NORTH PLATTE
Natural Resources District

Chimney Rock
on the Oregon Trail

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September 7, 1999

Project Name: NRD Correspondence
Project Number: 19
Date: 9/7/1999 Ref.#: 1834
Code 1: LEG Code 2: —
Comment: NPNRD

Roger K. Patterson, Director
Department of Water Resources
P O Box 94676
Lincoln, NE 68509-4676

Dear Roger:

Enclosed is a copy of Order No. NPNRD-3 establishing a Groundwater Quality Management Sub-Area for Level II Controls. The area affected is the alluvial valley in Garden County and the extreme eastern portion of Morrill County.

The effective date of the sub-area is October 1, 1999. Question or comments should be directed to Buck Buchanan of my staff or myself.

Sincerely,

Ronald D. Cacek

Ronald D. Cacek
Manager

Encl.

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DEPARTMENT OF
WATER RESOURCES

Category: Legal
Subcategory: NRD Order

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BY ORDER OF
The North Platte Natural Resources District

Establishing the Lisco-Oshkosh-Lewellen Groundwater Quality Management Sub-Area and adopting Level II Quality Controls to apply in the Sub-Area

Order No. NPNRD-3

This matter came for consideration before the Board of Directors on August 19, 1999, during the Board's monthly meeting at Bridgeport, Nebraska. The District conducted a public hearing on June 17, 1999, on the questions of establishing the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area and adopting Level II Controls.

The board finds that:

1. The North Platte NRD has adopted and implemented a Ground Water Management Plan, which has been approved by the Director of Water Resources.

2. The District's Ground Water Management Plan proposes establishment of a district-wide groundwater quality and quantity management area, and establishes triggers for the establishment of groundwater management sub-areas and Level II controls.

3. The North Platte NRD has established a district-wide groundwater quality and quantity management area, with an effective date of July 10, 1996, and adopted Level 1 quality and quantity controls listed in the Ground Water Management Plan.

4. The trigger established by the Groundwater Management Plan for creation of a groundwater quality management sub-area is as follows (section 9.4.1.2): "When sampling results show that 75% of the MCL (the Maximum Contaminant Level established by the U.S. Environmental Protection Agency) has been reached within a mappable area, further action by the NRD is required as per Section 9.3. This action will include determining stricter Level II Quality Controls to be applied to the area ..."

Sept. 22, 1999

5. This trigger has been met and exceeded in the alluvial valley of the North Platte River throughout Garden County and eastern Morrill County, where the District's groundwater monitoring program has detected nitrate concentrations exceeding the trigger of 7.5 mg/l in 40 to 50 percent of the wells measured in the proposed management sub-area. The highest concentration measured by the District in the proposed Sub-Area exceeded 80 mg/l.

6. The District has conducted the following scientific studies of groundwater within the proposed management sub-area, and elsewhere in the District:

a. "Geohydrology and Water Quality of the North Platte River Alluvial Aquifer, Garden County, Western Nebraska, 1993-94 (U.S. Geological Survey Water-Resources Investigations Report 98-4033)". This study, which was conducted in the same area as is the proposed management sub-area, found that "Nitrate concentrations exceeded the U.S. Environmental Protection Agency's Maximum Contaminant Level of 10 milligrams per liter for drinking water in at least one sample from 7 of the 14 monitoring-well sites (p 1)."

b. "Reconnaissance of Ground-Water Quality in the North Platte Natural Resources District, Western Nebraska, June-July 1991 (U.S. Geological Survey Water Resources Investigations Report 94-4057)". This study also detected nitrate concentrations exceeding 10 milligrams per liter in some of the samples collected.

c. "An Investigation to Determine the Source of Elevated Nitrate Concentrations in the Ground Water of the North Platte River Valley West of Oshkosh" by Mary Exner Spalding, hydrochemist of the Conservation and Survey Division, University of Nebraska, Lincoln, NE. This study reported: "The source of the elevated nitrate at

(monitoring well sites) is leachates from commercial fertilizer applied to the fertilized and irrigated fields." (p15)

7. Chapter 13 of the Groundwater Management Plan calls for establishment of the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area in the above-described area and lists Level II controls to be established.

8. It is appropriate to establish a groundwater quality management sub-area in the above-described alluvial valley because the climatic, hydrologic, geologic, and soil conditions existing within this sub-area differ from those in other portions of the District-wide management area, and the uniform application of controls throughout the entire District-wide management area would fail to carry out the intent of the Nebraska Groundwater Management and Protection Act in a reasonably effective and equitable manner.

9. It reasonably appears that adopting the Level II controls listed below will mitigate or eliminate the elevated nitrate levels that have led to the District's decision to designate the management sub-area, and will improve the administration of the area.

10. The Level II controls adopted below are authorized by Section 46-656.25 and it reasonably appears that these controls will achieve the groundwater management objectives specified in the Groundwater Management Plan.

11. Legal notice of a public hearing on the question of establishing a groundwater management sub-area and adopting Level II Controls was published in the Garden County News, a newspaper of general circulation in the affected area, on May 20, 1999; May 27, 1999; and June 3, 1999.

12. A public hearing was held on June 17, 1999, in the Oshkosh City Auditorium, and all present were given the opportunity to testify.

13. Due consideration has been given to testimony brought forth at the hearings.

14. The District has consulted with the holder of permits for intentional or incidental underground water storage.

IT IS CONCLUDED that establishment of the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area and adoption of Level II Controls is necessary to mitigate or eliminate nitrate contamination of groundwater within the proposed groundwater management sub-area.

It is hereby ordered:

1. The above and foregoing findings are so found and hereby ordered and incorporated herein by this reference.

2. That a groundwater management sub-area is hereby created. It shall be known as the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area, and it shall include the lands inside the boundary shown on Appendix A attached hereto and incorporated herein, and described as follows:

Beginning in Morrill County at the Northwest corner of Section 14, Township 18 North, Range 47 West, then East to the Northeast corner of Section 13, Township 18 North, Range 47 West, then South to the Southeast corner of Section 13, Township 18 North, Range 47 West, then East to the northeast corner of Section 20, Township 18 North, Range 46 West, then South to the northwest corner of Section 28, Township 18 North, Range 46 West, then East into Garden County to the Northeast Section corner of Section 26, Township 18 North, Range 46 West, then South to the Southeast Section corner of Section 26, Township 18 North, Range 46 West, then East to the Northeast Section corner of Section 36, Township 18 North, Range 46 West, then South to the Southeast Corner of Section 36, Township 18 North, Range 46 West, then East to the Northeast Section corner of Section 4, Township 17 North, Range 45 West, then South to the Southeast Section corner of Section 4, Township 17 North, Range 45 West, then East to the Northeast Section corner of Section 11, Township 17 North, Range 45 West, then South to the Southeast Section corner of Section 11, Township 17 North, Range 45 West, then East to the Northeast Section corner of Section 17, Township 17 North, Range 44 West, then South to the Southeast Section corner of Section 17, Township 17 North, Range 44 West, then East to the Northeast Section corner of

Section 24, Township 17 North, Range 44 West, then South to the Southeast Section corner of Section 24, Township 17 North, Range 44 West, then East to the Northeast Section corner of Section 30, Township 17 North, Range 43 West, then South to the Southeast Section corner of Section 30, Township 17 North, Range 43 West, then East to the Northeast Section corner of Section 33, Township 17 North, Range 43 West, then South to the Southeast Section corner of Section 33, Township 17 North, Range 43 West, then East to the Northeast Section corner of Section 6, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 6, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 10, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 15, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 24, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 24, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 30, Township 16 North, Range 41 West, then South to the centerline of the North Platte River, then Northwest along the centerline of the River to the point of beginning.

4. That the stratigraphic description of the Groundwater Management Area includes the following stratigraphic units: the Quaternary deposits, the Broadwater Formation, the Ogallala Group, the Arikaree Group, and the White River Group, as defined by the Conservation and Survey Division of the University of Nebraska-Lincoln.

5. That the rules and regulations attached hereto and incorporated herein as Appendix B and entitled "Section C: Level II Quality Controls for Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area" are hereby adopted.

6. The effective date of this order is October 1, 1999.

J Calburn

Chairman

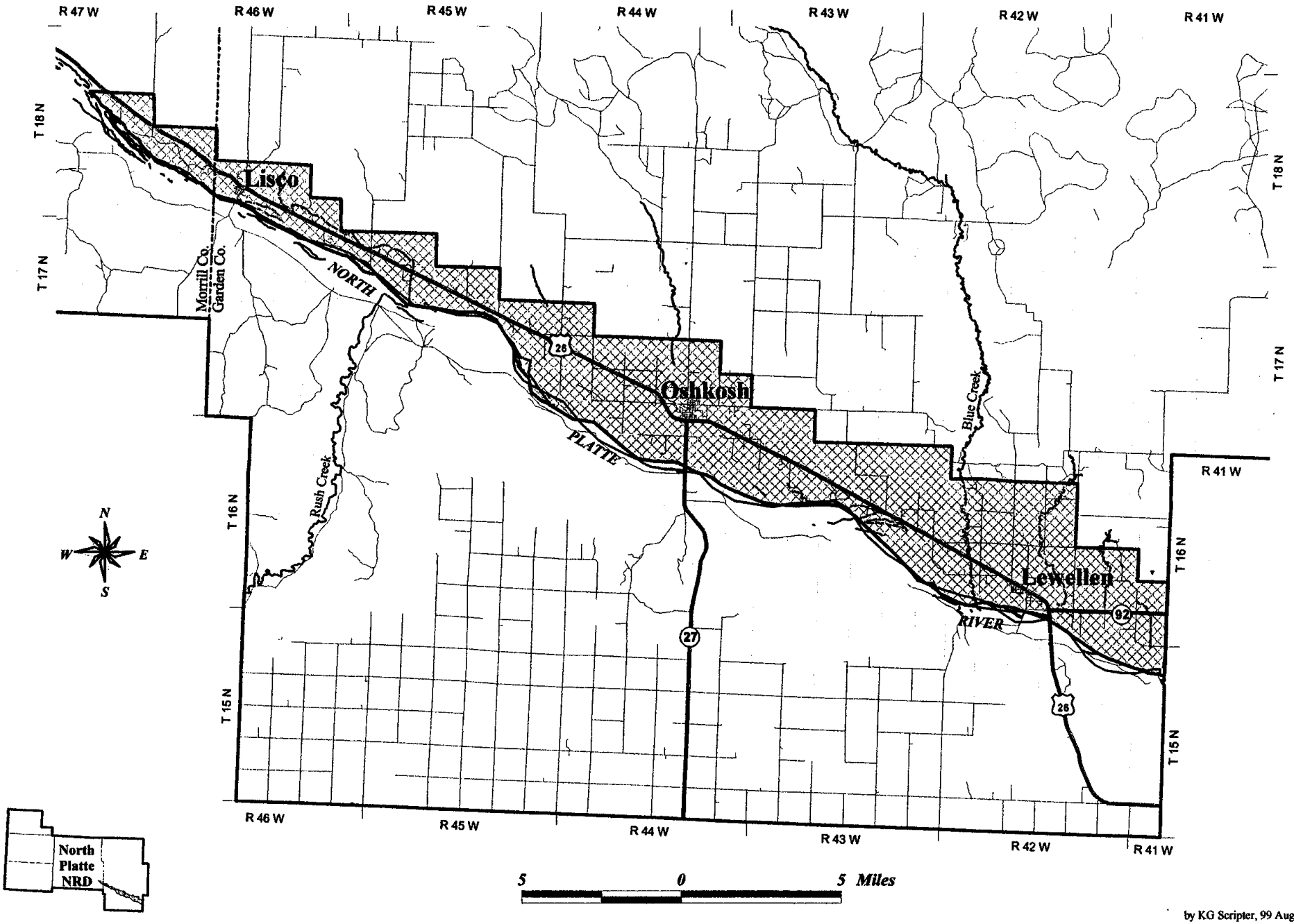
Adoption of this Order approved by the Board of Directors of the North Platte Natural Resources District at a regular meeting held at Bridgeport, Nebraska, on the 19th Day of August, 1999

Frederick Kinghorn

Attest: Secretary

Appendix A

Lisco-Oshkosh-Lewellen Groundwater Quality Management Sub-Area Boundaries



by KG Scripter, 99 August 5

Appendix B

ADDITION TO RULES AND REGULATIONS FOR ENFORCEMENT OF THE GROUNDWATER MANAGEMENT AND PROTECTION ACT

SECTION C: LEVEL II QUALITY CONTROLS FOR LISCO-OSHKOSH-LEWELLEN GROUNDWATER MANAGEMENT SUB-AREA

Rule 1

Definitions. As used in these rules and regulations:

a. Manufacturer shall mean any company that produces flow meters for the supplier or dealer.

b. Supplier or dealer shall mean any person who sells or provides flow meters to installer or groundwater user.

c. Installer shall mean the contractor, groundwater user or other person who installs flow meters on the groundwater user's irrigation equipment.

d. Pipe shall mean any conduit capable of transporting water.

Rule 2

Sub-Area boundaries. The controls contained in Rule 3 shall apply in the following described area, which may be referred to as the Lisco-Oshkosh-Lewellen Groundwater Quality Management Sub-Area, described as follows:

Beginning in Morrill County at the Northwest corner of Section 14, Township 18 North, Range 47 West, then East to the Northeast corner of Section 13, Township 18 North, Range 47 West, then South to the Southeast corner of Section 13, Township 18 North, Range 47 West, then East to the northeast corner of Section 20, Township 18 North, Range 46 West, then South to the northwest corner of Section 28, Township 18 North, Range 46 West, then East into Garden County to the Northeast Section corner of Section 26, Township 18 North, Range 46 West, then South to the Southeast Section corner of Section 26, Township 18 North, Range 46 West, then East to the Northeast Section corner of Section 36, Township 18 North, Range 46 West, then South to the Southeast Corner of Section 36, Township 18 North, Range 46 West, then East to the Northeast Section corner of Section 4, Township 17 North, Range 45 West, then South to the Southeast Section corner of Section 4, Township 17 North, Range 45 West, then East to the Northeast Section corner of Section 11, Township 17 North, Range 45 West, then South to the Southeast Section corner of Section 11, Township 17 North, Range 45 West, then East to the Northeast Section corner of Section 17, Township 17 North, Range 44 West, then South to the Southeast Section corner of Section 17, Township 17 North, Range 44 West, then East to the Northeast Section corner of Section 24, Township 17 North, Range 44 West, then South to the Southeast Section corner of Section 24, Township 17 North, Range 44 West, then East to the Northeast Section corner of Section 30, Township 17 North, Range 43 West, then South to the Southeast Section corner of Section 30, Township 17 North, Range 43 West, then East to the Northeast Section corner of

Section 33, Township 17 North, Range 43 West, then South to the Southeast Section corner of Section 33, Township 17 North, Range 43 West, then East to the Northeast Section corner of Section 6, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 6, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 10, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 15, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 24, Township 16 North, Range 42 West, then South to the Southeast Section corner of Section 24, Township 16 North, Range 42 West, then East to the Northeast Section corner of Section 30, Township 16 North, Range 41 West, then South to the centerline of the North Platte River, then Northwest along the centerline of the River to the point of beginning.

The Lisco-Oshkosh-Lewellen Groundwater Quality Management Sub-Area shall be described stratigraphically as including the following geologic units: the Quaternary deposits, the Broadwater Formation, the Ogallala Group, the Arikaree Group, and the White River Group, as defined by the Conservation and Survey Division of the University of Nebraska-Lincoln.

Rule 3

Controls. The following Level II controls shall apply in the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area:

A. All of the Level I controls and other requirements contained in Section A, Rules 3, 4, 5, and 7 of these rules and regulations will also continue to be in effect in the Lisco-Oshkosh-Lewellen Groundwater Management Sub-Area.

B. Each operator who applies commercial nitrogen fertilizer after January 1, 2000, must be certified by meeting district-approved educational requirements designed to acquaint landowners and operators with best-management practices in the operation of their irrigation and cropping systems. Certification shall be good for a period of four years.

C. Each operator who irrigates any field with groundwater after May 1, 2001, must have installed an operable flow meter to measure groundwater withdrawals for each well used to irrigate such field. Each operator who irrigates any field with surface water after May 1, 2001, must install and use a measuring device approved by the District to measure the amount of surface water applied to such field.

Each flow meter installed after the effective date of these rules and regulations shall comply with the applicable provisions of American National Standards Institute, American Water Works Association's standard number C704-92, as well as other technical specifications stated herein. In case of conflict, the specifications herein shall apply. Each flow meter shall be installed according to the manufacturer's specifications and calibrated to the pipe size. Calibration must maintain an accuracy of plus or minus two (2) percent of normal flow range.

Flow meters installed prior to the effective date of these rules and regulations are exempt from the specifications contained herein and shall be known as non-conforming flow meters.

However, when any such non-conforming flow meter is replaced, the replacement flow meter must conform to the specifications contained herein. In any event, all non-conforming flow meters must be replaced by January 1, 2010, with flow meters that conform to the specifications herein.

Except as specifically provided in these rules and regulations, it shall be a violation of these regulations for any person to willfully injure, alter, remove, reset, adjust, manipulate, obstruct, or in any manner interfere with or tamper with a flow meter within the Lisco-Oshkosh-Lewellen Groundwater Quality Management Sub-Area without District consent, or to cause, procure or direct any other person to do so.

The District shall have the right to enter upon private property at any reasonable time to inspect a flow meter or any other water-measuring device required by these rules and regulations.

D. Each operator who applies commercial nitrogen fertilizer after January 1, 2000, on any field irrigated by groundwater must cause to have performed an annual analysis of water from each irrigation well for nitrate-nitrogen content in parts per million (PPM) or milligrams per liter (mg/l). Water samples must be collected from the well during the irrigation season. The analysis must be made by a laboratory utilizing methods approved by the United States Environmental Protection Agency.

E. Each operator who applies commercial nitrogen fertilizer after January 1, 2000, must cause to have performed an annual soils analysis of residual nitrate-nitrogen content on each irrigated field. Such soils analysis must comply with the Acceptable Soil Sampling Procedures contained in University of Nebraska Nebguide G91-1000, titled "Guidelines for Soil Sampling." The analysis must be conducted by a laboratory participating in the University of Nebraska-Lincoln Soil Testing Program. An operator may be exempted from complying with the above University of Nebraska guidelines by submitting an alternate written plan for soil sampling to the District and receiving District approval. In considering such an alternate plan, the District may approve it as submitted; approve it with additional stipulations; or deny it.

F. Fields that are smaller than 5 acres and are planted to a crop other than corn are exempt from the requirements contained in Parts C, D, and E above.

G.Beginning in the year 2001, each operator shall submit to the District by January 10 of each year an annual report for the preceding calendar year containing the following information for each irrigated field:

1. Results of nitrate-nitrogen analysis in parts per million (PPM) for each well which supplies irrigation water to that field (as required in Part D above), with each well identified by legal location to the nearest 10-acre tract and by the Department of Water Resources registration number.

2. Results of nitrate-nitrogen analysis soil samples for each field (as required in Part E above), identified by legal description and showing the irrigation well(s) identified in (1) above used to irrigate that field.

3. Crop grown and per-acre yield goal used as the basis for determining nitrogen needs on each field.

4. A nitrogen fertilizer rate recommendation, based on previous yields, residual nitrate-nitrogen levels in soil, nitrogen levels in groundwater used for irrigation, and other sources of nitrogen available to the crop, including manure. The fertilizer recommendation must utilize the University of Nebraska formula for commercial nitrogen recommendations.

5. Amounts of fertilizer applied per acre and date(s) of application.

6. Estimate of tons of manure applied per acre.

7. Flow meter readings from beginning and end of irrigation season.

8. Total amount of irrigation water applied.

9. Method of irrigation scheduling used.

10. Actual per-acre yield.

11. Planned crop rotation for following year.

H. Applications of commercial nitrogen fertilizer are prohibited after September 1 and before March 1 of the following year, except for fertilization of small winter grain crops such as wheat.

Rule 4

Flow meter specifications. All flow meters required by Rule 4 of these rules and regulations must meet the following specifications:

1. Each flow meter must be of the velocity propeller type made of noncorrosive materials. Meters shall have a magnetic drive. Propellers shall rotate on a minimum of two bearings. Bearings shall be made of stainless steel or equivalent noncorrosive material. The propeller diameter shall not be smaller than 70 percent of the meter size.
2. The meter registry shall have a visual volume recording totalizer that shall record in acre-feet, acre-inches or gallons. Acre-inches are preferred. The registry shall be protected from the elements. Totalizers shall have sufficient capacity to record for a period of one year the quantity of water diverted from each water source, or combination of sources for installations supplied by multiple water sources. Totalizers shall be direct reading and the multiplier shall be clearly indicated. The meter also shall have a rate-of-flow indicator showing: (a) Instantaneous flow in gallons per minute, or (b) A sweep hand indicator from which rate of flow can be determined by timing. The registry shall be provided with a method for sealing with a wire or a lead seal to prevent unauthorized tampering or removal.
3. The meter shall have a rated accuracy of plus or minus two (2) percent of actual flow within the range of flow for which the meter is designed. The meter shall be capable of accurately registering the expected operating range of discharge.
4. The meter shall have a pressure rating to fit the application and shall be used only within its designed pressure range.
5. The meter size, serial number and the direction of flow shall be clearly stamped on the body of the meter. The inside pipe diameter for which the meter has been calibrated shall be clearly shown on the meter to the nearest 0.001 (one one-thousandth) of an inch.

All flow meters required by Rule 4 of these rules and regulations shall be installed to the following specifications:

1. The meter shall be installed in accordance with the manufacturer's specifications and in such manner that there will be a full pipe flow of water at all times while water is being measured. Full pipe flow may be obtained by using butterfly valves or by raising the pipe beyond the meter to a point above the level of the meter.
2. To increase accuracy, the meter shall be placed in the pipe not less than five pipe diameters downstream from any valve, elbow, or any other obstructions which might create turbulent flow, or as recommended by the manufacturer. There also shall be at least one pipe diameter of unobstructed flow on the downstream side of the meter. Straightening vanes shall be installed in the pipe if above conditions cannot be met.
3. The meter propeller shaft shall be positioned parallel to the pipe and aligned with the centerline of the pipe.

All flow meters required by rule 4 of these rules and regulations must be maintained in accordance with the following specifications:

1. Each flow meter must be kept in working order and clear of debris, vegetative growth, or other material that would impede operation.
2. Any malfunctioning flow meter must be reported to the District office at Gering, Nebraska, within twenty-four (24) hours after discovery. Malfunctioning flow meters discovered on any day other than working days (weekends and holidays) shall be reported before the office closes on the first working day following the discovery. During the malfunctioning period, the producer shall use a substitute meter from the District, if available, to determine water consumption. If no such meter is available, any reasonable method approved by the District shall be used to determine water consumption.
3. When any flow meter is removed for servicing or replacement, the owner/operator must keep records of the flow meter reading.
4. A meter may be removed for off-season storage, but should be stored in such a matter that will prevent freezing or damage by rodents.