STATE OF IOWA

RECORD COPY
File Name Nevada Sewage
Senders Initials TLK

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

January 3, 1992

The Honorable B.D. Hagen
Mayor of Nevada
1209 Sixth Street
Nevada, Iowa 50201

Subject: Raw Wastewater Pumping Station
Nevada, Iowa
C190845 04

Dear Mayor Hagen:

The Iowa Department of Natural Resources has reviewed your November 27, 1991, request for further consideration of a proposal to provide an installed firm pumping capacity of 7 mgd for a peak hourly design flow of 9 mgd. Nevada currently has a maximum pumping capacity of about 9 mgd and a firm pumping capacity of only 7 mgd. The city is willing to provide spare submersible pumps for backup replacement rather than an installed system.

The Department in its June 13, 1991 correspondence offered to issue a construction permit for the arrangement provided the existing bypass at the raw wastewater lift station was plugged. To avoid frequent bypassing, this precaution was deemed necessary to insure appropriate maintenance and rapid replacement of the pumps. Nevada, however, believes a bypass line is essential to limit damage to the upstream outfall sewer in the event the pumping system including pumps and standby electrical generator fail. According to the city, there would be better control and less impact on the environment if bypassing occurs at the Wastewater Treatment Plant rather than at upstream manholes on the outfall sewer.

It appears that the replacement of the existing pumps and the use of variable speed pumps with adequate firm pumping capacity meeting design standards is a necessary and appropriate solution. Your variance proposal providing a raw wastewater bypass and a lift station with a firm pumping capacity of 7 mgd for a design flow of 9 mgd is not equivalent. The November 27, 1991, correspondence only raises concerns. State design standards give consideration to high level emergency overflows to supplement alarm systems and required standby facilities in order to prevent backup of wastewater into basements or other discharges which may

cause severe adverse impact on public interests, including public health and property damage. A lift station lacking firm pumping capacity with an operating bypass for raw sewage is not equivalent to a lift station with adequate firm pumping capacity. The lack of installed firm pumping capacity should never be the cause of an emergency overflow.

We request that Nevada submit a design and construction schedule addressing the pumping station capacity problems. This will be needed before a construction permit for the proposed upgrade is issued. Should you have any questions or wish to meet with Departmental staff, please call. My telephone number is 515/281-8869.

Sincerely,

DARRELL MCALLISTER
BUREAU CHIEF
ENVIRONMENTAL PROTECTION DIVISION

cc: Snyder and Associates, Ankeny
Field Office 5

VARIANCE REQUEST

Iowa Department of Natural Resources

1. Date	: 1-7-92	13. Decision:	Denied
2. Review Engineer	: Terry Kinschenman	Date:	1-10-92
3. Date Received	: 2-11-91		
4. Facility Name	: Nevada	14. Appeal:	
5. County Number	: 85	Date:	
6. Program Area	: cp		
7. Facility Type	: 005		
8. Subject Area	: Pumping Station Capacity		
9. Rule Reference	: 900 - 64.2(9)a		
10. Design Std. Ref.	: 13.4.1		
11. Consulting Engr.	: Snyder and Associates, Inc.		
12. Variance Rule	: 900 - 64.2(9)c		

15. Description of Variance Request

Allow the city to provide a firm pumping capacity of only 7 mgd rather than a firm pumping capacity of 9 mgd. The PHww design flow for the lift station is 9 mgd.

16. Consulting Engineer's Justification

An upgrade of the existing raw wastewater lift station would be required. Variable speed pumps and the associated motor control center

16. Consulting Engineer's Justification (cont.)

would be expensive. The pumps installed in 1990 would have to be replaced. The capacity of the existing lift station is 9 mgd. Should a pump fail, city staff could replace the submersible unit within 2 hours.

17. Department's Justification

The City of Nevada believes a raw wastewater bypass is essential to their design approach. The lack of installed firm pumping capacity should never be the cause or justification for an emergency overflow. Cost savings is not a basis for a design variance. DNR should not approve a high level emergency overflow without the firm capacity required in design standards.
The city is arguing financial hardship for some of the relief sewer improvements. Field office 5 is handling this.

18. Precedents Used

None for granting variance.

19. Staff Reviewer	:	Terry Kirschenman	Date: 1-7-92
20. Supervisor	:		Date: 1/7/92
21. Authorized by	:		Date: 1/10/92

IOWA DEPARTMENT OF NATURAL RESOURCES

**** TRANSMITTAL SLIP ****

Date 4/9/91

FROM THE OFFICE OF: Wayne F.

TO: DMc
(Individual's Name)

[ ] REPLY FOR MY SIGNATURE
[ ] REPLY DIRECT
[ ] REVIEW, COMMENT AND RETURN
[ ] INVESTIGATE AND REPORT
[ ] SEE ME
[ ] FOR YOUR INFORMATION
[ ] TAKE ACTI

[ ] NOTE AND FORWARD
[ ] FILE
[X] FOR YOUR SIGNATURE
[ ] FOR YOUR APPROVAL

Roger Thom:
Need design meeting standards or plan indicating how they will operate
Weed as built.
Direct them to be not [illegible] in future w/o permit

[ ] COMMENTS: 4/12
Wayne
Please ~~[illegible]~~ explain to me

Note - replacement of pumps w/o construction permit in '96 was questionable but since the city could argue it was maintenance replacement, we should drop it after the fact. Pumps can seldom be replaced exactly. Purpose was same.

DNR form (Rev. 6-90) Printed on Recycled Paper 542-0593

27. The unit processes used for treatment in the facility will remain unchanged, therefore analytical tests required after this project will not be different than before. The only additional analysis required will be ammonia monitoring in conjunction with the effluent ammonia standards. The existing laboratory floor and bench area exceeds the recommendations in Chapter 14, Appendix II. Additional laboratory space is not necessary. Presently, most samples are sent to an outside laboratory for analysis; this procedure is anticipated to be continued.

28. The existing digester cover access manholes do not meet current design standards. This project does not modify or replace the existing covers. For maintenance or access, the 24' diameter covers are removed by crane.

29. A wastewater effluent flowmeter is added on Drawing 6 and specification Section 11301.

30. Drawings 4, 6 and 11. Stair details are revised.

31. Drawing 6. Scale of drawing is shown in title block. Waste gas burner is relocated.

32. Drawings 6 and 20. A Design Variance for the Raw Wastewater Pumping Station was requested on February 11, 1991 to allow consideration of the use of on-site standby pumps that could be installed in the event of pump failure in lieu of firm installed pump capacity with the largest pump out of service. The design variation as proposed is reasonable and cost effective and will provide the dependability and reliability that is required.

    Two standby pumps are proposed to be purchased outside the construction contract. The rules and documentation for EPA eligibility will be followed.

    Attached is a sketch showing the outfall sewer, raw wastewater pumping stations and gravity bypass elevations. The gravity bypass is located as high as possible and the outfall sewer will be surcharged in excess of 13 feet before any flow would be bypassed.

    The gravity bypass line is located at an elevation to limit bypassing at upstream manholes on the sewer outfall line. The bypass line is needed to limit damage to the upstream outfall sewer lines and manholes in the event the pumping system including pumps and standby electrical generator would fail. Bypassing at any time is not desirable but it is better controlled and will have less impact on the environment if the bypassing occurs at the Wastewater Treatment Plant rather than at upstream manholes on the sanitary outfall sewer.

A plant effluent flow meter is requested in your comment number 29. This meter which will measure the total effluent flow including any bypassed flow is added on Drawing 6 and Specification Section 11301. Plugging the gravity bypass line is not reasonable or prudent.

33. Drawing 10. The trickling filters are set at an elevation sufficient to drain to the recycle pumping station. The recycle pumping station is at an elevation at which it could be used to pump primary clarifier effluent to the new plastic media trickling filters in future flow patterns.

34. Drawing 10. There is sufficient head available to allow free flow conditions immediately downstream of the new Parshall Flume, note drop at discharge end, Section 4/16. The hydraulic profile has been revised to show the new flume on Drawing 10.

35. Drawing 11. There is a yard hydrant located near the tank for use in cleaning the tank or launders as shown on Drawing 6. The tank will have a web truss around the inside tank wall to which personnel can attach a safety harness.

36. The screenings grinder has been removed from this project, a hopper only will be provided.

37. The channels are all being covered with grating or tread plating. Guards are required on moving parts by specification Section 11330, 2.06.E.

38. Drawing 14. Concrete fillets have been added at all turns and bottom channel corners.

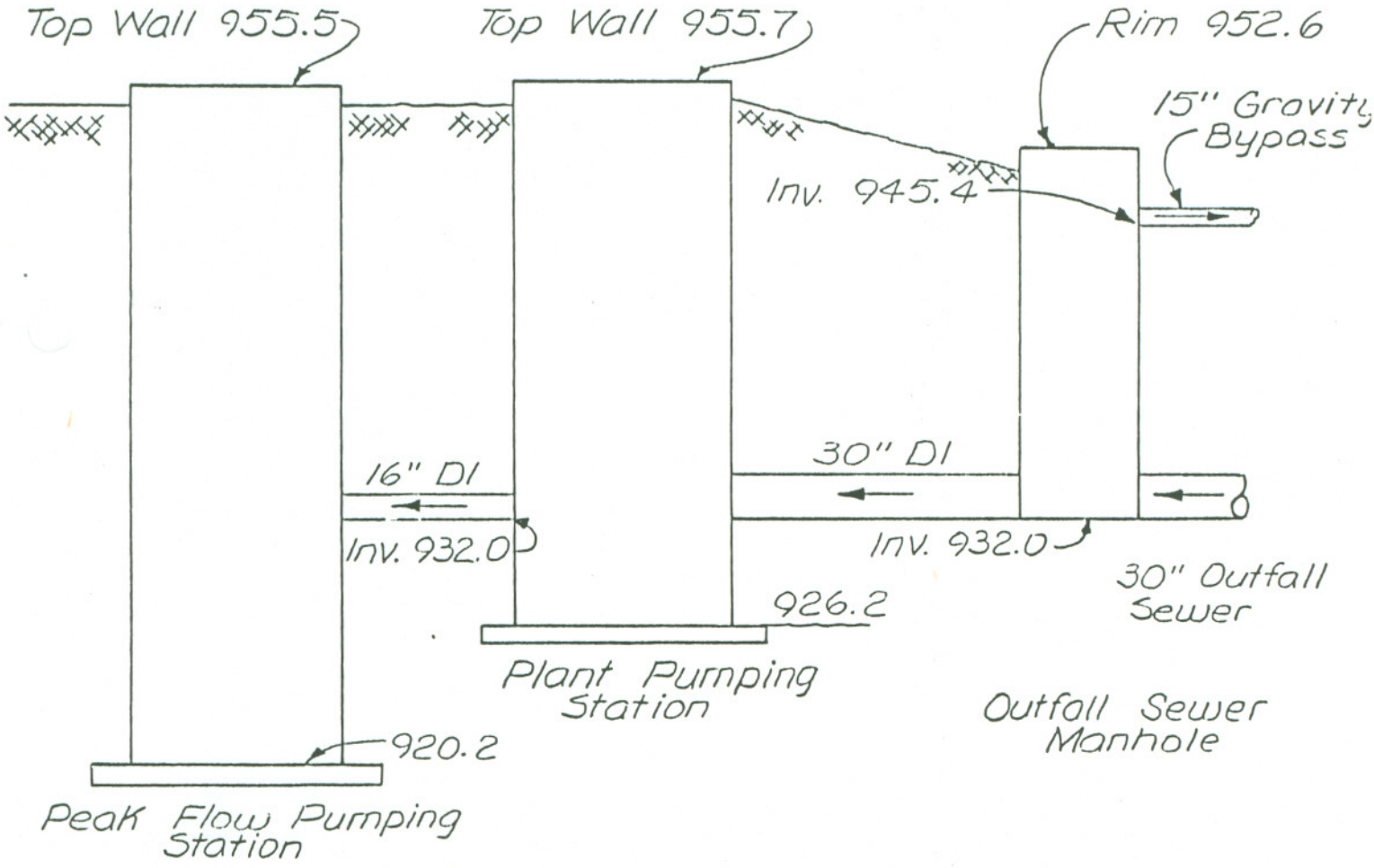
39. Drawing 14. A 3/4-inch hose bib is located inside the building.

40. Drawing 14. Drain lines for dewatering the mechanical and manual bar screen channels have been added.

41. Drawing 14. The return flows will be a major source of grit and should be discharged prior to grit removal. As an option, the secondary flows can be discharged prior to the flume as shown, or discharged after the flume. Major problems with gasses in the secondary flow are not anticipated.

42. Drawing 14. Screenings will discharge into a hopper; when the hopper becomes full, the operators can wheel it outside and store screenings in approved containers for future disposal as required.

NEVADA, IOWA
WASTE WATER TREATMENT PLANT IMPROVEMENTS
RAW WASTE WATER PUMPING STATIONS



SNYDER & ASSOCIATES

301 North Ankeny Blvd.
Ankeny, Iowa 50021
515-964-2020
FAX 515-964-7938

CONSULTING ENGINEERS

Civil • Municipal
Water & Wastewater Treatment
Drainage • Streets
Surveying • Airports

SNYDER & ASSOCIATES, INC.

February 11, 1991

Terry Kirschenman, P.E.
Project Manager
Wastewater Permits Section
Iowa Department of Natural Resources
Henry A. Wallace State Office Building
900 E. Grand
Des Moines, Iowa 50313

RE: NEVADA, IOWA
WASTEWATER TREATMENT PLANT IMPROVEMENTS
REQUEST FOR DESIGN VARIANCE - RAW WASTEWATER PUMPING STATION
PROJECT NO. 89-206-G

As shown in the Facility Planning for this project, the design peak hourly wet weather (PHWW) flow has been increased to 9.0 mgd based on recorded flow data observed in 1990.

Iowa DNR Design Standards, Section 13.4.1 requires that the raw wastewater pumping station have the capacity to handle the peak hourly wet weather (PHWW) flow with the largest pump out of service.

We request a design variance to allow the use of all the existing raw wastewater pumps to meet PHWW flows. We propose that the City purchase and maintain a spare pump of each size at the Wastewater Treatment Plant for installation if a pump should fail. The existing piping and pump installation is such that pump replacement can be done in approximately two hours.

The raw wastewater pumping facilities at the Nevada Wastewater Treatment Plant include two pumping stations. The attached sketch shows the piping arrangement and operation.

The Plant Pumping Station was constructed in 1981 and is a wet well/dry well type pumping station with space for three pumps. This pumping station is approximately 29 feet deep. The raw wastewater pumps were replaced by the City in 1990. Each pump has the capacity of approximately 1,100 gpm.

The Peak Flow Pumping Station was constructed in 1986 and is a wet well type with two submersible pumps and is approximately 35 feet deep. Each pump has the capacity of approximately 1,800 gpm.

Replacement of the Plant Pumping Station pumps with larger pumps is not desirable due to the more frequent pump cycling that would be required to meet normal plant influent flows.

Replacement of the Peak Flow Pumping Station pumps with larger pumps is not desirable again due to the more frequent pump cycling that would be required. With the present size, these pumps can be used to pump to the grit chamber if the Plant Pumping Station is out of service. Providing firm capacity would require replacement of the 35 hp pumps with 70 hp pumps. Operation of 70 hp pumps with the existing standby engine-generator is not possible.

Construction of an additional pumping station to provide the room necessary for additional pumps would be very expensive due to the depth of structure required and would not be cost effective.

It may be possible to install an additional pump within the Plant Pumping Station but not in a conventional manner. It may also be possible to use variable speed operation for the Plant Pumping Station pumps but it would require replacement of the pumps and the motor control center and would be expensive.

We believe the design variance as proposed is reasonable and cost effective and will provide the dependability and reliability that is required. We request your review and approval.

Sincerely,

SNYDER & ASSOCIATES, INC.

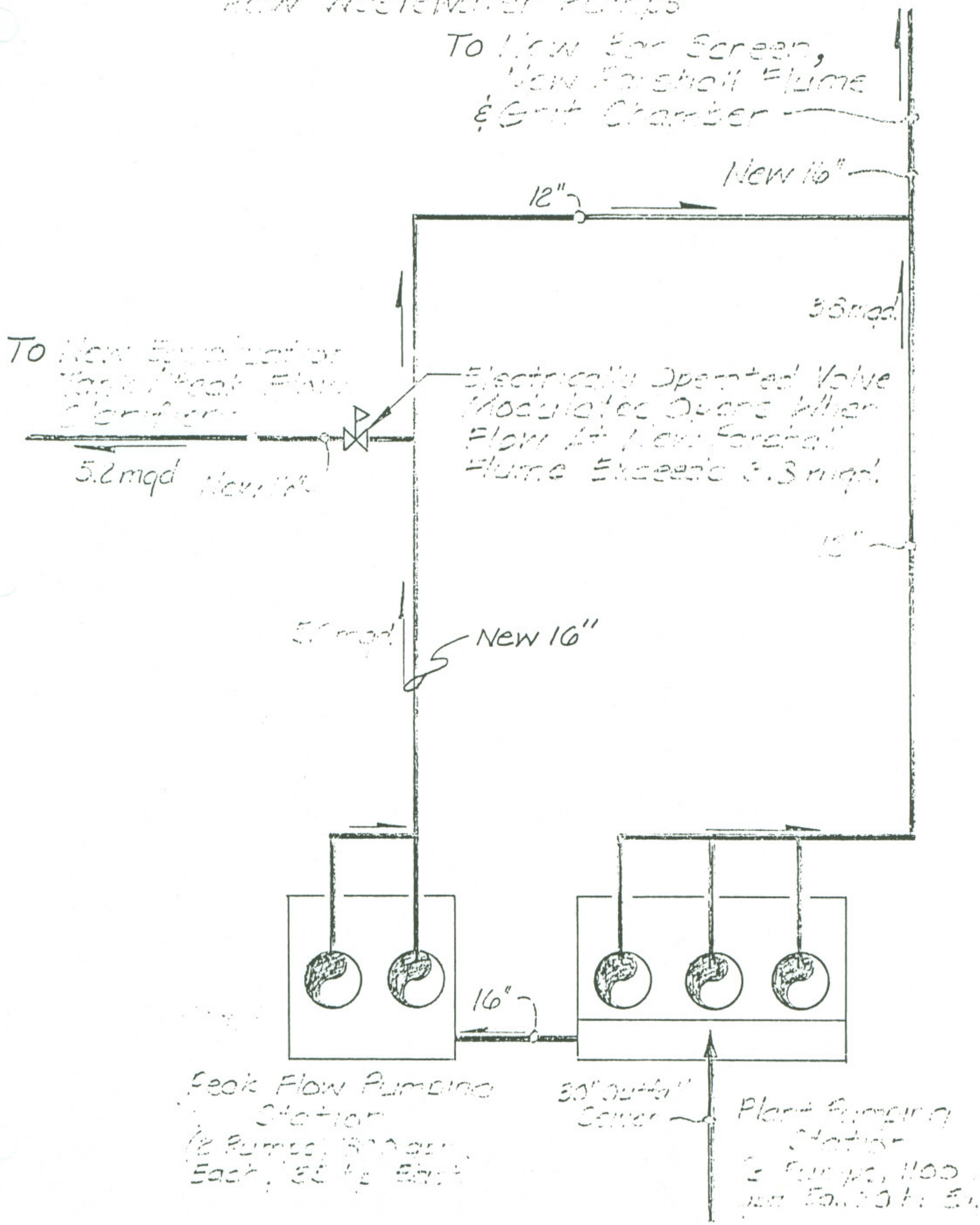
Allen Munsterman

Allen R. Munsterman, P.E.
ARM/ckc
N16.23

Encl.

cc: Harold Mitchell
Mike Monahan

Nevada, Iowa
Wastewater Treatment Plant Improvements
Raw Wastewater Pumps



89-206-G
2/11/91

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

April 9, 1991

The Honorable B. D. Hagen
Mayor of Nevada
1209 Sixth Street
Nevada, Iowa 50201

Subject: Raw Wastewater Pumping
Nevada, Iowa
C190845 04

NOT SENT

Dear Mayor Hagen:

The Iowa Department of Natural Resources has reviewed your February 11, 1991 request for a variance to design standard IA 13.4.1. This standard requires the capability to handle the expected PHWW (9.06 mgd for Nevada after equalization) with one unit out of service. Nevada currently has a maximum pumping capacity of about 9 mgd and a firm pumping capacity of only 7 mgd, but it will provide spare submersible pumps for immediate backup replacement. Nevada upgraded the raw wastewater lift station in 1990 to provide some increased firm pumping capacity. These improvements were made without an application for a construction permit. If the city implements a variable speed pump design meeting construction standards at this time, the installed pumps would have to be replaced.

The Department has decided to issue the construction permit for the proposed plant upgrade conditioned to require the expansion of the raw wastewater lift station to provide a firm pumping capacity of at least 9.06 mgd if the city bypasses raw wastewater more frequently than once in five years. A construction permit variance for the recently installed equipment does not appear to be appropriate. We consider the 1990 construction a serious violation of our rules (IAC 567-64.2(455B)). Apparently, the modifications included pump type as well as capacity. Enforcement action may be necessary if any construction occurs again in the future without a permit.

April 9, 1991

Should you have any questions, please call. My telephone number is 515/281-8869. We trust the City of Nevada will work closely with the Department in implementing all future improvements.

Sincerely,

DARRELL MCALLISTER
BUREAU CHIEF
SURFACE AND GROUNDWATER PROTECTION BUREAU

cc: Field Office 5
Snyder and Associates, Ankeny