 feet
FO no MOR data exists in NPDS? turn in ALL MOR from records kept.

CROMWELL- Southern Iowa RWA

FO wrong NPDES number? yes
FO responsible operator of record? name Ken Johns
MOR data exceeded? telemeter data-wrong information sent according to meter reading, system
telemeter being recalibrated.
Appears only discharges? yes

TINGLEY-Southern Iowa RWA

MOR date influent flows significant problem? Initial problems with removable check valves
"sticking" open. Problem solved by using a more rigid ball.
Excessive inflow resulting from poor construction by Contractor. Problem solved by repairing
manhole and additional grading to improve drainage.

ARISPE-Southern Iowa RWA

MOR exceeded flows? Problems with removable check valves "sticking" open. Problem solved by
using a more rigid ball.

KIRKVILLE-Wapello RWD

No MOR? not operational

FLORIS-Wapello RWD

MOR shows exceeded design flow? telemeter data-wrong information sent according to meter reading, system telemeter being recalibrated. Also check valve "sticking" open, looking at a more rigid ball.

No drawdown has yet occurred? Yes ture. Maybe fall 98.

FO 6 recommended full rip rap? Did

KIRKVILLE-Wapello RWD

No MOR data or FO report? Not under construction, problems with land. Cont. spring 98.

MEMORANDUM

DATE: December 1, 1997
TO: Darrell McAllister
FROM: Wayne Farrand
RE: Rural Water Pilot Projects - General discussion of
selected projects

Of the 16 pilot projects now on our list, only eight have proceeded far enough to where any observable results are possible. These are:

- Exline*
- Persia
- Cromwell*
- Floris*
- Avery
- Kirkville
- Tingley *
- Arispe*

* MOR data available in NPDS

A brief summary on each of the above:

EXLINE - Rathbun RWA

Construction permit issued 1/7/97.

lagoons were not prefilled as per specs

9/16/97, FO requested explanation of reported flows of 0.15mgd compared to design avg of 0.02. (response: MOR had a decimal place error)

FO not aware of responsible operator

7/97 MOR reported a max day flow of 0.34 (over design max and permitted flow of 0.309)

PERSIA - Shelby Co. RWD #1

Construction permit issued 10/16/95.

FO inspection on 10/2/96 - near complete, fully riprapped, no influent, requested advice as to the responsible operator in charge.

FO visit 2/19/97 - lagoon freeboard in each cell was 6 inches. Followup planned.

No MOR data exists in NPDS. This should be checked out.

CROMWELL - Southern Iowa RWA

Construction permit issued 8/21/95. Review questioned adequacy of 3 inch force main. The sewer system is 6 inch sewers. Specs supposedly ran service lines to within 5 feet of bldgs.

FO reports lagoons were fully riprapped.

FO letter to SIRWA pointed out wrong NPDES number (Decatur's) on report form. There was also confusion caused by the person signing the MOR's being different than the responsible operator of record.

MOR data exists since 3/96. Influent flows reported on MOR's show avg design flows exceeded in May of '96 and '97. Also Maximum day design flows exceeded in May, June, and September of '96 and April, May and June of '97. These could be of concern since this is a new 6 inch sewer system.

Appears only discharges have been in May of '96 and '97.

FLORIS - Wapello RWD

Construction permit issued 8/1/95. Less than fully riprapped.

Put into operation 1/97.

MOR data shows influent flow exceeded design avg (0.017mgd) in April '97 at 0.2mgd. Peak day design flow was exceeded the second and fourth months of operation (design = 0.025, 2/97 = 0.031, 4/97 = 0.037mgd).

No drawdown has yet occurred.

FO 6 did an inspection 4/22/97. Recommended full riprap but did not give reason.

AVERY - Rathbun RWA

Construction permit issued 6/26/97

Probably not completed yet. No FO reports or MOR data exist.

KIRKVILLE - Wapello RWD

Construction permit issued 3/17/97

No MOR data or FO reports.

TINGLEY - Southern Iowa RWA

Construction permit issued 7/16/96.

FO visited the lagoons 6/20/97 - No outstanding observations.

MOR data begins 1/97: in April and May of '97 avg monthly influent flows exceeded design value (0.017mgd) at 0.0393 and 0.0434 mgd. This is a significant exceedance (double and over) for a new sewer system. Max daily flows are recorded in March, April and May of 0.0187, 0.0679 and 0.1953. These show significant flow problems in the system if they are in fact correct. This system is mostly 6 inch sewers with a lift station and 3 inch force main over 1/2 mile long. The capacity of the 6 inch sewers could be of concern. The cause should be investigated.

Drawdown occurred in May '97.

ARISPE - Southern Iowa RWA

Construction permit issued 7/16/96

FO visited the lagoons on 6/20/97. No outstanding observations.

MOR data begins 12/96: In May and June the design avg flow (0.0087mgd) for influent was exceeded; May = 0.0144, June = 0.0097. Max day flows (same as avg - 0.0087) were exceeded in February, March, May and June (0.0089, 0.0089, 0.0208, 0.0101mgd). If correct, there should be concern for a new sewer system in this condition.

Drawdown occurred in May '97.