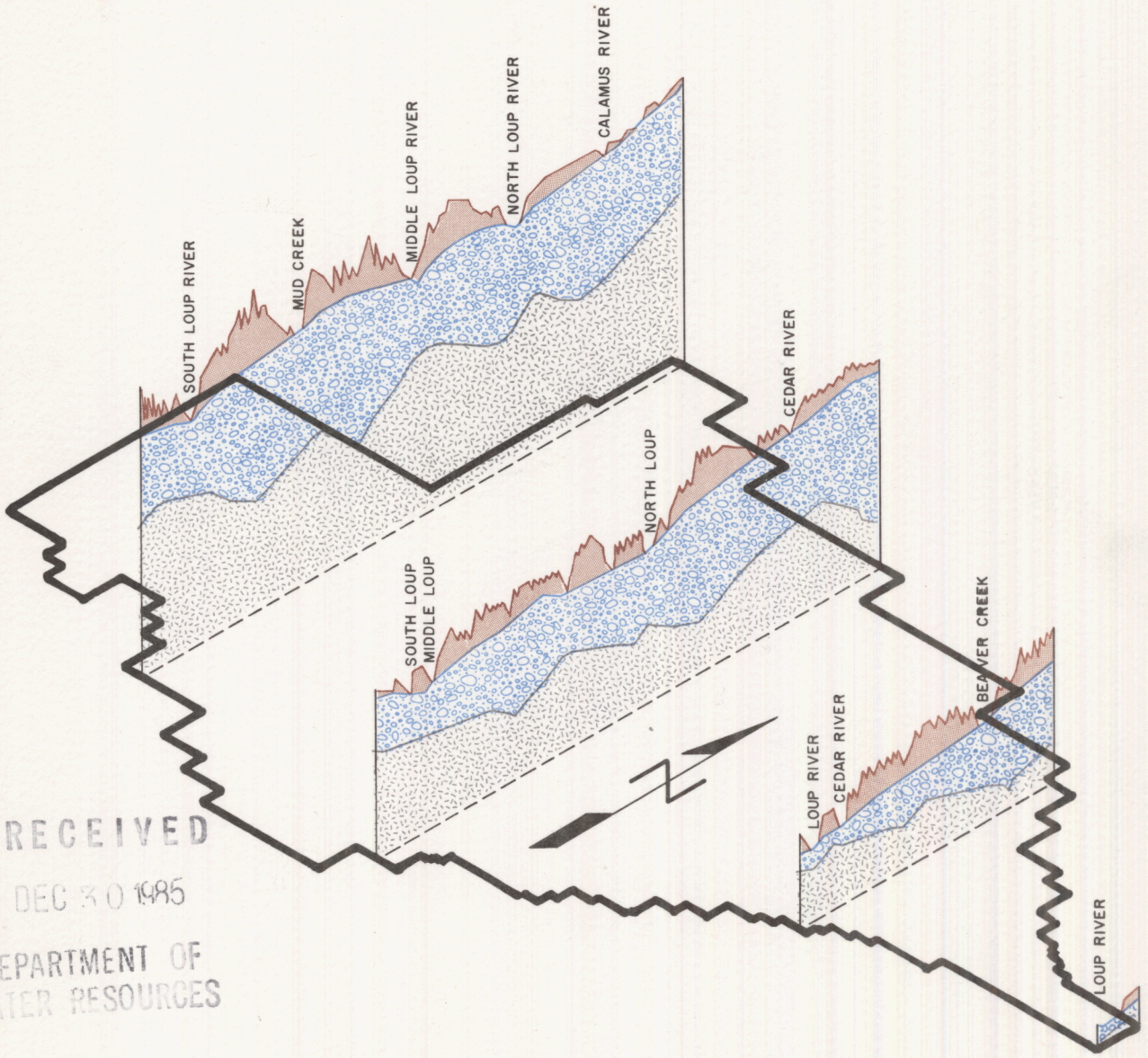
PROPERTY OF DEPARTMENT
OF WATER RESOURCES

NRD Correspondence
Project 19

Date: 12/30/1985
Reference #: 827
Code 1: GWMP
Code 2:
Comment: LLNRD

Groundwater Management Plan — 1985



RECEIVED
DEC 30 1985
DEPARTMENT OF
WATER RESOURCES

LOWER LOUP NATURAL RESOURCES DISTRICT
NO. HIGHWAY 11, HADAR INDUSTRIAL PARK
P. O. BOX 210, ORD, NEBRASKA 68862-0210
PHONE (308) 728-3221

Category: GWMP
Subcategory: GWMP

Groundwater Management Plan - 1985

Lower Loup Natural Resources District
No. Highway 11, Hadar Industrial Park
P. O. Box 210, Ord, Nebraska 68862-0210
Phone (308) 728-3221

ON THE COVER: AN AERIAL VIEW OF THE LOWER LOUP NRD AS SEEN FROM THE SOUTHEAST. FOUR NORTH-SOUTH SLICES OF SUBSTRUCTURE HAVE BEEN RAISED. ON EACH SLICE CAN BE SEEN THE SURFACE MATERIALS, THE WATER BEARING PRINCIPAL AQUIFER, AND THE BASEMENT STRATA.

BOARD OF DIRECTORS
AND
STAFF

SUBDISTRICT 1
L. J. Garrison
James L. Ziegler, Treasurer

SUBDISTRICT 2
Norman J. Smith
James M. Ryan

SUBDISTRICT 3
Frank S. Bartak
Lynn C. Jenkins, Secretary

SUBDISTRICT 4
Dale L. Zadina
Cledis A. Prescott

SUBDISTRICT 5
David Shoemaker
Dean J. Rasmussen

SUBDISTRICT 6
Duane K. Pont
William H. Schriver

SUBDISTRICT 7
Delwin J. Beck
Alan S. Musil

SUBDISTRICT 8
James C. Nelson
William L. Petersen

SUBDISTRICT 9
Raymond C. Tarnick, Chairman
Billy D. Schroeder, Vice Chairman

SUBDISTRICT 10
Darwin B. Anderson
L. Floyd Mueller

DIRECTOR-AT-LARGE
Richard D. Walsh

ADMINISTRATIVE

Richard J. Beran. . . . . .General Manager
Leon A. Koehlmoos . . . . . .Assistant Manager
Rita A. Goldfish. . . . . .Administrative Secretary
Cheryl K. Hornickel . . . . . .Programs Assistant & Secretary

TECHNICAL

Robert T. Mohler. . . . . .District Engineer
Richard T. Straight . . . . . .NRD Forester
James R. Hansen . . . . . .Pump Test Specialist
Lavern F. Coleman . . . . . .NRD Conservationist - Ord
Daniel R. Timmerman . . . . . .NRD Conservationist - Ord
Earl W. Ramm. . . . . .NRD Conservationist - Albion
Orval L. Haumont. . . . . .NRD Conservationist - Broken Bow
Raymond H. Guggenmos. . . . . .NRD Conservationist - Burwell
Daniel J. Ray . . . . . .NRD Conservationist - Spalding

SECRETARIAL - SCS FIELD OFFICES

Marilyn Y. Ramm . . . . . .Secretary, Albion
Virginia L. John. . . . . .Secretary, Broken Bow
Cindy D. Fletcher . . . . . .Secretary, Burwell
Ona M. Foland . . . . . .Secretary, Columbus
Judith A. Frenzen . . . . . .Secretary, Fullerton
Phyllis J. Piontkowski. . . . . .Secretary, Loup City
Beverly I. Smedra . . . . . .Secretary, Ord
Elaine M. Swanson . . . . . .Secretary, St. Paul
Agnes B. Glassmaker . . . . . .Secretary, Spalding

TABLE OF CONTENTS

	Page
Introduction	
Acknowledgements	
The District	
Topography	1
Soils	2
Climate	3
Population	4
Land Use	4
The Plan	
Plan and Policy	5
Goal - Groundwater Quantity	10
Objectives - Groundwater Quantity	11
Goal - Groundwater Quality	14
Objectives - Groundwater Quality	15
Recharge	18
Groundwater Quality Concerns	19
Supplemental Water Supplies	20
Subirrigation	20
Economics	21
Conclusions and Observations	21
Groundwater	
The Occurrence	23
Inventory of Users	43
Surface Water	
The Occurrence	46
Users	54
Groundwater Monitoring	
District Monitor Wells	58
Transect Wells	59
District Recorder Wells	61
Automatic Recorder Wells	61
Hydrology - Platte/Loup	65
Water Quality	
Groundwater Quality	73
Agency Reports	75
Monitoring Program	76
Transect Water Quality	76
Beaver Creek Surface Water Quality	76
Special Projects	77
Surface Water Quality	77
Conservation	
Crop Water Use	79
Deficit Scheduling	79
Tensiometers	78
Soil Probe Scheduling	79
Water Flow Meters	78

LIST OF FIGURES

		Page
1	- Map of Lower Loup Natural Resources District	1
2	- Major Physiographic Areas	2
3	- Average Annual Precipation	4
4	- Map of Groundwater Quantity Subdivisions	12
5	- Map of Groundwater Quality Subdivision	16
6	- Configuration of Base of Principal Aquifer	24
7	- Configuration of the Water Table	25
8	- Thickness of Principal Aquifer	26
9	- Transmissivity of Principal Aquifer	27
10	- Geologic Bedrock Map	28
11	- Stratigraphic Cross-Section	32
12	- Geologic Cross-Section Locations	33
13	- Map of Registered Wells	43
14	- Center Pivots	44
15	- Number of Registered Wells	44
16	- Municipalities with Water Systems	45
17	- Surface Water Gaging Station Locations	46
18	- Beaver Creek Gaging Stations	52
19	- Surface Water Irrigation Projects	53
20	- Loup Basin Water Supply and Use	56
21	- Observation Well Sticker	58
21a	- Groundwater Rises and Declines	58
22	- Transect Well Cluster Locations	59
23	- Typical Transect Well Cluster	60
24	- District Recorder Well Locations	61
25	- Albion Recorder Well Chart	62
26	- Dannebrog Recorder Well Chart	62
27	- Ord Recorder Well Chart	63
28	- Merna Recorder Well Chart	63
29	- Bartlett Recorder Well Chart	64
A-L	- Projected Declines in Platte/Loup	67-72

LIST OF TABLES

1	- Geologic Time Scale	23
2	- Registered Irrigation Wells	43
3	- Groundwater Users	45
4	- Annual Discharge at Gage Locations	48
5	- (Reserved)	
6	- Beaver Creek Stream Gaging Readings	51
7	- Number of Water Rights by County	55
8	- Static Water Level Monitoring Program	58
9	- Water Levels in Transect Wells	60
10	- Quinn Recorder Well	61
11	- Wagner Recorder Well	61
12	- Water Quality Monitoring Program	76
13	- Transect Well Water Quality Report	76
14	- Spalding Report, Transect Wells: Garfield, Wheeler, & Boone	76
15	- Beaver Creek Water Quality Report	77
16	- Irrigation Well Water Quality Report	77
17	- Crop Water Use Report	79

INTRODUCTION

The purpose of this Plan is to demonstrate the methodology by which the Board of Directors of the Lower Loup Natural Resources District will use to manage the groundwater resources of the District.

Although the State mandated the preparation of Groundwater Management Plans in 1984, to be completed by January of 1986, the Lower Loup NRD began the planning process much earlier--in 1975.

The focal point of this Plan document is the section on the Plan. It provides two basic and simple goals--one for groundwater quantity and one for groundwater quality. Each of the goals is accompanied by a set of objectives. The objectives provide the action plan to achieve the stated goals. In addition, voluntary and mandatory management options are listed. These management options provide groundwater users with a list of action alternatives they can use to delay or eliminate the need for government regulation. The mandatory options are available to the District to be implemented when conditions justify their use.

The supply of the groundwater resources is vast, nearly 170 million acre-feet beneath the District. Distribution, however, is not uniform. While aquifers in the Sandhills in Loup County are greater than 500 feet thick, those in southern Nance County are sometimes less than 100 feet thick.

Groundwater usage has increased at a varying rate over the years. Presently, the District has 7,539 registered wells of which 98% are irrigation wells. The distribution of groundwater users is likened to the supply--distribution is not uniform.

Surface water systems account for large diversions on the main stem North Loup, Middle Loup, and Calamus Rivers. Irrigation from project sources and individual water rights is an important use of water resources. The Loup River Public Power District uses surface water for electrical generation.

The quality of groundwater has surfaced as one of the most important issues of present time. The District has had programs in place since 1975 to gather base line data on water quality. This report documents the District's efforts to face this important issue. In addition, water quality data from other sources is inventoried in order that a reviewer may have the advantage of all data sources.

The final section included in the Plan explains the District's present, past, and future programs to encourage conservation of water usage. The District believes that if water users practice stewardship with the use of water, water quality conservation will be a natural by-product.

The publication of this Plan will fill the requirements mandated by the State. It will, by no means, provide the solution to present and future resource concerns unless it is implemented in a timely and energetic manner. If the goals are to be obtained, a regular and systematic review and update will be necessary.

ACKNOWLEDGEMENTS

The Board of Directors and staff gratefully acknowledges the assistance provided by the Nebraska Natural Resources Commission, the Soil Conservation Service, the Conservation & Survey Division, the U.S. Geological Survey, the Department of Water Resources, the Department of Environmental Control and other Federal, State, and Local agencies for their assistance.

A special thanks to Dennis Lawton - C&SD; Jim Cook - NRC; Jay Wilson - SCS; Karl Wadas - DWR; and Richard Beard - USGS; for their review and data acquisition.

THE DISTRICT

TOPOGRAPHY

SOILS

CLIMATE

POPULATION

LAND USE

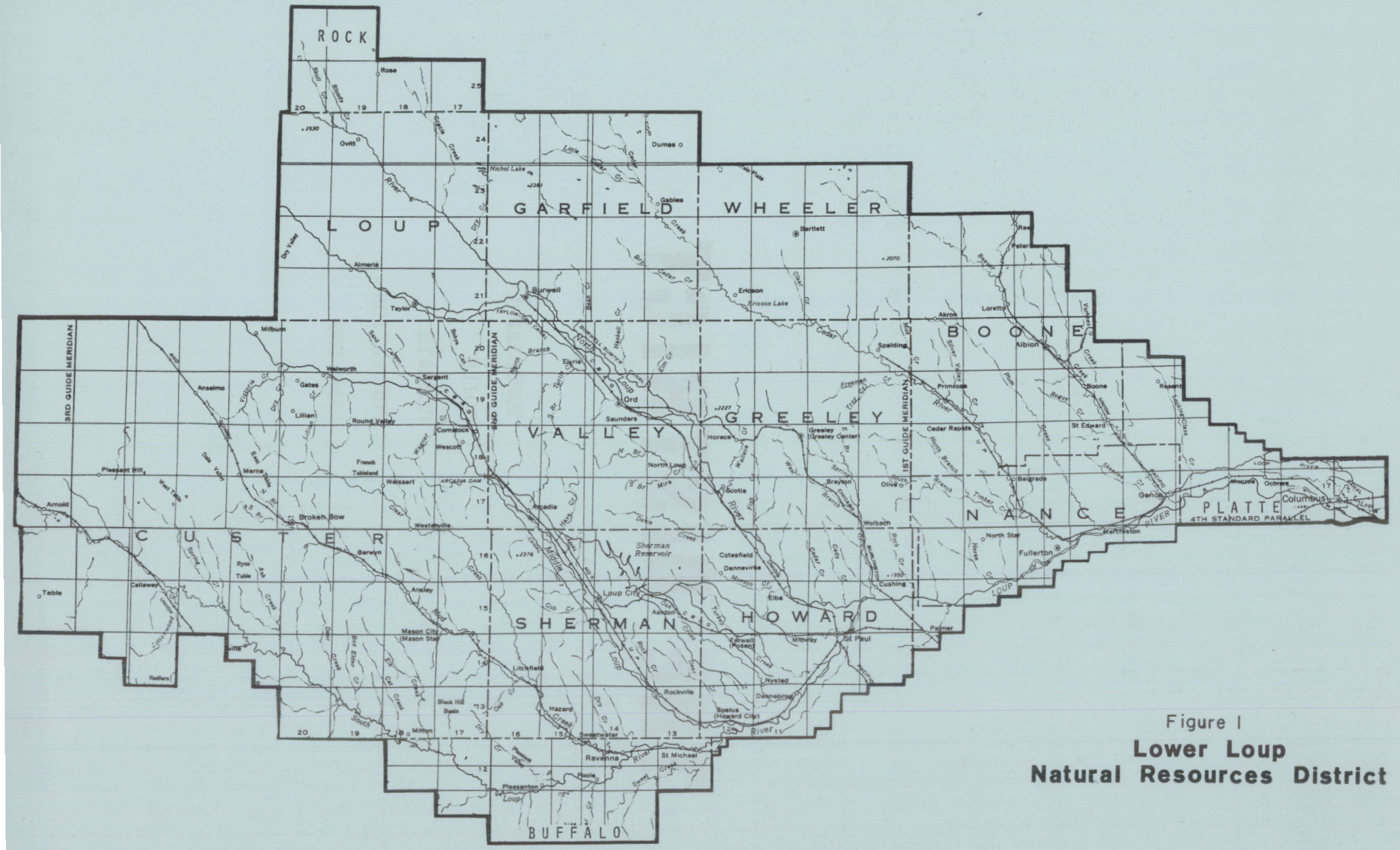


Figure I

Lower Loup Natural Resources District

THE DISTRICT

The Lower Loup Natural Resources District was organized as a result of the passage of LB-1357 in 1969. The NRD law is now found in RRS, Nebraska, Chapter 2, Sections 3201 to 3261.

The District became operational on July 1, 1972. The nucleus of the original District governing board came from the merger of 12 Soil & Water Conservation Districts and respresentatives from cities as provided by the enacting legislation. Presently, the District governing body consists of 21 Directors elected from 10 subdistricts and one Director-at-Large.

The Lower Loup Natural Resources District is located in the heartland of Nebraska. It is the largest NRD by land area comprising approximately 7,923 square miles. Its land area is 265 square miles smaller than the State of Massachusetts, and larger than any one of the states of New Jersey, Connecticut, Delaware, Rhode Island, and Hawaii. It comprises 10.3% of the State of Nebraska, and 52% of the Loup Basin. At its maximum, the District is 156 miles from the Custer/Logan County lines on the west to the Platte/Colfax county lines east of Columbus. The District's 96-mile width stretches from southern Rock County to Buffalo County, south of Ravenna.

All or parts of 15 counties are located within the NRD boundaries, including all of Loup, Garfield, Greeley, Sherman, and Valley; 91% of Howard; 89% of Custer and Nance; 87% of Boone; 75% of Wheeler; 41% of Platte; 36% of Buffalo; 16% of Rock; 6% of Merrick; and 1% of Hall. See Figure 1 on facing page.

TOPOGRAPHY

The Lower Loup NRD boundary is generally irregular encompassing the drainage systems of the lower reaches of the North, Middle, and South Loup River systems along with the Cedar and Calamus Rivers. Except for river and stream valleys and a few major table land areas, the District is rolling. The District is composed of Sandhills, dissected loess hills and relatively flat river valley terraces and lowlands.

Relief varies from elevation 3,146 feet MSL in Section 21, Township 18 North, Range 25 West, 6 miles north of Arnold, Nebraska; to 1,402 feet MSL in Section 1, Township 16 North, Range 1 East, southeast of Columbus.

Figure 2 shows the delineation of the major physiographic areas.

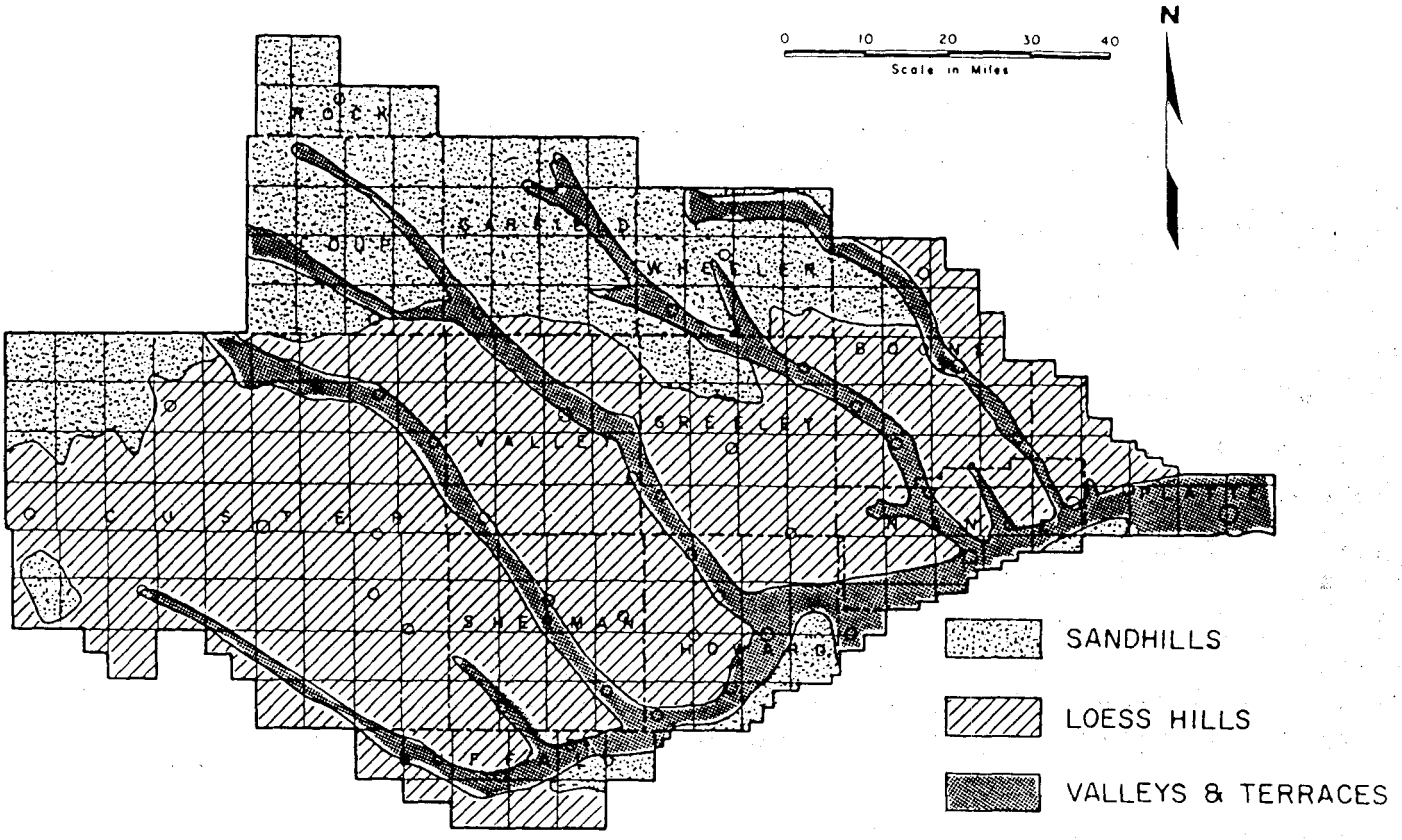


Figure 2
MAJOR PHYSIOGRAPHIC AREAS

SOILS

The Lower Loup Natural Resources District is dominantly composed of four major soil areas or soil associations. These are the Valentine Association, the Coly-Uly Association, the Cozad-Hord Association, and the Inavale-Boel-Barney Association.

The Valentine soil association is mainly along the northern part of the District and consists of deep, gently sloping to very steep, excessively drained, sandy soils formed in eolian sand on uplands. This area is part of the broad expanse of the Nebraska Sandhills region and is dominated by soils in the Valentine soil series. The soils are dominantly fine sand in texture, have low available water capacity, and rapid permeability. This soil association is generally suited to use as rangeland because of the low water capacity and erosion hazard.

The Coly-Uly soil association covers a major part of the District. This association consists of deep, gently sloping to steep, somewhat excessively and well drained silty soils formed in loess on uplands. The soils are dominantly silt loam in texture, have high available water capacity and moderate permeability. Much of this area is best suited for rangeland because of the steep slopes and erosion hazards.

The Cozad-Hord association is along streams and rivers within the District and consist of deep, nearly level and very gently sloping, well drained, silty soils formed in alluvium and loess on stream terraces and foot slopes. The soils are dominantly silt loam in texture, have high available water capacity and moderate permeability. Most areas of these soils are used for cultivated crops under irrigation. The soil erosion hazard on these soils is generally none to slight.

The Inavale-Boel-Barney association is along narrow bottomlands along the Loup River system. This association consists of deep, nearly level to gently sloping, somewhat excessively, somewhat poorly, and poorly drained, sandy and loamy soils formed in sandy alluvium on bottomlands. The soils are dominantly coarse textured, have low available water capacity and rapid permeability and have water tables within the profile. Some of the soils in this association are suited to cultivated crops but many are best suited to rangeland because of excessive wetness or other limitations.

CLIMATE

Weather conditions over the Lower Loup NRD vary considerably from year to year. In the District, winters are cold because of frequent incursions of cold, continental air. Summers are hot with occasional interruptions of cooler air from the north. Snowfall is fairly frequent in winter, but snow cover is usually not continuous. Rainfall is heaviest in late spring and early summer.

In winter the average temperature across the District is about 26 degrees F, and the average daily low is about 14 degrees. In summer the average temperature is about 74 degrees, and the average daily high is about 86 degrees.

Of the total annual precipitation, 80 percent usually falls from April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall from April through September is less than 15 inches. Thunderstorms occur on about 50 days each year, and most occur in summer. Figure 3 shows the average annual precipitation across the District.

Average seasonal snowfall is about 28 inches. On the average, about 19 days have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in mid-afternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The percentage of possible sunshine is 75 in summer and 60 in winter. The prevailing wind varies from place to place but is primarily from the northwest or the south. Average windspeed is highest, about 13 miles per hour, in spring.

Severe duststorms occur occasionally in spring when strong dry winds blow over unprotected soils. There are occasional tornadoes and severe thunderstorms, some with hail. These storms are local and short in duration, and the pattern of damage is variable and spotty.

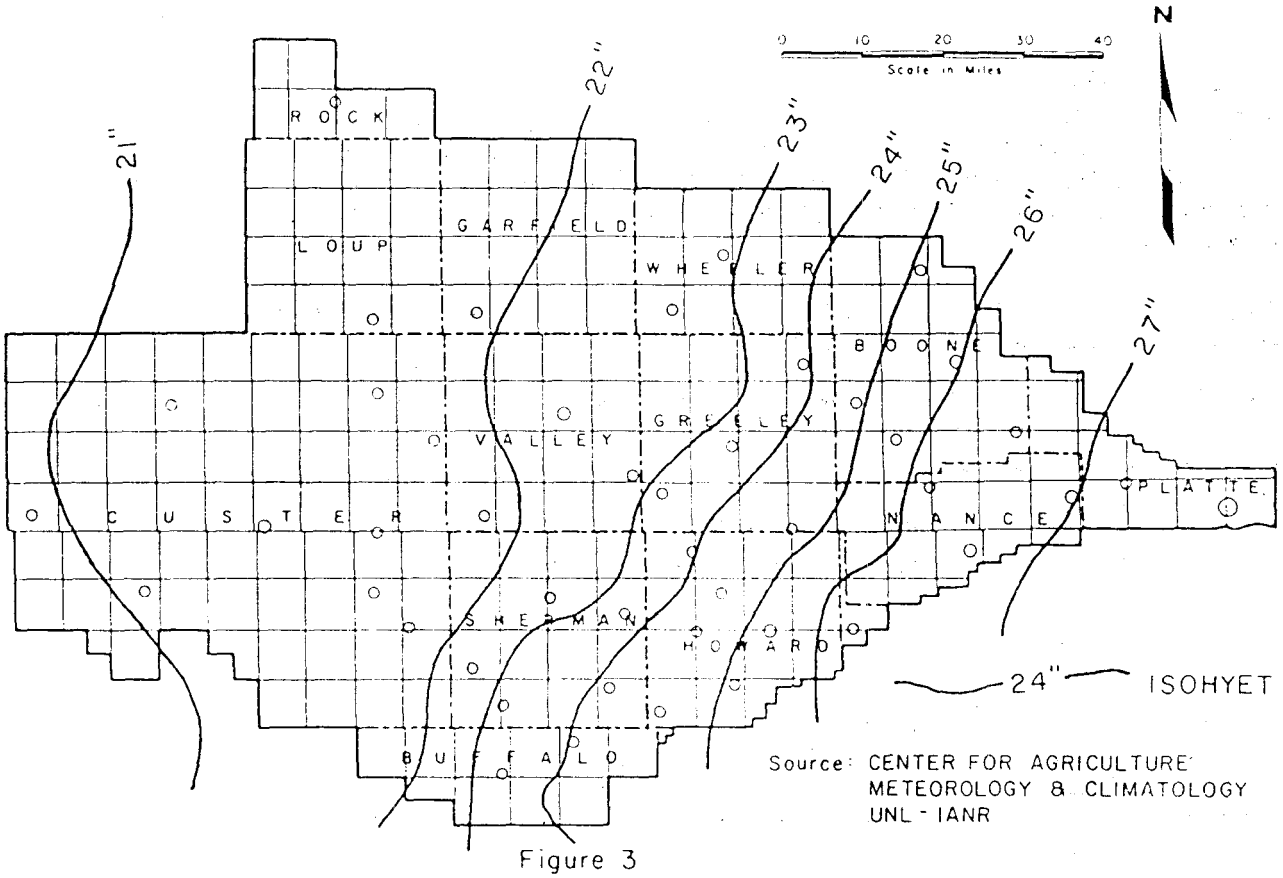


Figure 3
AVERAGE ANNUAL PRECIPITATION, 1951 to 1980

POPULATION

The 1970 census reports a population of 74,556 with approximately one-half concentrated on the eastern one-third of the NRD. Columbus, the Platte County seat, is the largest and only city of the first class within the NRD. Other county seat towns include Albion, Bartlett, Broken Bow, Burwell, Fullerton, Greeley, Loup City, Ord, St. Paul, and Taylor.

AGRICULTURAL LAND USE

The NRD's economy is based almost entirely on crop and livestock production, along with agricultural related business.

Land use in acres includes 915,200 acres of irrigated crop land; 850,300 acres dry crop land; 3,017,100 acres of range and pasture; 33,200 acres of forest land; 33,445 acres in farmsteads; 31,692 acres of roads; 16,200 acres of urban areas; and 15,163 acres of large water impoundments and public lands.

Irrigated acres have increased from 402,000 acres in 1967 to 915,200 in 1982 along with a corresponding decrease in dry crop land from 1,376,000 acres in 1967 to 850,300 acres in 1982.

THE PLAN

PLAN AND POLICY

GOAL - GROUNDWATER QUANTITY

OBJECTIVES - GROUNDWATER QUANTITY

GOAL - GROUNDWATER QUALITY

OBJECTIVES - GROUNDWATER QUALITY

RECHARGE

GROUNDWATER QUALITY CONCERNS

SUPPLEMENTAL WATER SUPPLIES

SUBIRRIGATION

ECONOMICS

CONCLUSIONS AND OBSERVATIONS

GROUNDWATER MANAGEMENT -- PLAN AND POLICY

The need for management of groundwater falls into a simple business ethic, that being one of supply and demand. Once the demand outstrips the supply, a shortage results. When conditions promulgate heavy usage, the supply is reduced and the price rises. Likewise with the groundwater resource--as declines occur, the cost to maintain a supply will increase. It then is essential that taxpayers who are all groundwater users provide the management up-front before conditions mandate more expensive alternatives. It parallels the advertising cliche "pay me now or pay me later", the "later" being more difficult and expensive.

The complex and difficult aspect of groundwater management is seated in the resource itself.

When the supply diminishes, it would seem prudent to simply boost manufacturing output. With groundwater resources, replenishment is difficult. Recharge is expensive and, at best, limited to relatively small geographic areas.

Ownership of the product is a basic question. Nine out of ten groundwater users maintain that they own and can use, without restriction, water under their land. In Nebraska, the use of groundwater is governed by the rule of reasonable use and correlative rights. This means that groundwater users have the right, by control of the land, to use groundwater but are required to exercise reasonable care of usage and share in times of shortage.

The resource is elusive and hard to track. You see it when it falls as rain and you see it again when it's pumped out of the ground. In between, its movement and quantity are partly speculative. It can be traced, monitored, measured, and modeled, but these activities are expensive.

For some reason, human nature dictates that needs for regulation and control only occur in time of crises. In the case of water resources, responding to shortages and pollution in a crisis situation will be too late. It is then proper and in the best interests of the public health and welfare that state and local governments respond to the storm clouds on the water horizon and implement a workable, sound water management plan in advance of the downpour that shortages and pollution of groundwater can bring about.

In its wisdom, the Nebraska Legislature has enacted the Groundwater Management and Protection Act (GWMPA). The Act mandates that each Natural Resources District (NRD) develop a Groundwater Management Plan (GWMP) in accordance with Sections 46-673.01 through 46-673.04.

46-673.01. Management area designation; groundwater management plan; prepared; when; contents. Prior to January 1, 1986, each district shall prepare a groundwater management plan

based upon the best available information and submit such plan to the director for review and approval. If on the operative date of this act a control or management area has been designated in a district, the district shall not be required to prepare a plan for the geographical area encompassed by such control or management area.

The Plan shall include, but not be limited to, the identification to the extent possible of:

(1) Proposed geographic and stratigraphic boundaries of the management area;

(2) Ground water supplies within the area including transmissivity, saturated thickness maps, and other groundwater reservoir information, if available.

(3) Local recharge characteristics and rates from any sources, if available;

(4) Average annual precipitation and the variations within the area;

(5) Crop water needs within the area;

(6) Current groundwater data collection programs;

(7) Past, present, and potential groundwater use within the area;

(8) Groundwater quality concerns within the area;

(9) Proposed water conservation and supply augmentation programs for the area;

(10) The availability of supplemental water supplies, including the opportunity for groundwater recharge;

(11) The opportunity to integrate and coordinate the use of water from different sources of supply;

(12) Groundwater management objectives, including a proposed groundwater reservoir life goal for the area;

(13) The controls enumerated in Sections 46-673.08 to 46-673.12 proposed to achieve the groundwater reservoir life goal, and the impact of such controls on the goal;

(14) Existing subirrigation uses within the area; and

(15) The relative economic value of different uses of groundwater proposed or existing within the area.

Source: Laws 1982, LB 375, 3; LAWS 1983, LB 378, 3; Laws 1984, LB 1106, 37.

46-673.02. Groundwater management plan preparation; district; solicit and utilize information. During preparation of a groundwater management plan, the district shall actively solicit public comments and opinions, and shall utilize and draw upon existing research, data, studies, or any other information which has been compiled by, or is in the possession of, state or federal agencies, natural resources districts, or any other subdivision of the state. State agencies, districts, and other subdivisions shall furnish information or data upon the request of any district preparing such a plan. A district shall not be required to initiate new studies or data collection efforts, or to develop computer models, in order to prepare a plan.

Source: Laws 1982, LB 375, 4.

46-673.03. Groundwater management plan; director; review; duties. The director shall review any groundwater management plan submitted by a district to ensure that the best available studies, data, and information were utilized and considered and that such plan is supported by and is a reasonable application of such information. The director shall consult with the Conservation and Survey Division of the University of Nebraska, the Natural Resources Commission, and such other state or federal agencies the director shall deem necessary when reviewing plans. Within ninety days after receipt of a plan, the director shall transmit his or her findings, conclusions, and reasons for approval or disapproval to the district submitting the plan.

Source: Laws 1982, LB 375, 5.

46-673.04. Groundwater management plan; disapproved by directors; district; duties. If the director disapproves a groundwater management plan, the district which submitted the plan shall, in order to establish a management area, submit to the director either the original or a revised plan with an explanation of how the original or revised plan addresses the issues raised by the director in his or her reasons for disapproval. Once a district has submitted an explanation pursuant to this section, such district may proceed to schedule a hearing pursuant to Section 46-673.05.

Source: Laws 1982, LB 375, 6.

In order that the Board of Directors of the Lower Loup Natural Resources District (LLNRD) develop a GWMP to meet the requirements of Sections 46-673.01 through 46-673.04, the Board submits this plan.

The District has a long history of involvement in the gathering of data to assess the condition of both ground and surface waters.

The LLNRD began the planning process for protection of the water resource base long before it became popular to talk of declining water tables and groundwater pollution. An historical review of Board action to develop programs that were designed to assess the resource base are as follows:

June, 1974 - Before the NRDs celebrated their second birthday, the LLNRD made a decision to provide funding for a groundwater study in the Mira Valley area of Valley County.

August, 1974 - The District amended the budget to provide funds to initiate a static well monitoring program.

June , 1975 - First water quality hearings in Loup Basin at NRD Headquarters office in Ord.

July, 1975 - Board directs the establishment of a water quality monitoring program.

September, 1975 - Board reviewed first draft of Rules and Regulations for Administration of Groundwater Management Act.

October, 1975 - Adopted Rules and Regulations for Administration of the Groundwater Management Act.

October, 1975 - Provided funds to Conservation and Survey Division for first NRD-sponsored recorder well. Well to be a joint effort among the C&SD, USGS, and NRD.

December, 1975 - First discussion of water modeling on the South Loup River.

October, 1976 - Buffalo County residents propose advisory group on groundwater problems.

November, 1976 - Board entered into an agreement to participate with Central Platte NRD, USGS, and C&SD on the groundwater study of the area between the Loup, South Loup,and Platte Rivers.

March, 1977 - Board established Hot-Line Crop Water Use Program.

July, 1977 - Board agrees to participate and make available Irrigation Water Management equipment.

November, 1977 - Board receives first report on water quality sampling in NRD.

February, 1978 - District makes first publication on use of electrical resistance block for irrigation scheduling.

April, 1978 - Board takes first action to establish Pumping Plant Efficiency Test Program.

May, 1978 - Board provides authorization for funding Pumping Plant Efficiency Program.

April, 1979 - Board authorizes installation of recorder wells in Beaver Valley in Wheeler, Boone, and Garfield Counties.

September, 1979 - Landowners and counties request control area for Loup, Garfield, Wheeler, and Boone Counties. There were 78 people in attendance.

Board authorizes establishing a Stream Gaging Program for Beaver Creek in Wheeler and Boone Counties.

October, 1979 - Meetings held to assess public interest in establishing control area.

Board adopts Resolution asking the Director of the Department of Water Resources to hold hearing on control area in Loup, Garfield, Wheeler, and Boone Counties.

November, 1979 - Department of Water Resources responds to request and set hearing date for February 28, 1980.

December, 1979 - Custer County group appears to seek advice on control area for vicinity of proposed Comstock power plant.

Group from Nance, Platte, and Merrick Counties express interest in control area.

February, 1980 - Board approves testimony for control area hearing on February 25th.

May, 1980 - Board reviews the Director of the Department of Water Resources denial for control area and decides not to appeal to courts.

October, 1980 - Board takes action to participate with the Bureau of Reclamation and others on the Cedar Valley Water Management Study.

January, 1981 - Approved contract with NRC on installation of transect wells in Garfield, Wheeler, and Boone Counties.

April, 1981 - Board provides funding for Deep Percolation Study.

October, 1984 - Board reviews draft of the Groundwater Management Plan preparation guide. Board authorizes funding to participate.

November, 1984 - Board reviewed material from Norfolk workshop on Groundwater Management Plans.

May, 1985 - Discussion of Groundwater Management Plan formulation as agenda item.

June, 1985 - Discussion of Groundwater Management as agenda item.

July, 1985 - Discussion of Groundwater Management as agenda item.

This previous material provided an insight into the history of District involvement in programs that affect the management of both ground and surface water resources. The next section will be The Plan the District will use to manage groundwater resources.

Goal - Groundwater Quantity

It shall be the goal of the Lower Loup Natural Resources District to maintain a perpetual source of groundwater for all uses -- domestic, agricultural, and industrial.

Objectives - Groundwater Quantity

To insure the maintenance of the groundwater reservoir, the District will, as part of this plan:

1. Adopt the Spring, 1982, static water levels as documented by the District as the base line top of the groundwater reservoir;

2. Adopt the District map (Figure 4) indicating the 10 subdivisions as areas in which management plans will be implemented under declining conditions;

3. Continue present monitoring within the District. In the event any well or group of wells has maintained a 10-foot decline below the Spring, 1982, base line levels for 3 consecutive years, it shall be designated as a critical well or wells;

4. The Board will, in an area with a designated critical well, expand the static well monitoring program to provide needed data for management area designation;

5. The Board will simultaneously, with #3, notify water users within a 36 square mile area projecting 3 miles in all directions of the critical well or wells of the conditions. The Board shall then assess the land use, water usage, number of active irrigation wells, and any other pertinent factors to make recommendations on voluntary water conservation practices;

6. In any groundwater reservoir that has a saturated thickness of less than 100 feet, the trigger to begin the process in #3 shall be 10% of the saturated thickness;

7. In the case of #3 or #5, if declines continue at a rate to equal 30% of the initial decline in the critical well and in other wells within the 36 square mile area over a 3-year period, the District shall establish a groundwater management area. Said management area shall extend not less than an area projecting 9 miles in all directions from any critical well or wells. In no case will management area boundaries cross into adjacent subdivisions or Natural Resources Districts. Boundaries greater than 9 miles in radius can be adopted at the District's discretion;

8. In the case where declines appear to cross NRD boundaries, the affected NRD shall be notified of the conditions and District's actions;

9. Once a groundwater management area has been established, through due process, the District may require a combination of any of the options listed in Part B and C under this plan; Groundwater Management Options - Quantity;

10. Management area designations for subdivisions 7, 8, 9, and that part of 10 south of the Loup River will be established through coordination with the Central Platte NRD. The Board reserves the right to exercise independent judgment if it determines that the management options proposed are too lenient or severe;

11. At any time it becomes apparent to the Board that a management area designation will not bring declines into conformance with the goals of this plan, the District will take appropriate action to create a control area in accordance with appropriate statutes.

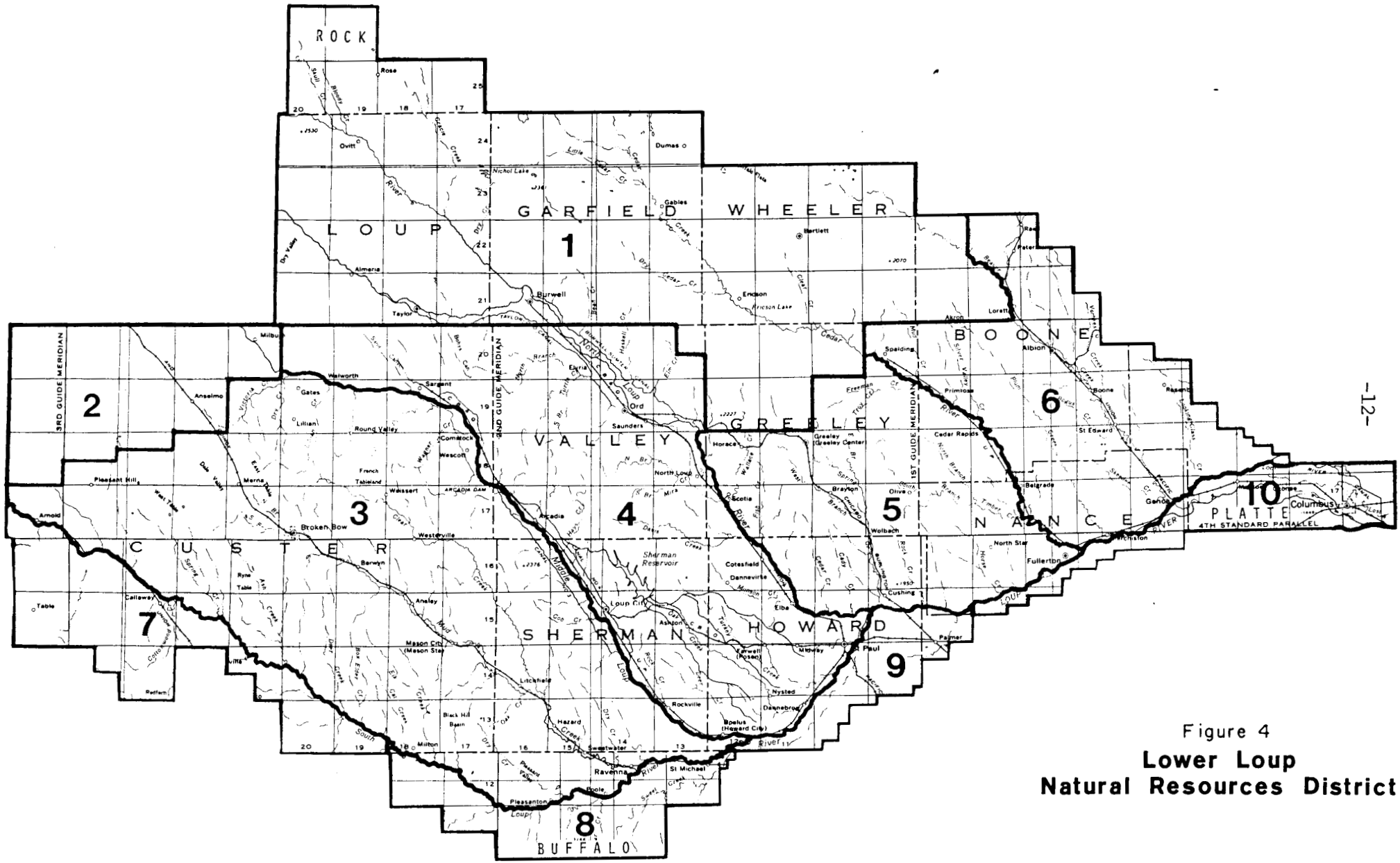


Figure 4
Lower Loup
Natural Resources District

Groundwater Management Options - Quantity

A. Water users voluntary options to conserve water:

1. Construction and operation of reuse pits.
2. Use of irrigation scheduling equipment.
3. Use of Crop Water Use information.
4. Change to more water efficient crop.
5. Furrow diking.
6. Cablegation.
7. Other

B. Quantity Management Area Options - Natural Resources District:

1. Well spacing.
2. Require water meters and report usage.
3. Develop an allocation system for groundwater withdrawal.
4. Adopt a system of rotation among groundwater users.
5. District initiate complaints for improper runoff.

C. Quantity Control Area Options - Natural Resources District:

1. All options included in Section 46-666, RRS, Nebr., 1943. Section 46-666 provides that Natural Resources Districts can, with concurrence from the Department of Water Resources, establish groundwater control areas with the possibility of invoking well drilling moritoriums.

Goal - Groundwater Quality

It shall be the goal of the Lower Loup Natural Resources District to maintain the quality of groundwater in the groundwater reservoir to within tolerances established by the Nebraska Department of Environmental Control and the Nebraska Department of Health.

Objectives - Groundwater Quality

In order that the integrity of the quality of groundwater reservoir be maintained for all uses, the District will, as part of this plan:

1. The District recognizes that the major threat to groundwater pollution within their jurisdiction will be in the form of nitrate pollution. Recognized sources of nitrate pollution are from agriculture, urban sewage treatment, individual septic systems, and industry. As pollution from manmade compounds becomes more readily recognizable, standards and maximum tolerances will be established by the Board;

2. The District will adopt a map (Figure 5) indicating 28 subdivisions in which groundwater quality samples are being taken. When the average nitrate-nitrogen level in 25% of the domestic wells presently being sampled within a subdivision reaches an average of 8 mg/l, the District will (a) increase its sampling program to 30% of the identifiable domestic wells within that particular subdivision; (b) attempt to identify contamination sources whenever practical and possible; and (c) whenever appropriate, the District, in cooperation with UNL Institute of Agriculture and Natural Resources, Cooperative Extension Service, Soil Conservation Service, and others, initiate a public information and education program on the condition and alternatives for use of domestic water supplies;

3. The District will establish groundwater quality management areas within the subdivisions when 30% of the total sampling sites show a sustained 8 mg/l nitrate-nitrogen level over a 3-year period;

4. The District will, when afforded the opportunity and when budget constraints permit, participate in studies, research, and programs designed to reduce the threat of groundwater pollution; and

5. Maintain Board and staff awareness of new chemicals and restrictions on usage of chemicals.

Groundwater Management Options - Quality

A. Growers voluntary options to abate groundwater pollution:

1. Obtain soil tests from competent laboratory.
2. Restrict water application to reduce leaching.
3. Become familiar with soil types, limitations, and capabilities in his farming unit.
4. Become competent in the usage of all chemicals.
5. Irrigation scheduling.
6. Use Crop Water Use information.
7. Water management equipment.
8. Other

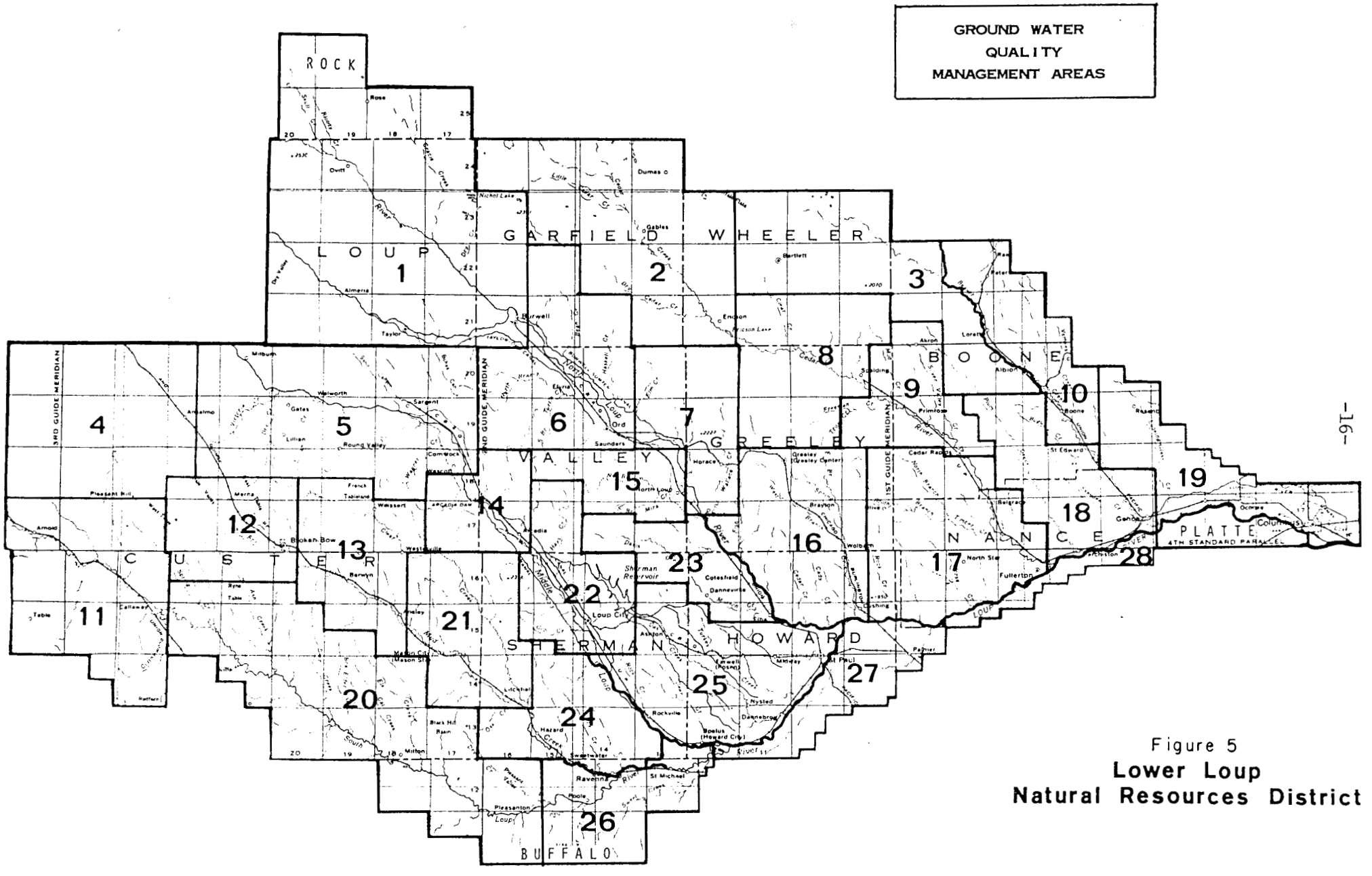


Figure 5
Lower Loup
Natural Resources District

B. Quality Management Area Options - Natural Resources District:

1. Well spacing.
2. Require water meters and report use.
3. Develop allocation system for groundwater withdrawal.
4. Require irrigation scheduling.
5. Adopt a system of rotation among groundwater users.
6. Expand water quality sampling program.

C. Quality Control Area Options - Natural Resources District:

1. All options included in Section 46-666, RRS, Nebr., 1943. Section 46-666 provides that Natural Resources Districts can, with concurrence from the Department of Water Resources, establish groundwater control areas with the possibility of invoking well drilling moritoriums.

RESPONSE TO LEGISLATIVE CONCERN

The legislation that mandated groundwater management plans called for response on specific concerns. This section is intended to provide District response to those concerns not answered within other specific sections of the Plan.

Recharge

The recharge of the groundwater reservoir is an important and natural concern. Water management officials are usually not concerned with recharge until declining groundwater supplies require a look in that direction.

Recharge of the groundwater reservoir is a slow continuing process. It is an ongoing process that depends on several factors, such as the amount of precipitation, the movement of groundwater, the types of soils that overlay the groundwater reservoir, the movement of surface water in and out of the reservoir, and artificial sources from water impoundment structures.

The movement of groundwater within the Loup River Basin is generally from the north and west out of Nebraska's Sandhills to the southeast. This in itself provides the District with recharge from one of the largest natural reservoirs in the world. While groundwater movement is slow (from a few feet to hundreds of feet per year) the recharge potential from streams is significant.

The soils within the Sandhills region give up their water rapidly. Valentine soils will only hold about three-quarters of an inch per foot of depth. This provides for rapid downward and lateral movement of precipitation.

The heavier soils in the loess hills do not give up water to downward movement easily. In general terms, the loess soils hold about three inches per foot. Consequently, recharge from precipitation is slower. Man can and does capture overland runoff in dams and other conservation practices. Recharge is then inversely proportional to the overburden above the aquifer.

Recharge from impoundments is evident by examining Figure 30 that shows the rise in groundwater levels from storage in Sherman Reservoir. The diversion of surface waters from the Sargent, Farwell, Middle, and North Loup Irrigation Projects creates recharge along their canals and laterals (see Figure 19).

It is estimated that an average ditch irrigation project will lose up to 50% through seepage and evaporation. Recharge from the Twin Loups Project will not be as great because the main canal is concrete lined and most of the smaller canals and laterals will be in pipe. The Davis Creek Dam will provide some aquifer recharge.

The Nebraska Department of Water Resources provides information, through the NRC Data Bank, on privately-owned dams that meet certain storage and height requirements. The latest report indicates that 113 dams with 22,568 acre-feet of normal storage are inventoried within the Lower Loup NRD. It is evident that a greater

percentage of these dams lose water rapidly, resulting in recharge of the groundwater reservoir.

Recharge from precipitation within the 1.1 million acres of Sandhills would provide 550,000 acre-feet of recharge annually (using 25% recharge, and a 24" mean annual precipitation). The 4 million acres within the dissected plains would provide 800,000 acre-feet to the groundwater reservoir.

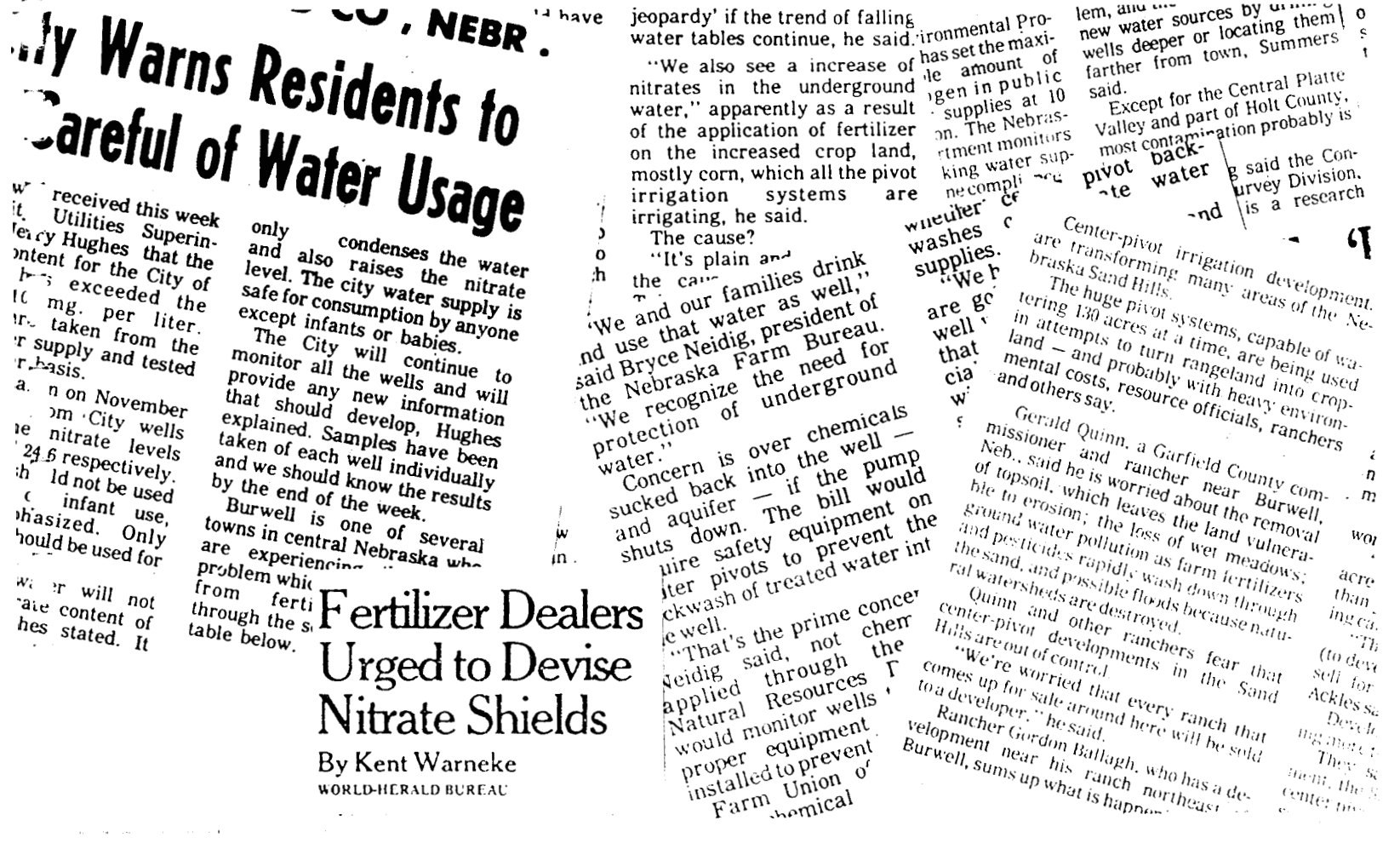
Groundwater Quality Concerns

Most all resource management officials will agree that the general public does exhibit a great deal of concern about the quality of groundwater. You can always find disagreement to varying degrees on the need for regulation of the quantity of groundwater used, but seldom do you find argument over the need for quality protection.

Local, state, and national press coverage of groundwater pollution conditions has brought the subject into sharp focus. Quality concerns were largely responsible for the local support for a control area designation in the Sandhills region.

The water quality section of this Plan will demonstrate the District's on-line water quality sampling program. What it doesn't report on is the number of individual "walk-in" samples performed for concerned citizens. The District performs 137 tests annually from this source.

Several news clippings are included to support public concern:



...ly Warns Residents to ...areful of Water Usage

...received this week ...t. Utilities Superin... ...ency Hughes that the ...ontent for the City of ... exceeded the ...0 mg. per liter. ...taken from the ...r supply and tested ...basis.

...n on November ...om City wells ...e nitrate levels ...24.6 respectively. ...ld not be used ... infant use, ...hasized. Only ...hould be used for

...r will not ...ate content of ...hes stated. It

...have ... only condenses the water and also raises the nitrate level. The city water supply is safe for consumption by anyone except infants or babies.

The City will continue to monitor all the wells and will provide any new information that should develop, Hughes explained. Samples have been taken of each well individually and we should know the results by the end of the week.

Burwell is one of several towns in central Nebraska who are experiencing ... problem whic... from ferti... through the s... table below.

Fertilizer Dealers Urged to Devise Nitrate Shields

By Kent Warneke

WORLD-HERALD BUREAU

jeopardy' if the trend of falling water tables continue, he said.

"We also see a increase of nitrates in the underground water," apparently as a result of the application of fertilizer on the increased crop land, mostly corn, which all the pivot irrigation systems are irrigating, he said.

The cause?

"It's plain and ... the cau...

"We and our families drink ...nd use that water as well," said Bryce Neidig, president of the Nebraska Farm Bureau. "We recognize the need for protection of underground water."

Concern is over chemicals sucked back into the well — and aquifer — if the pump shuts down. The bill would ...uire safety equipment on ...ter pivots to prevent the ...ckwash of treated water int... ...e well.

"That's the prime concer... Neidig said, not chem... applied through the ... Natural Resources ... would monitor wells ... proper equipment ... installed to prevent ... Farm Union o... ...hemical

...ironmental Pro... has set the maxi... ...le amount of ...gen in public ... supplies at 10 ...on. The Nebras... ...rtment monitors ...king water sup... ...ne compli...

...wheuler ... washes ... supplies. "We h... are go... well ... that ... cia... w...

...lem, and the ... new water sources by drilling wells deeper or locating them farther from town, Summers said.

Except for the Central Platte Valley and part of Holt County, most contamination probably is ...

...pivot back... ...te water ...nd

...g said the Con... ...urvey Division, ... is a research

Center-pivot irrigation development are transforming many areas of the Nebraska Sand Hills.

The huge pivot systems, capable of watering 130 acres at a time, are being used in attempts to turn rangeland into cropland — and probably with heavy environmental costs, resource officials, ranchers and others say.

Gerald Quinn, a Garfield County commissioner and rancher near Burwell, Neb., said he is worried about the removal of topsoil, which leaves the land vulnerable to erosion; the loss of wet meadows; ground water pollution as farm fertilizers and pesticides rapidly wash down through the sand, and possible floods because natural watersheds are destroyed.

Quinn and other ranchers fear that center-pivot developments in the Sand Hills are out of control.

"We're worried that every ranch that comes up for sale around here will be sold to a developer," he said.

Rancher Gordon Ballagh, who has a development near his ranch northeast ... Burwell, sums up what is happen...

Supplemental Water Supplies

The Policy Issue Study on Supplemental Water Supplies by the Natural Resources Commission describes supplemental water as:

> "additional water provided to supply that which is lacking, i.e., needed or desired. Because water is unevenly distributed in time and space, storage and transportation are the key elements in any strategy to provide supplemental water. In this study, supplemental water is considered to be water which is made available for use within a specific area by moving it from one area to another and/or storing it for use at a later time. Supplemental water can be provided by constructing surface-water reservoirs, by adding to groundwater storage and by importing groundwater or surface water from another area. The objective of providing supplemental water is to balance the supply from available sources for the various uses."

Supplemental water for use within the Lower Loup NRD would normally be from surface water sources. A look at the surface water section of this Plan will demonstrate those sources that are presently being used through the organized Irrigation and Reclamation Districts. Other needs do exist in the lower Cedar River area and within Nance County south of the Loup River. The needs of the Cedar River areas will be filled if the Cedar Valley Project becomes a reality. The potential does exist for the Nance County area; however, the water right held by the Loup Power District makes diversion from that source more difficult. There was, at one time, a proposal for a major on-stream impoundment on the Loup River in Nance County. Environmental concerns, lack of public support, and changes in Federal policy on water projects makes development difficult, if not impossible, in the short-term. Long-term groundwater conditions may make these types of projects feasible.

The potential does exist for smaller, more localized projects to supply supplemental water to individual farm units or multi-farm units.

Subirrigation Uses

Use of subirrigation for crop production is limited primarily to the wetland areas in Loup; Garfield; Wheeler; and the Sandhills area of Boone County; and to some extent, the bottomlands in river valleys. Crop use is for native hay and alfalfa production.

One of the greatest concerns by conservationists is the destruction of wetlands by drainage. To support grain production, many thousands of once noncontributing acres are now being drained.

Subirrigated areas do lose considerable water to evapotranspiration (ET). If water tables decline, ET declines improving the availability of and need for groundwater for pump irrigation.

Presently, water supplies within the area subject to use as subirrigated lands are adequate and do not presently indicate a concern even for the long-term.

Economic Value of Water

The highest use of groundwater is, by nature, for domestic use. The relatively small amounts used for domestic users as compared to uses for crop production places the overall value on agricultural production within the Lower Loup NRD. If groundwater were to become a scarce commodity, the greater value would then swing to domestic use.

One important fact is becoming quite evident--producers are beginning to realize that it may be more expensive to try to squeeze that last bushel of production rather than farm for a moderate yield and cut expenses.

Conclusions and Observations

The wounds of a painful merger had not yet healed when the Board of Directors in 1974 amended the FY-1975 budget to include funds to initiate a static water level monitoring program. Less than 1 year later, the Board provided the leadership to initiate a comprehensive water quality testing program. The Board further demonstrated its willingness to come to grips with the Quantity-Quality issues when, in 1975, it provided funds to the Conservation and Survey Division to install permanent recorder wells.

Over the years, the make-up of the Board has changed. What has not changed is the Board's commitment to fulfill its responsibility to protect the resource base of the District.

The Board had built the bandwagon in 1974 and 1975. They made a place for the State with a request for a control area designation for the Sandhills in 1979. The State chose not to join. The state passed up numerous opportunities to join when legislative efforts to address groundwater issues failed to gain support in the early '70's.

In 1984, Groundwater Management Plans were mandated. The District has had groundwater management programs in place since early 1975.

Now that legislation has caught up, the District is willing and capable to provide the leadership they believe is necessary considering conditions and needs.

Within the 7,992 square miles in the District, there lies a tremendous potential for further development of the use of groundwater. The Groundwater Reservoir Management Policy Issue Study makes some projections on future use of groundwater. In the Appendix, they estimate within the Lower Loup Natural Resources District a potential for 1,698,582 additional acres to be available for irrigation. The Appendix also makes projections on the time for

maximum development to range from a low of 18.8 years in Buffalo County to 139 years for Loup County. These projections would indicate, and so does the Central Platte-Loup Study, that Buffalo and Platte Counties will reach ultimate development first. The District agrees that both will require careful observation for trends in both Quantity and Quality problems. The Plan Goals and Objectives meet these needs.

Water quality conditions within the District are good. The District has 240 stations in the domestic sampling rogram. The transect wells provide 72 stations, Beaver Creek has 8 sampling points in programs that are published. In addition, a new program involves regular sampling of irrigation wells. As stated before, 137 samples are tested annually for individuals.

The domestic program began in 1977. Tests for different parameters are included on the inside cover of Table 12. This program has, alone, involved over 17,000 individual tests.

The District average for 2,223 nitrate-nitrogen tests from 1977-1985 is 2.5 mg/l.

This section concludes the material on Plan requirements and policy established by the Board of Directors. The following material in this Plan is in the form of an appendix that provides the data to support the policy goals and objectives.

GROUNDWATER

THE OCCURRENCE

INVENTORY OF USERS

GROUNDWATER - THE OCCURRENCE

This section covers the occurrence of groundwater in the reservoir. A description of the principal aquifer is mandated by the legislation and does serve an important function in understanding more about the occurrence of groundwater. One should realize that information documenting the limits of the principal aquifer are based on limited data. While the top of the saturated zone (top of the aquifer) can be well documented, the base of the principal aquifer is based on a series of geologic borings.

Principal Aquifer

Although the use of names that refer to the geologic ages of different rock units may be confusing to the lay audience when discussing the occurrence of groundwater resources, a basic understanding of how specific aquifer materials relate to the entire sequence of sediments that represent the geologic history of the earth is helpful. Table 2 illustrates how the various rock units and aquifers mentioned in the following discussion fit within the geologic time scale.

( ) = YEARS FROM BEGINNING OF THAT GEOLOGIC TIME.

TABLE 2

ERA	PERIOD	EPOCH	GROUP OR FORMATION	AQUIFERS		
CENOZOIC	QUATERNARY	HOLOCENE (12,000)		PRINCIPAL AQUIFER *	UNCONSOLIDATED QUATERNARY/TERTIARY SEDIMENTS	WATER DEPOSITED SAND, GRAVEL, SILT, AND CLAY, AND WIND-DEPOSITED SAND AND SILT
		PLEISTOCENE (600,000)				
	TERTIARY	PLIOCENE (10 M)				
		MIOCENE (25 M)	OGALLALA GP		OGALLALA SEDIMENTS	SAND & SILT, SANDSTONE, CLAY
		OLIGOCENE (35 M)	ARIKAREE GP	NOT AN AQUIFER	PREOGALLALA TERTIARY SEDIMENTS	PRIMARILY SILTSTONES & CLAY, CONTAINS SOME SAND & SANDSTONE, MAY BE CONSIDERED PRINCIPAL AQUIFER TO WEST.
			WHITE RIVER GP			
		EOCENE (55 M)	ROCKS OF THIS AGE PROBABLY NOT PRESENT IN THIS AREA			
		PALEOCENE (65 M)				
MESOZOIC	CRETACEOUS	LATE CRETACEOUS (135 M)	PIERRE FM	NOT AN AQUIFER	SHALE	
			NIOBRARA FM	SECONDARY AQUIFER X	SHALY CHALK AND LIMESTONE - CAN YIELD WATER TO WELLS WHERE FRACTURED	
			CARLILE FM	NOT AN AQUIFER	SHALE	
			GREENHORN FM	NOT AN AQUIFER	LIMESTONE	
			GRANEROS FM	NOT AN AQUIFER	SHALE	
		EARLY CRETACEOUS	DAKOTA GP	SECONDARY AQUIFER X	SANDSTONE AND SHALE - WATER MAY BE HIGHLY MINERALIZED.	
	JURASSIC (180 M)	ROCKS OF THIS AGE PROBABLY NOT PRESENT IN THIS AREA.				
	TRIASSIC (230 M)	ROCKS OF THIS AGE PROBABLY NOT PRESENT IN THIS AREA.				
PALEOZOIC	PERMIAN	UNDIFFERENTIATED		(280 M)	CONTAIN LIMESTONES AND DOLOMITES THAT MAY PROVIDE MODERATE TO LARGE WELL YIELDS, BUT WATER IS LIKELY TO BE HIGHLY MINERALIZED.	
	PENNSYLVANIAN	UNDIFFERENTIATED		(310 M)		
	MISSISSIPPIAN	UNDIFFERENTIATED		(345 M)		
	DEVONIAN	UNDIFFERENTIATED		(405 M)		
	SILURIAN	UNDIFFERENTIATED		(425 M)		
	ORDOVICIAN	UNDIFFERENTIATED		(500 M)	CONTAIN SANDSTONES THAT MAY PROVIDE LARGE WELL YIELDS, BUT WATER IS LIKELY TO BE HIGHLY MINERALIZED.	
	CAMBRIAN	UNDIFFERENTIATED		(600 M)		
PRE-CAMBRIAN	(2 B TO 4.5 B)					

The occurrence of groundwater (description of aquifers) within the Lower Loup NRD can be described most simply by examining representative geologic cross-sections and by utilizing the concept of "the Principal Aquifer" which was used by the Conservation and Survey Division in preparing technical information for the Policy Issue Study on Groundwater Reservoir Management, a part of the State Water Planning and Review Process.

The lower limit (boundary) of the Principal Aquifer in the Lower Loup NRD generally is considered to be the base of the Ogallala Group of sediments. Throughout most of the NRD, the base of the Ogallala Group coincides with the top of Cretaceous bedrock, either the Pierre Shale (throughout most of the NRD), the Niobrara Formation (in the eastern part of the NRD - Boone, Platte and Nance Counties), or the Carlile Shale (extreme eastern part of the NRD-Platte County). In some parts of the NRD, primarily the western portions, pre-Ogallala Tertiary sediments occur between the base of the Ogallala Group and the top of the Cretaceous bedrock. These pre-Ogallala Tertiary sediments are not included as part of the Principal Aquifer within the Lower Loup NRD. The lower boundary of the Principal Aquifer is illustrated on the map entitled, "Configuration of Base of Principal Aquifer (see Figure 6).

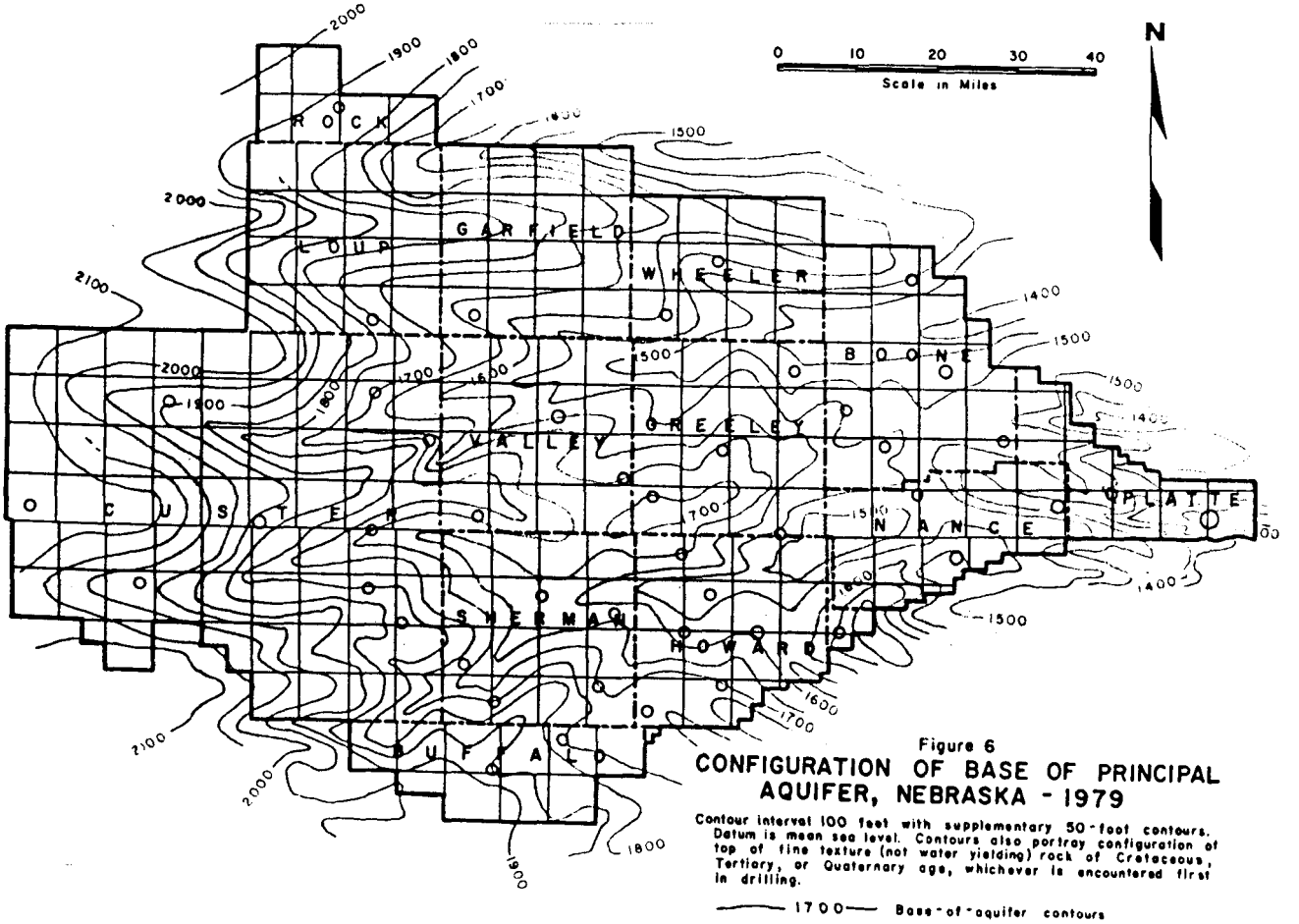


Figure 6
CONFIGURATION OF BASE OF PRINCIPAL AQUIFER, NEBRASKA - 1979

Contour interval 100 feet with supplementary 50-foot contours. Datum is mean sea level. Contours also portray configuration of top of fine texture (not water yielding) rock of Cretaceous, Tertiary, or Quaternary age, whichever is encountered first in drilling.

——— 1700 ——— Base-of-aquifer contours

The upper boundary of the principal aquifer is the water table, which is the top of the saturated zone (see Figure 7, entitled, "Configuration of the Water Table, Spring 1979", and see location of water table on cross-sections). The water-table configuration generally coincides with the land surface topography. Where the water table is close to the land surface, it generally mimicks the local topography; but where it is at greater depths below the land surface it will mimick more regional topographic trends but not smaller scale local topography. Unlike the base of the Principal Aquifer, which is a fixed surface, the water table surface does fluctuate both seasonally and over longer time periods. However, these fluctuations generally are quite small in magnitude compared to the total thickness of the aquifer. The depth to the water table or top of Principal Aquifer varies throughout the NRD, ranging from 0 feet to as much as 300 feet.

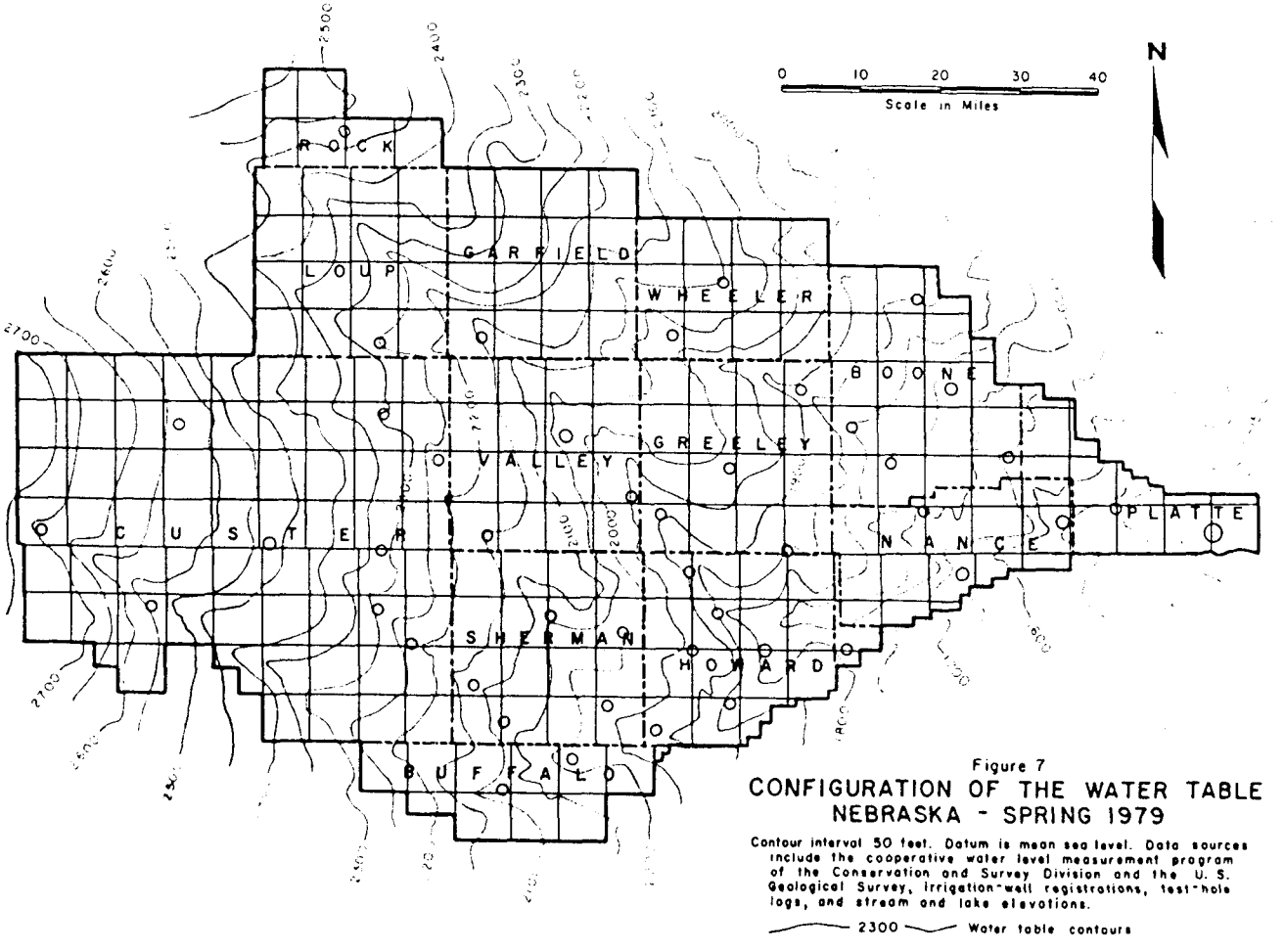


Figure 7
CONFIGURATION OF THE WATER TABLE
NEBRASKA - SPRING 1979

Contour interval 50 feet. Datum is mean sea level. Data sources include the cooperative water level measurement program of the Conservation and Survey Division and the U. S. Geological Survey, irrigation-well registrations, test-hole logs, and stream and lake elevations.

2300 Water table contours

All the geologic material (sediments) between the base of the Principal Aquifer and the water table, regardless of grain size (i.e. gravel, sand, silt, clay), are considered as part of the Principal Aquifer. The thickness of saturated sediments is shown on the map entitled, "Thickness of the Principal Aquifer," Figure 8. Although only coarse-textured materials such as sand and gravel will readily yield water to wells at rates necessary for most moderate to large scale needs, water stored in the finer grained materials (silt and clay) can be an important source of water where they are interbedded with coarser grained materials.

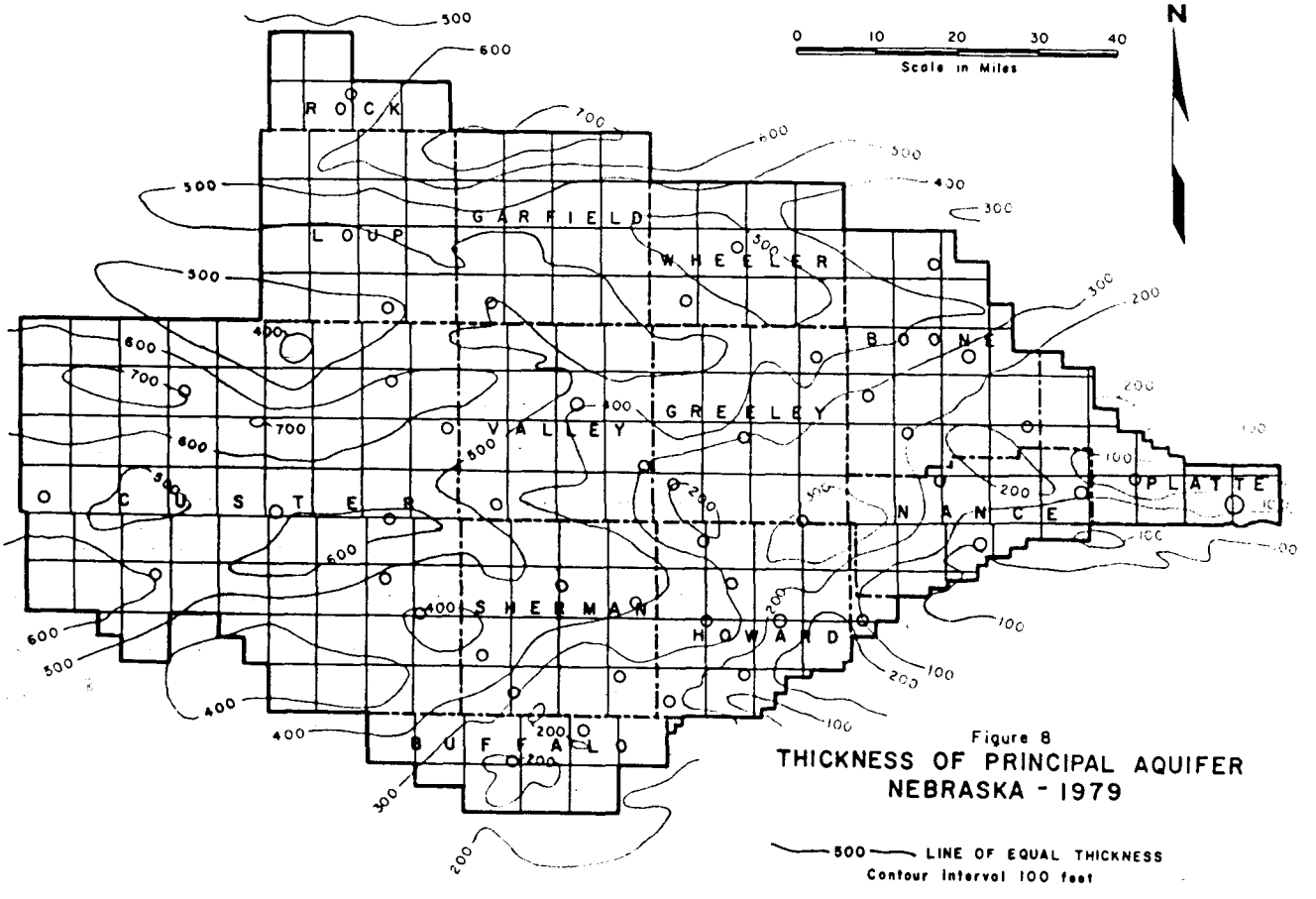


Figure 8
THICKNESS OF PRINCIPAL AQUIFER
NEBRASKA - 1979

The ability to obtain water from a well at a certain rate depends on the permeability and total thickness of the available aquifer materials. The parameter that expresses the ability of an aquifer to yield water to wells is "transmissivity." The transmissivity of the Principal Aquifer is shown on the map entitled, "Transmissivity of the Principal Aquifer" shown in Figure 9. It should be noted that the transmissivity values in Figure 9 are for the entire thickness of the Principal Aquifer. Yields of wells that penetrate only a part of the Principal Aquifer depend on how much of the aquifer was penetrated, the grain-size of the specific materials penetrated by the well, and where within the aquifer the well is screened.

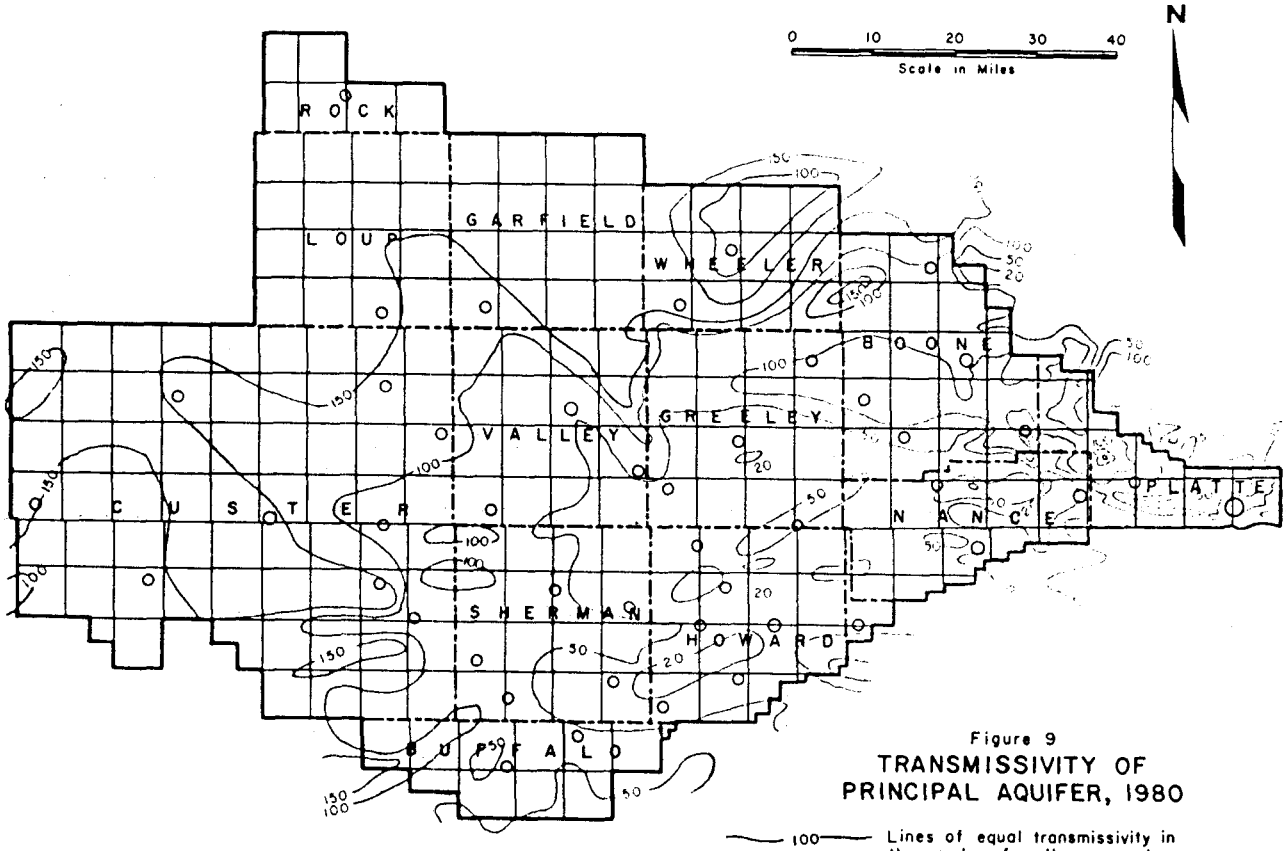


Figure 9
TRANSMISSIVITY OF PRINCIPAL AQUIFER, 1980

—100— Lines of equal transmissivity in thousands of gallons per day per foot.

Although the term Principal Aquifer defines a single unit of materials for which a series of descriptive maps have been prepared, its character is actually quite complex, consisting of interbedded sand, gravel, silt, clay, sandstone, and siltstone. Again, it is important to stress that the principal aquifer includes both coarse-grained materials such as sand and gravel, which we usually think of as aquifer materials, and the associated fine-grained materials. Because of the complex interbedded nature of these materials, it is difficult to delineate specific units that are regionally continuous. The Principal Aquifer, however, can be subdivided into two general subunits, the Ogallala Group of sediments and the unconsolidated Quaternary/Tertiary sediments.

The Ogallala Group of sediments, which are delineated on the cross sections, consist primarily of unconsolidated to semiconsolidated silt and sand with interbedded silty clay and some gravel. The thickness of the Ogallala Group ranges from as much as 600 feet in the western part of the NRD to 0 feet along the boundary of its easternmost occurrence in Nance and Platte Counties (see "Geologic Bedrock Map" - Figure 10).

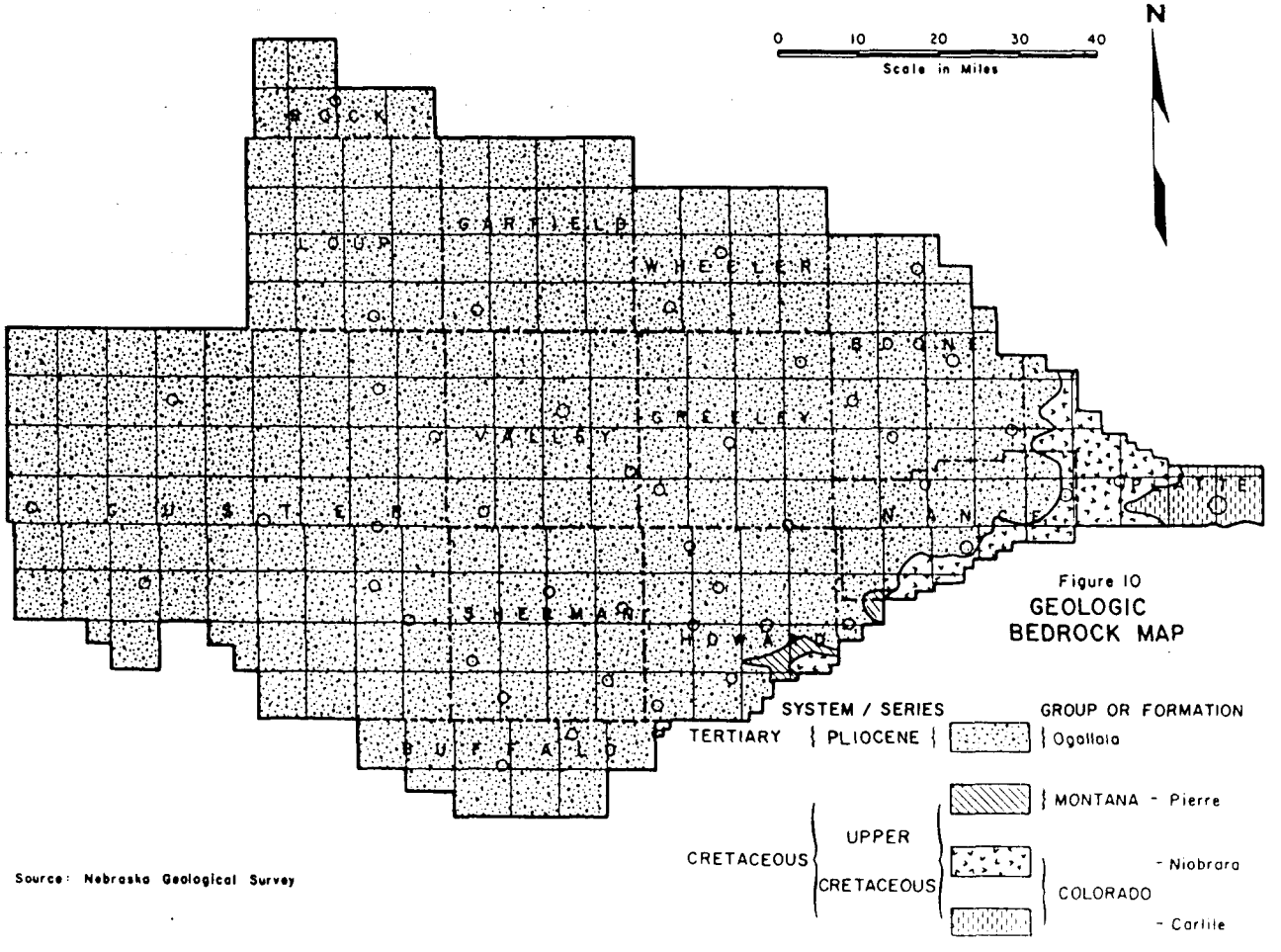


Figure 10
GEOLOGIC BEDROCK MAP

Source: Nebraska Geological Survey

Although the Ogallala Group is a separate stratigraphic unit, because it is often quite sandy, it generally is in good hydraulic connection with the overlying unconsolidated Quaternary/ Tertiary sediments. Thus, the reason for the Ogallala Group being included with those sediments as a single aquifer system.

The unconsolidated Quaternary/Tertiary sediments are quite complex in character and include water-deposited sand, gravel, silt, and clay, and wind-deposited sand and silt. This group of sediments includes materials which have been referred to in previously published reports as " Pleistocene deposits." Use of the term Pleistocene infers that the sediments were deposited during a specific time period. Recent thought is that some of the sediments (particularly the sands and gravels) that overlie the Ogallala Group may be older than previously thought and may actually be Pliocene Age. Thus, use of the term unconsolidated Tertiary/Quaternary sediments avoids possible misuse of specific geologic names.

The complexity of the unconsolidated Quaternary/Tertiary sediments is illustrated on the various cross sections. The most significant sediments for groundwater utilization are the sand and gravel deposits. The occurrence and thicknesses of sand and gravel deposits throughout the NRD is variable (see cross sections). Generally, the sand and gravel is at the base of the unconsolidated Quaternary/Tertiary sediments, resting on top of the Ogallala Group. In areas that have adequate thickness of sand and/or gravel, moderate to large well yields (500-1000 gallons per minute) generally can be obtained from the Quaternary/Tertiary sediments. Where only small thicknesses of sand and/or gravel are present, well yields will be lower.

In areas where large thickness of sand and gravel are present in the unconsolidated Quaternary/Tertiary sediments, high capacity wells, such as municipal or irrigation, may penetrate only those deposits and may not penetrate the deeper Ogallala Group. Wells installed more recently (1970s) will commonly penetrate the Ogallala Group in addition to the shallower sand and gravel. Where adequate thicknesses of shallow sand and gravel are absent, some large capacity wells may be completed solely in the Ogallala Group. Because the Ogallala Group generally is finer-grained, a greater thickness must be penetrated to obtain well yields similar to those obtained for wells in the sand and gravel.

Confined and Unconfined Aquifers

The Principal Aquifer generally is considered to be an unconfined aquifer (in a regional sense) because its uppermost surface is defined by the water table (the surface at which the water pressure is equal to atmospheric pressure). However, because of the complex interbedded nature of different types of materials within the Principal Aquifer, there are instances where layers of coarse-grained permeable materials are overlain and underlain by much finer grained and less permeable materials. In such a case, the layer of coarse-grained material may be considered to be a separate aquifer or a subaquifer of the larger Principal Aquifer

that exhibits characteristics of a confined aquifer. An aquifer is considered confined in the sense that the movement of water either into or out of the aquifer is impeded by the surrounding beds of lower permeability. Aquifers that are confined have different responses to pumping than do unconfined aquifers. The water level drawdown in a well pumping from a confined aquifer will be greater than for a well pumping at the same rate from an unconfined aquifer.

The degree of confinement of an aquifer or a specific layer within a complex aquifer depends on the permeability contrast between the coarse-grained materials and the fine-grained materials. Also, labeling an aquifer as confined and unconfined depends on what scale it is being evaluated on. No geologic material is absolutely impermeable; thus, an aquifer is never totally confined, in an absolute sense. In natural geologic settings, a wide range of aquifer conditions exist, ranging from unconfined to confined. Actually, most aquifer conditions might best be considered as semiconfined.

Water levels in wells penetrating confined aquifers will rise to some level above the top of the aquifer (bottom of the confining bed). This level may be either above or below the water table and may even be above the land surface. In the later case, the well will flow freely at the land surface, resulting in a flowing artesian well. It should be noted, however, that not all flowing wells are associated with confined aquifers. Because the hydraulic head increases with depth in a groundwater discharge area, such as a stream, a well completed deeper within the aquifer in such a setting will have a water level that rises to a higher elevation than the water table and in some instances above the land surface. Flowing wells occur within the Lower Loup NRD, primarily along the upper reaches of Beaver Creek and Cedar Creek and in the stream valleys. The wells are all completed within the sand and gravel unit at the base of the unconsolidated Quaternary and Tertiary sediments and generally are between 100 and 150 feet deep. The wells appear to flow primarily because of their location in discharge areas, but may also be affected some by confining conditions within the sand and gravel.

Groundwater Movement

Knowledge about the movement of groundwater also is very important, especially when evaluating recharge to and discharge from the aquifer and when assessing the movement of contaminants that may be introduced to the aquifer. General directions of groundwater movement can be determined from the water table map shown in Figure 7. Groundwater generally flows along paths at right angles to the water table contours, from areas of higher water table elevations toward areas of lower water table elevations. If flow arrows are drawn on the water table map, one can see that the arrows originate at groundwater divides (where the water table contours bow out in a downstream direction) and terminate at streams or wetland areas. Generally, water will move only a few tens of miles from where it entered the aquifer as recharge to where it is discharged along a stream valley (as inflow to the stream or as evapotranspiration) or in a wetland area.

A more detailed evaluation of groundwater flow directions and the relationship between groundwater and surface water may be necessary in the future, but is beyond the current scope of plan at this time. In addition to understanding horizontal directions of groundwater movement, an understanding of the vertical movement within the aquifer will be important also, especially when assessing groundwater quality and contamination.

Secondary Aquifers

Within the Lower Loup NRD, the Principal Aquifer, as previously defined, is essentially the main economically usable aquifer. However, potential deeper aquifers do occur in the NRD. These include the Cretaceous Age Niobrara Formation and Dakota Group and some of the Cambrian and Ordovician Sandstones (see geologic chart, geologic bedrock map, and north-south "Stratigraphic Cross-Section, Figure 11 on next page).

Although the Cambrian and Ordovician Sandstones are important sources of water in Iowa and near Omaha, in the Lower Loup NRD they are too deeply buried and probably too highly mineralized to be of reasonable economic use.

The Niobrara Formation consists of a shaly chalk and limestone. In parts of northeastern Nebraska where the Niobrara Formation is fractured and creviced and is overlain by small thickness of unconsolidated deposits, it yields amounts of water adequate for domestic, municipal, and irrigation wells. The Niobrara Formation forms the bedrock surface in the eastern part of the Lower Loup NRD in Boone, Platte, and Nance Counties. Use of the Niobrara for a water supply is not documented in this area, however, it may be a potential source in some of the major river valleys, where overlying unconsolidated deposits are thin.

The Dakota Group (sandstone) is an aquifer in parts of eastern and northeastern Nebraska. Depth to the top of the Dakota Group in the NRD ranges from about 500 feet in the southeast (Platte County) to about 2000 feet in the west (Custer County). Because of the large depths and probable high mineralization of the water, the Dakota is not likely to be a significant aquifer throughout most of the NRD. However, its potential use must be considered, especially in the easternmost part of the NRD. At this time no wells within the Lower Loup NRD are known to obtain water from the Dakota Group.

Geologic Cross-Sections

Several geologic cross-sections are available to plot the occurrence of groundwater in the District. The Conservation & Survey Division - UNL is presently involved in a detailed geologic study of Garfield and Wheeler Counties. Field work on the detailed geologic drilling program is essentially complete.

NORTH-SOUTH STRATIGRAPHIC CROSS-SECTION FROM KNOX COUNTY TO WEBSTER COUNTY, NEBRASKA

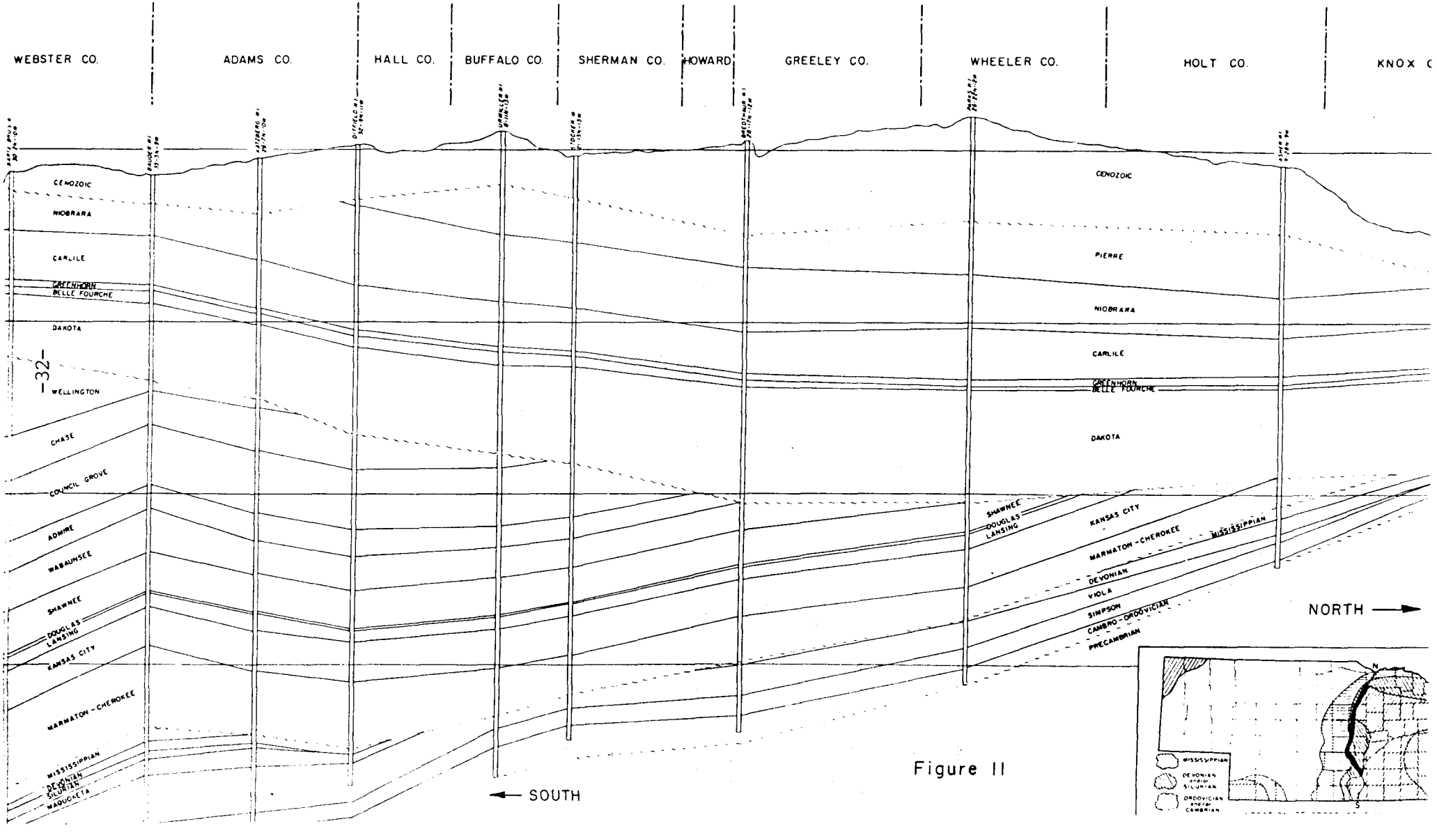


Figure 11

The description of the principal aquifer includes the unconsolidated Quaternary/Tertiary sediments and the Ogallala group. The availability of the geological cross-sections provides ground water managers with a valuable tool in the assessment of the use of the principal aquifer.

In order to provide a better understanding of the use of groundwater, it is helpful to know what parts of the aquifer are being utilized and for what purposes.

For purposes of this assessment, we will be referring to a series of geological cross-sections from geological borings as shown on the District map, Figure 12.

The depth of Quaternary/Tertiary sediments are such that most all of the stock and domestic wells are within this formation. This is evidenced by the fact that most of these wells are within 100 to 200 feet in depth.

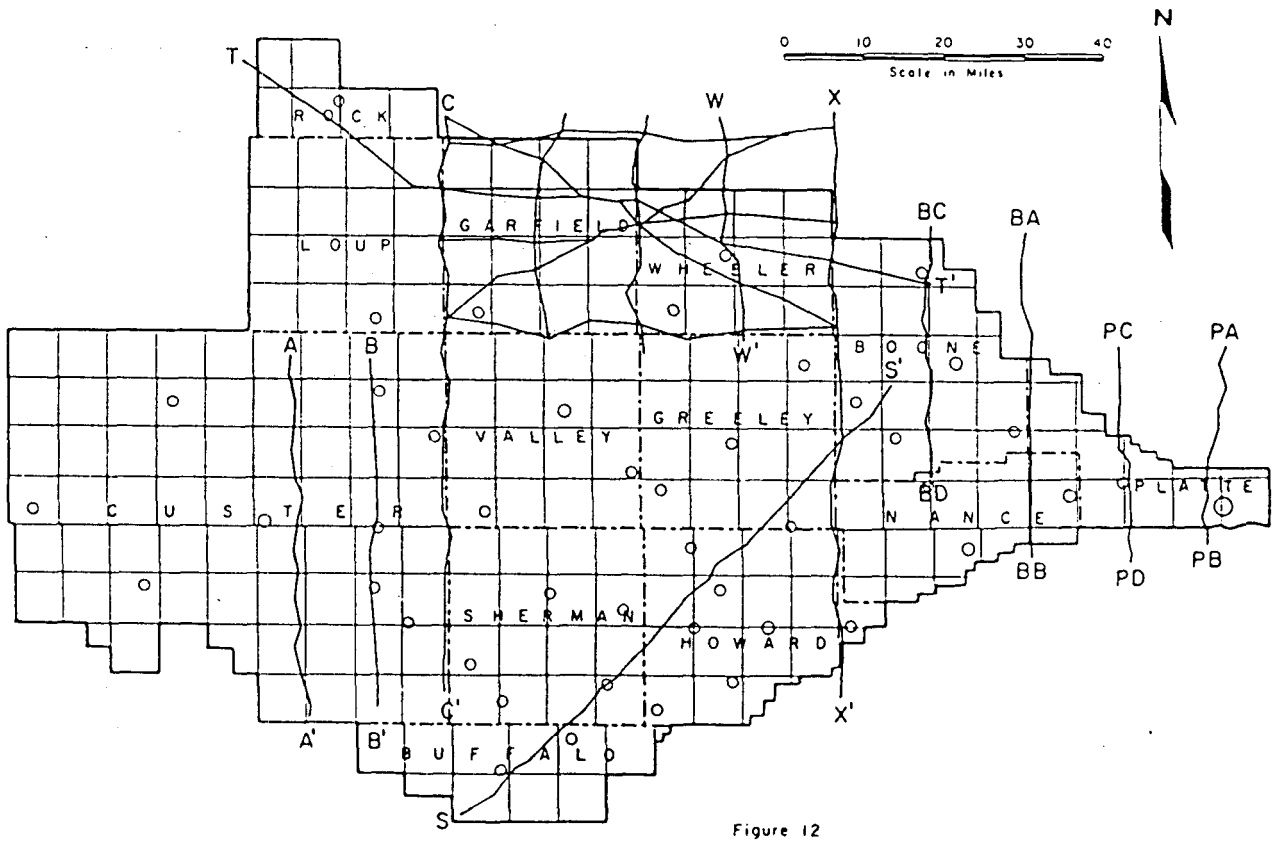
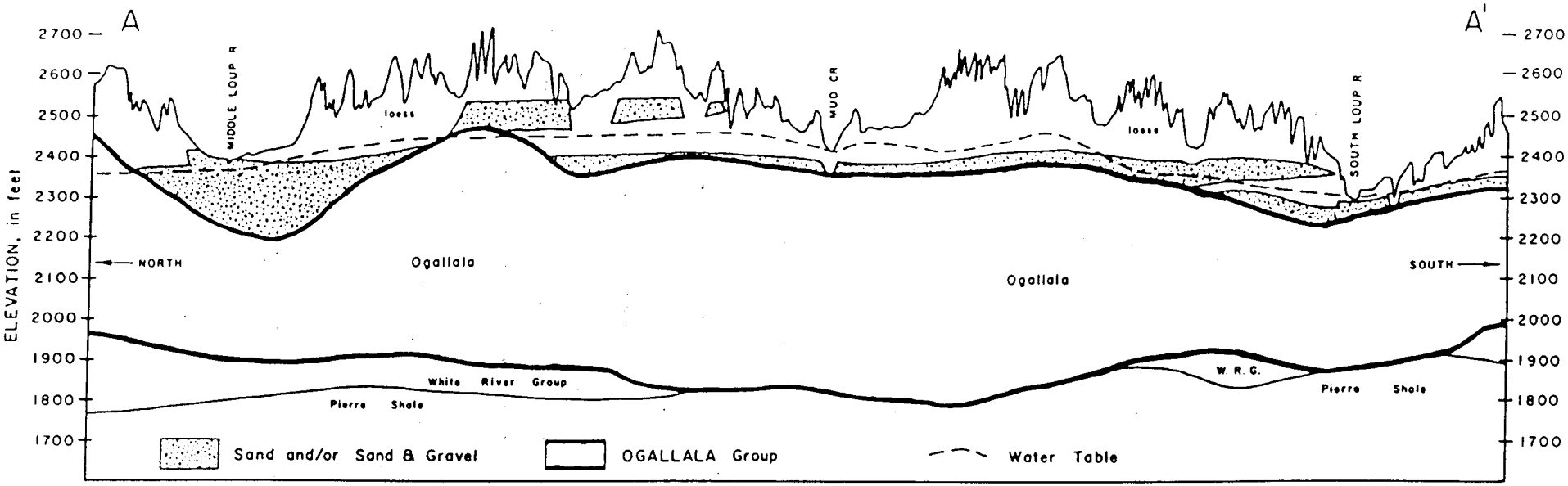


Figure 12

GEOLOGIC CROSS SECTION LOCATIONS



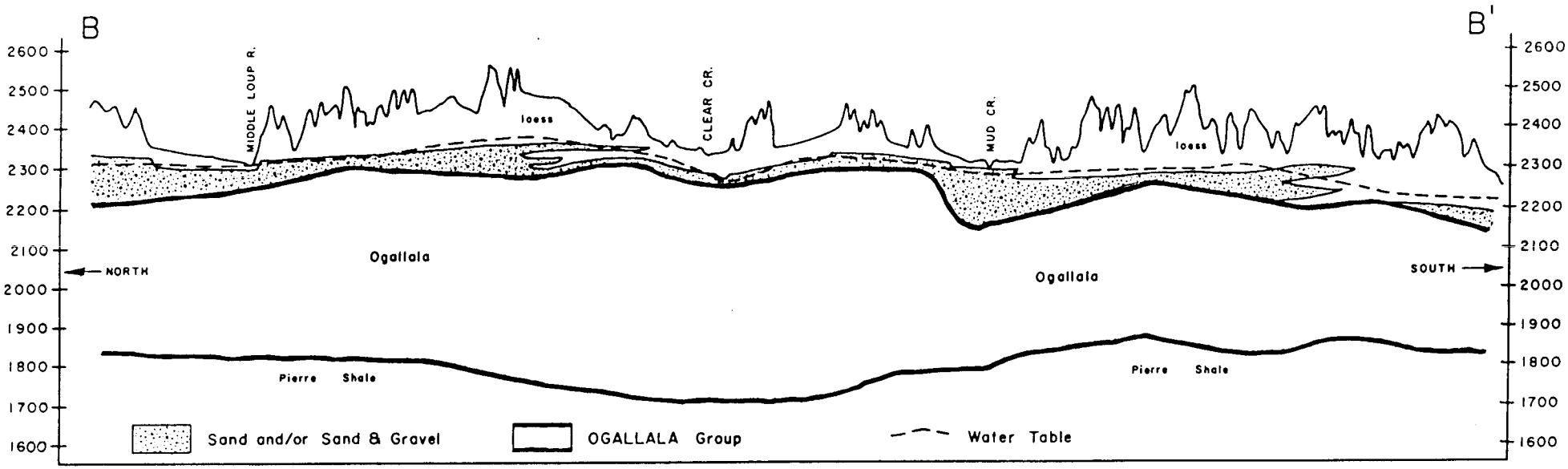
Geological Cross-Section A-A' - East side, Range 20, T20N to T13N, Unpublished-Con. & Sur. Div.

Along A-A' the water table is generally above or near the top of the major sand and gravel layer, except in Township 14 North and part of Township 15 North. The saturated thickness of the sand and gravel reaches a maximum thickness of about 180 feet in Township 19 North. Saturated sand and gravel is absent in part of Township 19 North and is very thin in parts of Township 17 North. Along the remainder of the cross-section the saturated thickness averages between 20 and 40 feet.

The Ogallala sediments range in thickness from about 600 feet in Township 18 North to about 350 feet in Township 13 North. The entire thickness of the Ogallala sediments is saturated everywhere along the cross-section, except in part of Township 18 North, where the water table is a maximum of 30 feet below the top of the Ogallala and in Township 20 North, where the water table is as much as 80 feet below the top of the Ogallala.

Nineteen irrigation wells are located within the easternmost tier of Sections (1, 12, 13, 24, 25, and 36) of Townships 13 North through 20 North and Range 20 West. Thirteen, or 68 percent, of the wells penetrate part of the Ogallala sediments in addition to the Quaternary/Tertiary sediments. Only one well penetrates the entire thickness of the Ogallala.

Reported yields of the 13 wells penetrating both the Ogallala and Quaternary/Tertiary range from 670 GPM to 2,000 GPM. Yields of wells penetrating only the Quaternary/Tertiary range from 500 GPM to 1,000 GPM.

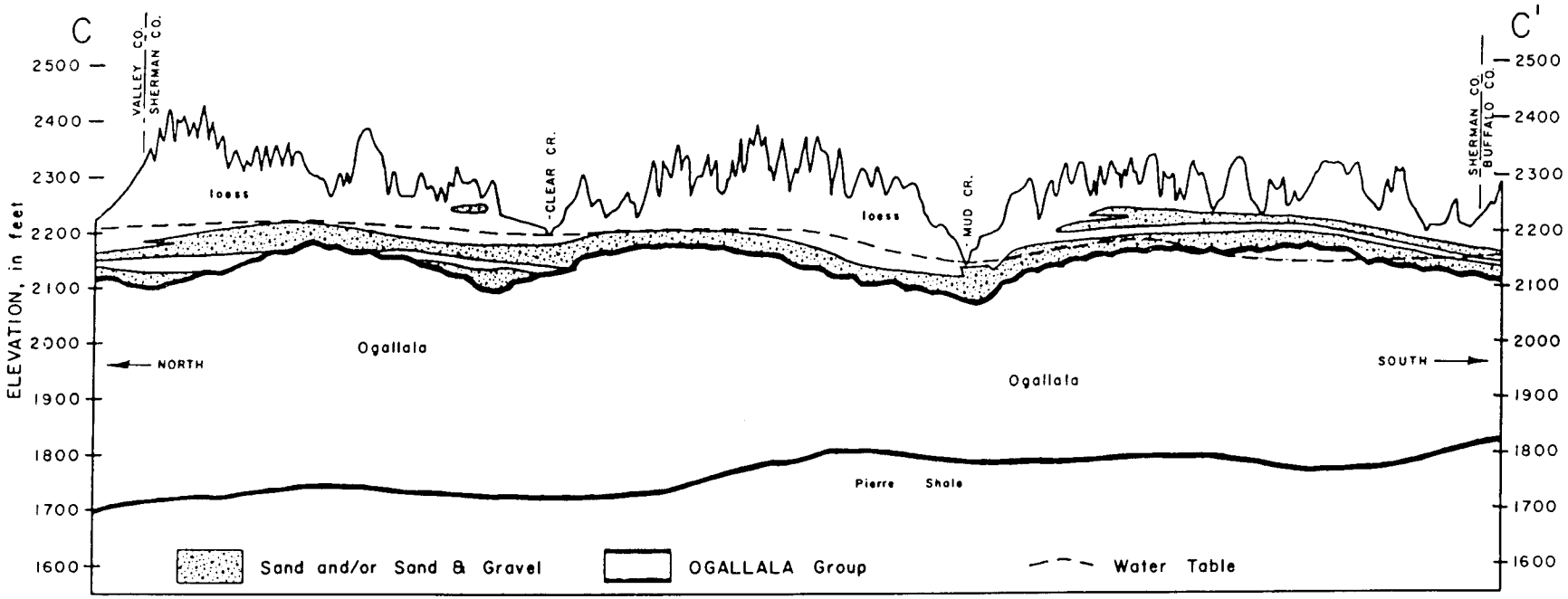


Geological Cross-Section B-B' - Center of Range 18, T20N to T13N, Unpublished-Cons. & Sur. Div.

Along B-B' the water table generally is above or near the top of the sand and gravel layer. The maximum thickness of sand and gravel is about 140 feet in Township 15 North. Saturated sand and gravel is not present in part of Township 13 North. Thicknesses are less than 20 feet in the northern part of Township 14 North, throughout most of Township 16 North, and in the southern part of Township 17 North. Saturated thicknesses along the rest of the cross-section generally range from 20 to 60 feet.

The entire thickness of the Ogallala is saturated everywhere along the cross-section and ranges in thickness from 600 feet in Township 16 North to 300 feet in Township 13 North.

A total of 100 wells are located within the 90 sections within 1 mile east and 1 mile west of the cross-section. Seventy-four of the wells penetrate both the Quaternary/Tertiary and the Ogallala sediments. The remaining 26 penetrate only the Quaternary/Tertiary. Nearly half the wells completed in the Ogallala penetrate greater than 50 percent of its thickness. Most of the wells that penetrate only the Quaternary/Tertiary are located in Townships 15 North and 20 North, where the Quaternary/Tertiary is thickest.

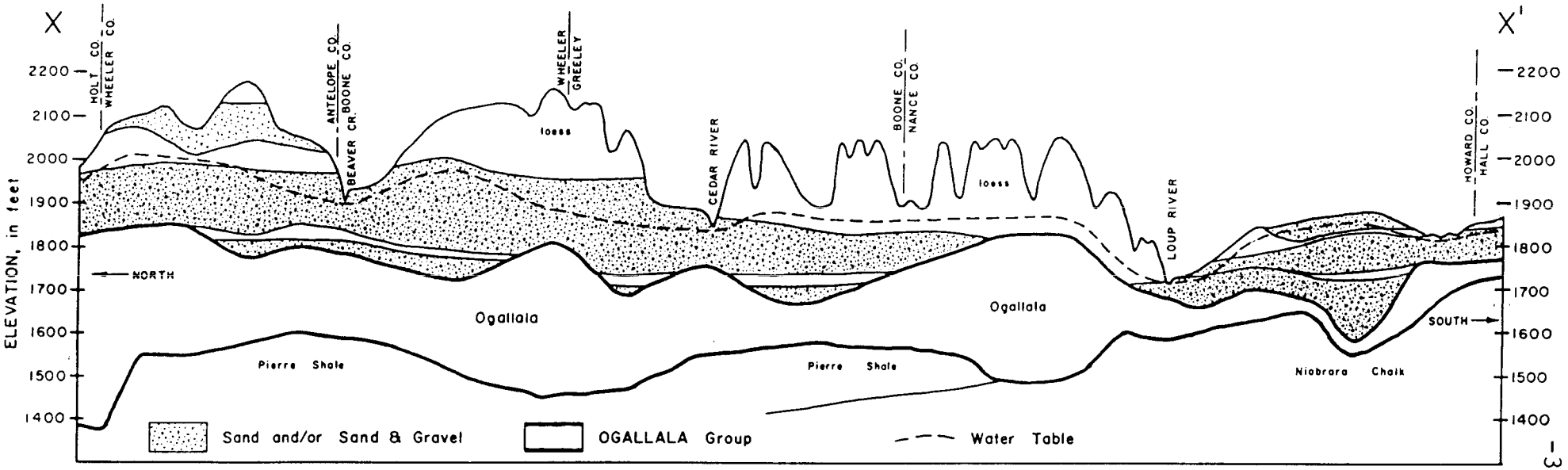


Geological Cross-Section C-C' - East side, Range 17, T20N to T13N, Published-Cons. & Sur. Div.

The water table is above the top of the sand and gravel layer everywhere north of Mud Creek, in about the center of Township 14 North. South of Mud Creek, some unsaturated sand and gravel occurs above the water table. In the central part of Township 13 North, the water table appears to be below the entire thickness of sand and gravel.

The Ogallala is about 400 feet thick along the entire cross-section.

Twenty-five wells are located within the tier of sections immediately adjacent to and west of the cross-section (the easternmost tier of townships in Custer County). Twenty-two of the wells (88 percent) penetrate the Ogallala in addition to the sand and gravel in the Quaternary/Tertiary. Nine of these 22 wells extend almost to the top of the Pierre shale.

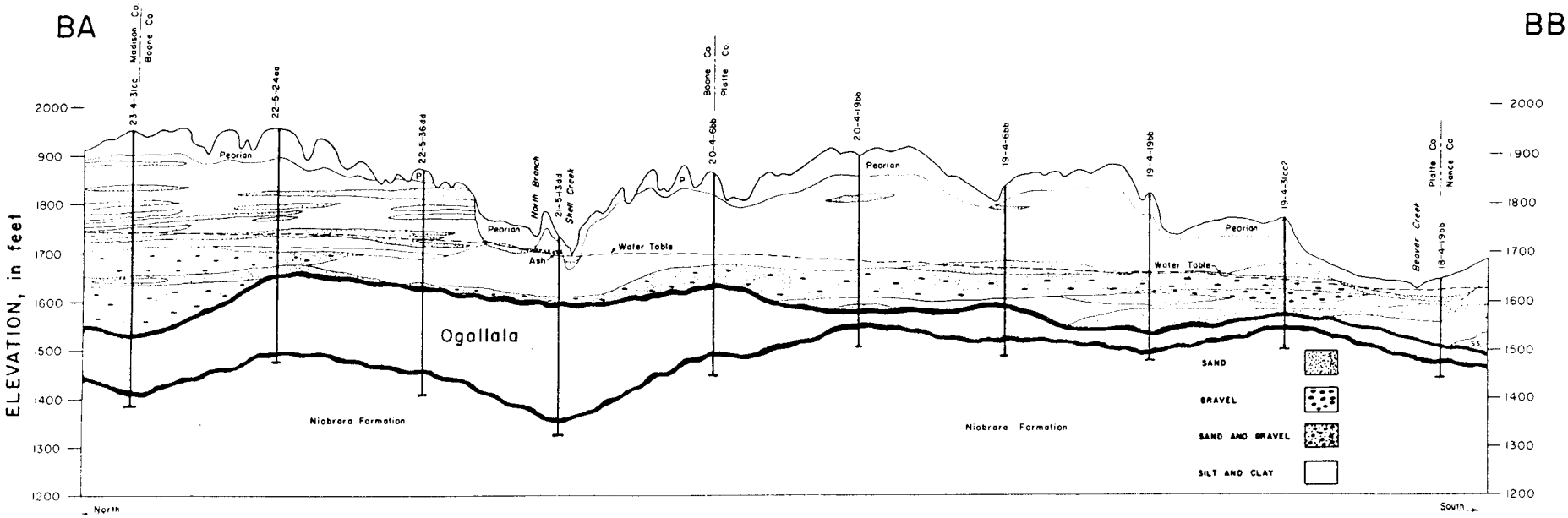


Geological Cross-Section X-X' - West side, Range 8, T24N to T14N, Unpublished File Map-Cons. & Sur. Div.

Cross-section X-X', extends from northern Wheeler County to southern Howard County.

The saturated thickness of sand and gravel within the Quaternary/Tertiary formation is somewhat greater along this cross-section compared to the cross-sections further west in Custer County. The thickness of the Ogallala formation varies considerably ranging from about 400 feet in northern Wheeler County to less than 50 feet in Howard County.

Comparisons of the formations were made with well records on the west side in Wheeler, Greeley, and Howard Counties. Sixty-two wells are located within the easternmost tier of townships in Range 9 West from Township 24 North to Township 13 North. Sixteen wells, (25%), penetrate the Ogallala formation in addition to the sand and gravel within the Quaternary/Tertiary. Most wells penetrating the Ogallala are in Greeley County where the thickness of the saturated sand and gravel is less than 25 feet.



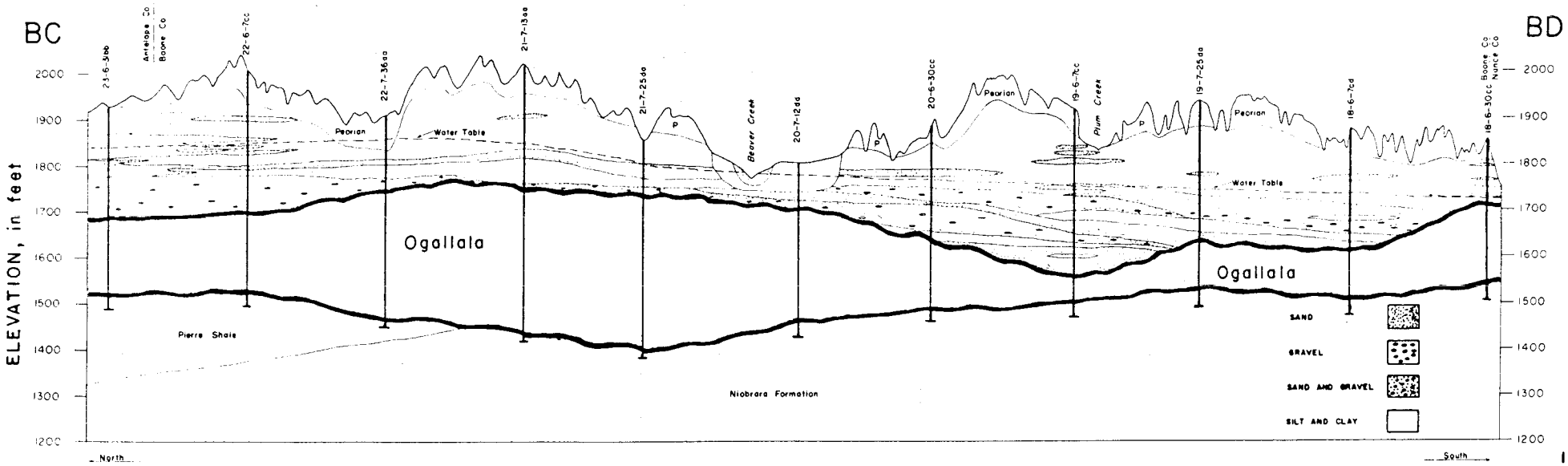
Geological Cross-Section BA-BB - West side, Range 4, T20N to T16N, Platte/Boone Counties
Groundwater Study - Cons. & Sur. Div.

Cross-section BA-BB is located on the north-south Boone/Platte County line from Township 20 North south to Township 18 North.

The water table is above or near the top of the sand and gravel along the entire cross-section. The saturated thickness of the sand and gravel averages 100 feet for the 12 miles within the Lower Loup NRD.

The Ogallala averages about 50 feet in thickness from the center of Township 20 North to the center of Township 18 North.

Wells in Sections 6, 7, 18, 19, 30, and 31 in Range 4 West and Nance County wells for the same sections in Townships 18 and 17 North were inventoried. Wells north of the NRD boundary were not inventoried. Twenty wells are located within these sections, all of which are finished entirely within the Quaternary/Tertiary zone. The wells average 225 feet in depth.



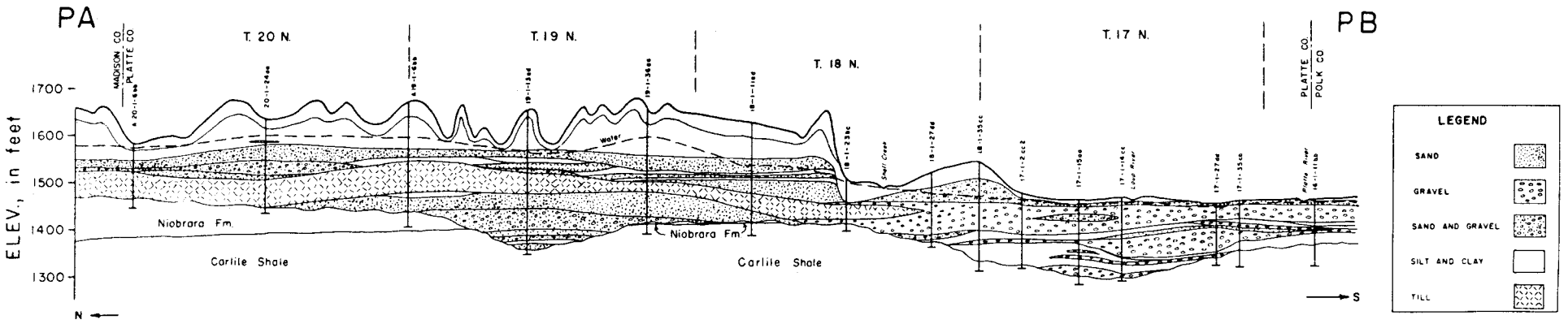
Geological Cross-Section BC-BD - East side, Range 7, T22N to T18N, Boone County Groundwater Study - Cons. & Sur. Div.

The total length from north to south is 30 miles.

The water table is above the primary sand and gravel unit within Quaternary/Teritary along the entire section. Total saturated thickness of the sand and gravel is as much as 150 feet in parts of Townships 19 North and Township 20 North. In the central part of Township 21 North, the sand and gravel thins out to generally less than 25 feet. Also, at the very south end of the section in southern Boone County, saturated sand and gravel is absent.

The Ogallala ranges in thickness from about 350 feet in Township 21 North to about 75 feet in Township 19 North.

Wells in Sections 1, 12, 13, 24, and 25 in Boone County, along with Section 36 in Nance County, were evaluated. Fifty-six wells are located within these sections. Twenty-two, or 39%, penetrate part of the Ogallala formation in addition to the Quaternary/Tertiary. No wells were drilled to the underlying Pierre shale or the Niobrara formation.

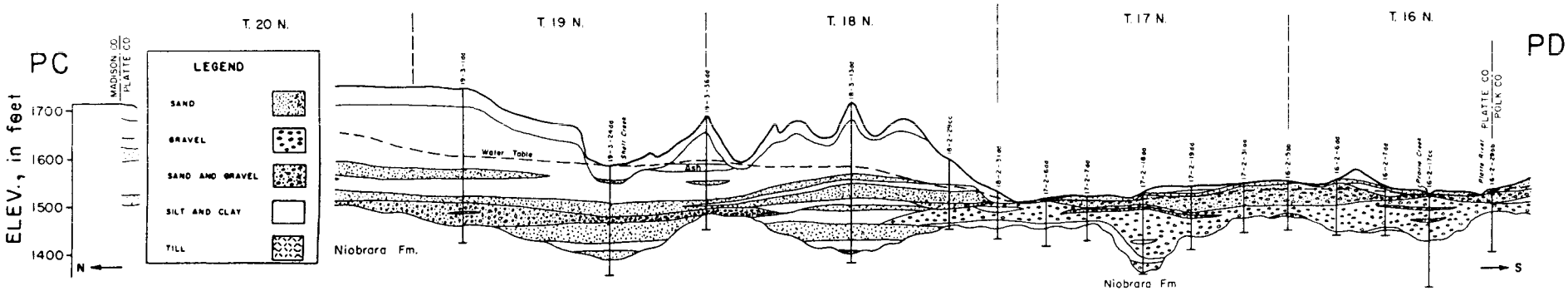


Geological Cross-Section PA-PB - Two miles west of east side, Range 1 West, Townships 17 & 18 North, Platte County Groundwater Study - Cons. & Sur. Div.

Cross-section PA-PB extends for 7 miles within the Lower Loup NRD 2 miles west of Columbus in Range 1 West.

The water table along all but 2 miles on the north end of the cross-sections is near the land surface. The entire area is underlain with sand and gravel deposits. Ogallala sediments are not present along this cross-section.

Thirty-eight registered irrigation wells are located within Sections 34 and 35 in Township 18 North, and Sections 2, 3, 10, 11, 14, 15, 22, 23, 26, 27, 34, and 35 in Township 17 North, Range 1 West. All wells are less than 100 feet deep and yields are as high as 1,250 GPM.

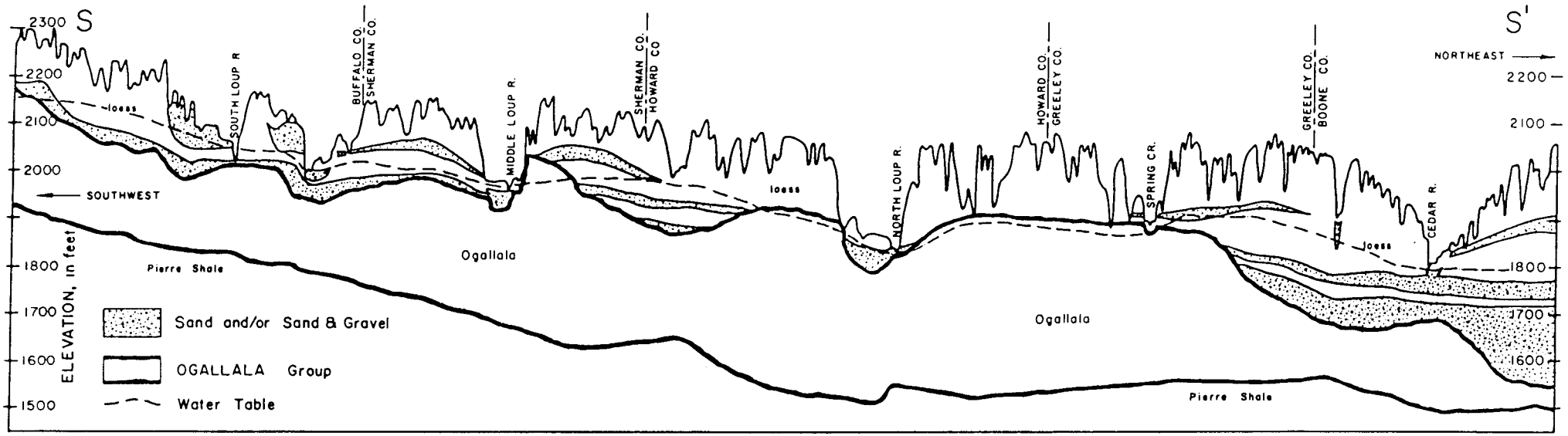


Geological Cross-Section PC-PD - West side, Range 2 West, T18N to T16N, Platte County Ground Water Study - Cons. & Sur. Div.

Cross-section PC-PD extends for 10 miles within the Lower Loup NRD 1 mile east of the west boundary of Range 2 West.

The saturated zone begins at 200' in thickness in Township 18 North, narrows to 60 feet or 70 feet on the north side of Township 17 North, then increases to just under 200 feet in the center of Township 17 North. The last 3 miles it varies but is generally about 100 feet thick. The Quaternary/Tertiary zone is underlain by the Niobrara formation throughout central and eastern Platte County.

For purposes of this evaluation, wells were inventoried in Section 13, Township 18 North, Range 3 West; Sections 18, 19, 29, 30, 31, and 32 in Township 18 North, Range 2 West; and Sections 5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, and 32 in Township 17 North, Range 2 West. Sixty-seven wells were located in this area. Most wells, while relatively shallow, are reported to yield from 900 to 1500 GPM.



Geological Cross-Section S-S' - Diagonal, Buffalo to Boone Counties - From U.S. Geological Sur. Water Supply Paper 1493

Cross-section S-S' begins in Boone County on the north end and progresses 80 miles southwesterly through Greeley, Howard, and Sherman Counties and ends at the southern NRD boundary in Buffalo County.

Thickness of saturated sands and gravel is generally less than 25 feet from the southwest end of the cross-section continuing to about the northern third of Greeley County. Northeast of that, the sand and gravel becomes thicker, averaging 140 feet. Of the 79 wells surveyed adjacent to the cross-section alignment, 18 were developed solely in the sand and gravel.

Because the saturated thickness of the sand and gravel is small, most wells penetrate the sand and gravel. Thickness of the Ogallala averages 200 feet through Buffalo County, increasing to 240 feet in Sherman County, and 400 feet through Howard and most of Greeley Counties, then declines to 25 feet at the northeast end of the cross-section in Boone County. Sixty-one of the 79 wells surveyed were developed in the Ogallala and Quaternary/Tertiary formations.

GROUNDWATER - INVENTORY OF USERS

The State of Nebraska boasts 76,765 total registered groundwater wells as of September, 1985. Of these wells 7,539 or 9.8% are registered in the Lower Loup NRD. Table 2 provides a breakdown by type and by county.

TABLE 2

REGISTERED IRRIGATION WELLS IN THE LOWER LOUP N.R.D. - 9/31/85

COUNTY:	IRRIGATION:	MUNICIPAL:	REPLACEMENT:	INDUSTRIAL:
Boone	1033	14	21	2
Buffalo	582	5	14	1
Custer	1457	31	25	1
Garfield	197	3	3	0
Greeley	604	9	2	0
Hall	3	0	0	0
Howard	629	18	13	0
Loup	110	0	1	0
Merrick	86	1	1	0
Nance	477	8	6	0
Platte	731	11	2	5
Rock	123	0	0	0
Sherman	509	7	9	2
Valley	502	10	19	1
Wheeler	365	2	4	0
	7408	119	120	12

TOTAL REGISTERED WELLS IN THE L.L.N.R.D.: 7539

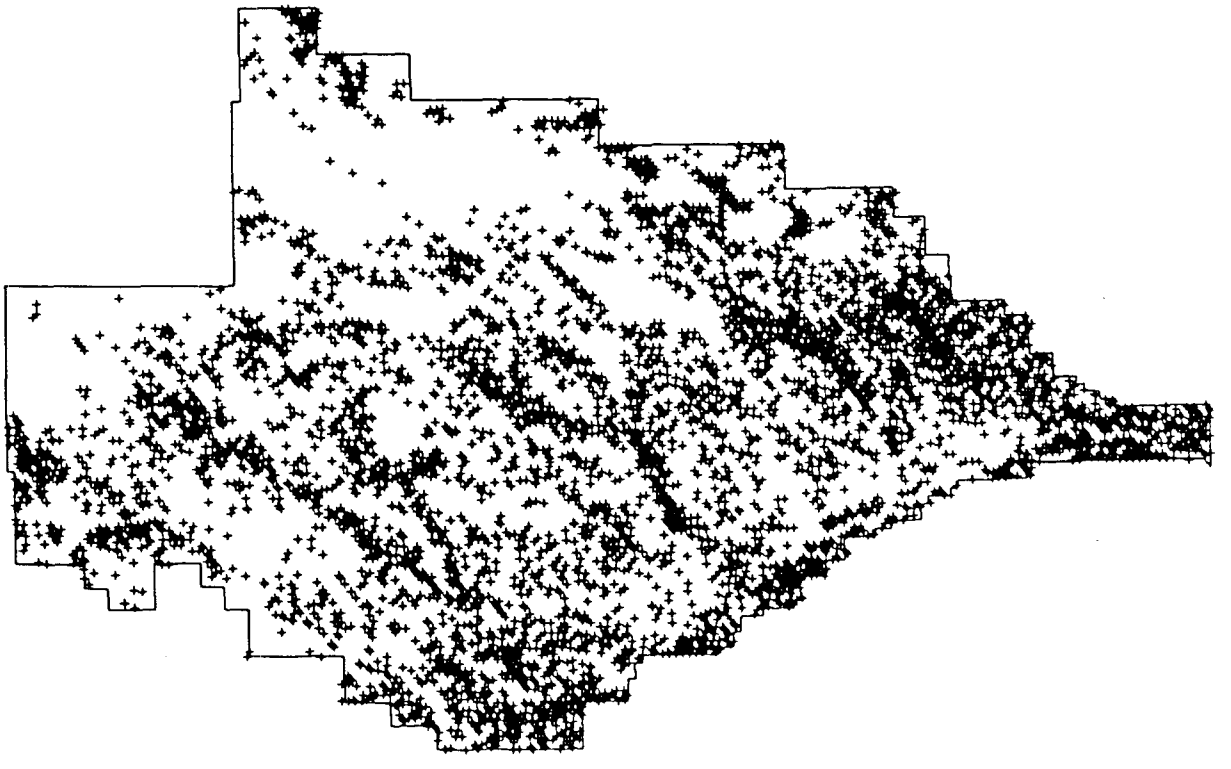


Figure 13
REGISTERED WELLS
thru September 30, 1985

from: Nebr. Nat'l. Res. Comm.

Figure 13 shows the distribution of registered irrigation wells throughout the District.

A majority of the new irrigation well registrations since 1972 have been center pivot systems. By the 1984 count, the state had installed 25,216 center pivot systems which account for 33% of the total irrigation wells. There are 3,308 center pivot systems operating within the Lower Loup NRD which account for 13% of the center pivot systems within the state and 44% of the wells within the District.

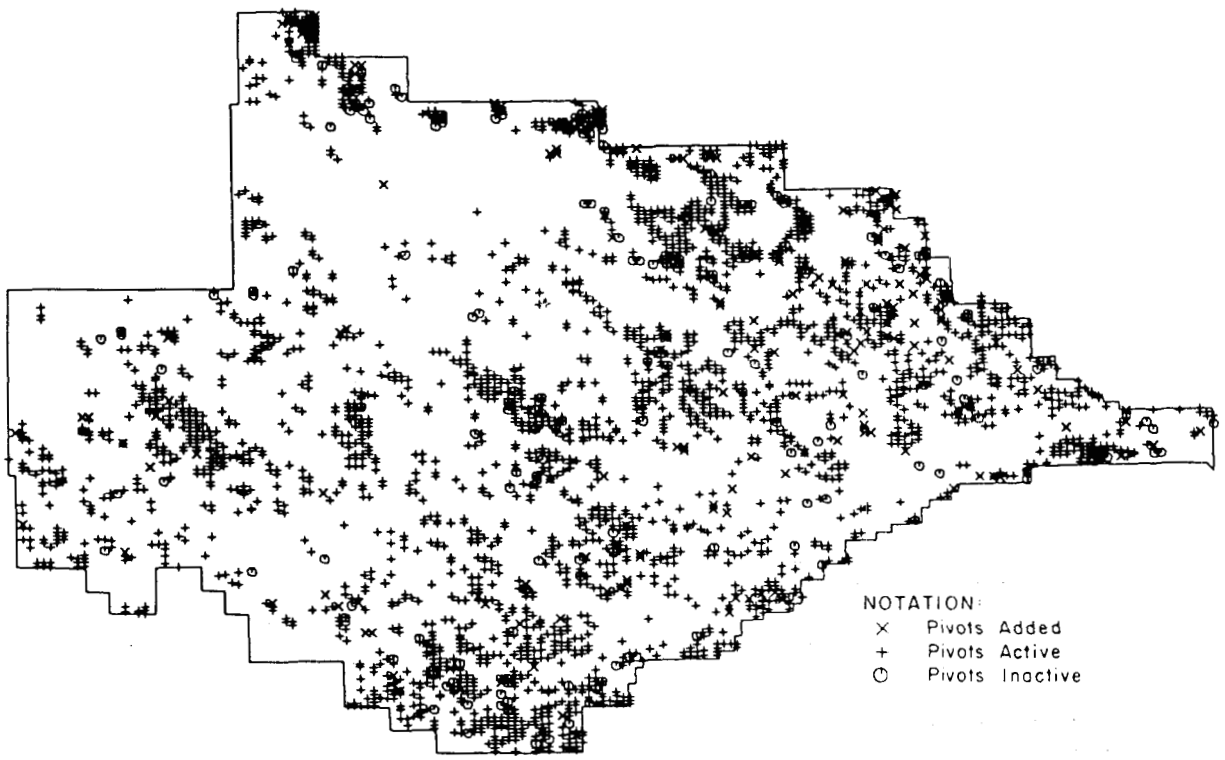
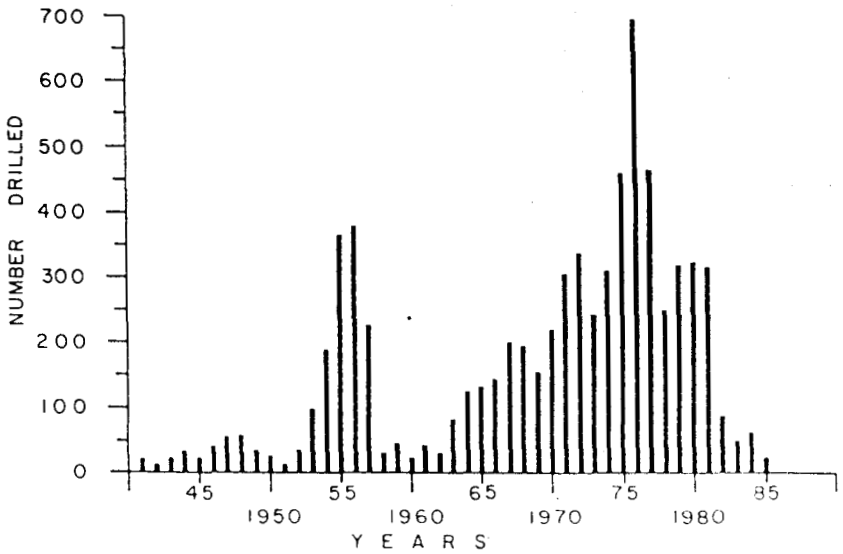


Figure 14
CENTER PIVOTS
thru December, 1983

from: Nebr. Nat'l. Res. Comm.



REGISTERED WELLS
in Lower Loup NRD

Figure 15

There are users of groundwater within the District that do not withdraw for crop production. Those major uses are human domestic, livestock, and industrial. Table 3 provides a breakdown of all groundwater users.

TABLE 3

USER	ESTIMATED USE
Irrigation.	1.53 M ac-ft/yr
Livestock /1.	16.29 M gal/day
Human domestic /2	17.82 M gal/day
Industrial.	6.60 M gal/day

/1 - Est. DED Nebraska Statistical Handbook
/2 - National Water Summary 1984-USGS

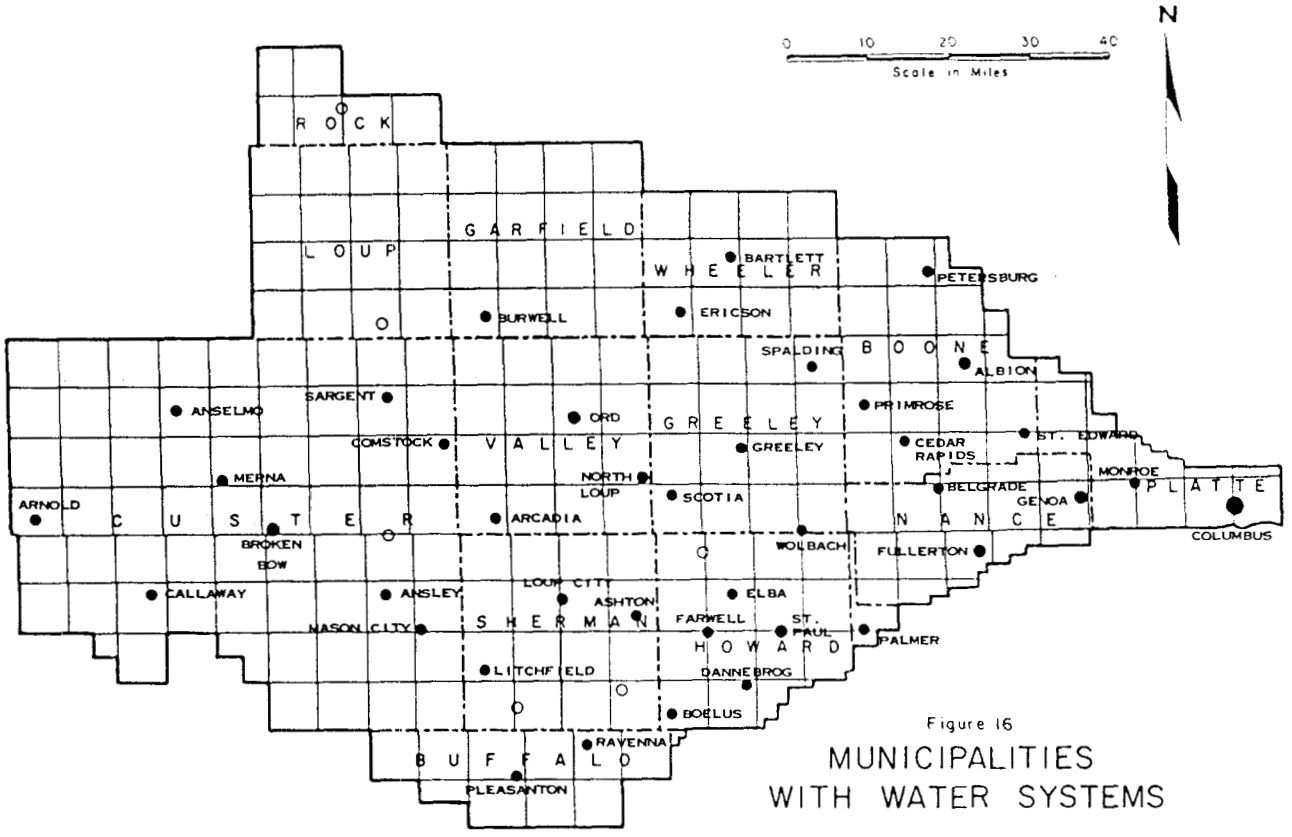


Figure 16
MUNICIPALITIES WITH WATER SYSTEMS

All cities, towns, and villages within the Lower Loup NRD that have water systems utilize groundwater. Figure 16 above illustrates those municipal systems with a "●" symbol that have public distribution systems. Those indicated by "○" are those where households are served by private wells. Annual use ranges from a few hundred gallons per day to several million gallons per day.

SURFACE WATER

THE OCCURRENCE

USERS

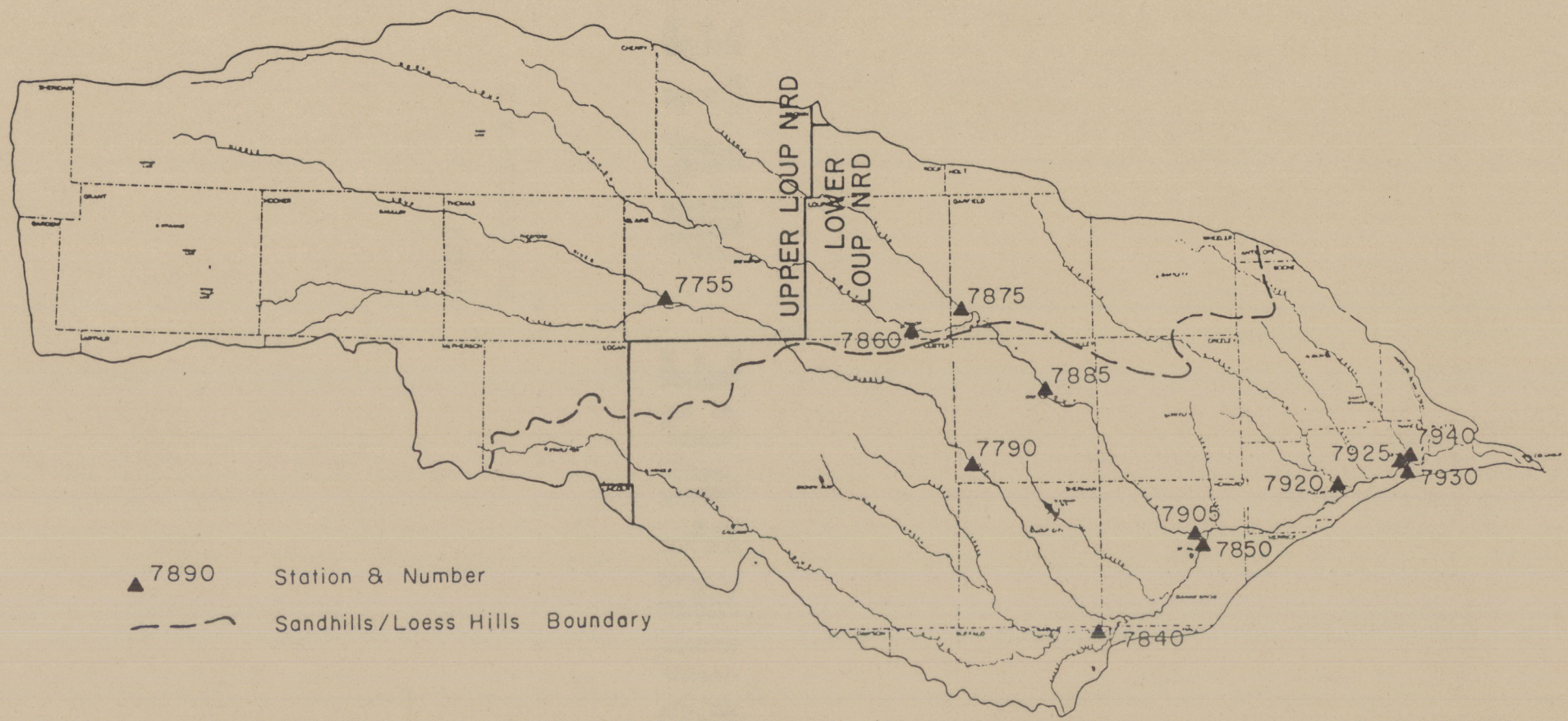


Figure 17

SURFACE - WATER GAGING STATION LOCATIONS

SURFACE WATER -- THE OCCURRENCE

This section will cover the occurrence of surface water resources within the Lower Loup Natural Resources District. Any effort to assess the supply and use of surface waters within the Lower Loup NRD requires a look west beyond the District. Major streams contributing to streamflow within the District boundaries include the North, Middle, and South Loup River systems and the Calamus River. All other river systems begin within the District's boundaries.

See facing page. Figure 17 shows a map of the Loup River Basin with river gages used in Table 4.

The Loup River Basin is adequately described by F. B. Shaffer in USGS Open File Report 7401, entitled, "Characteristics of Stream Flow at Gaging Stations in the Loup River Basin, Nebraska".

> "The Loup River in central Nebraska drains about 15,200 square miles, or nearly one-fifth of the State. The basin is more than 300 miles long and about 90 miles wide at its widest point. All drainage is eastward or southeastward toward a narrow band along the southeast border of the basin; drainage within that band is mostly northeastward.
>
> "The sandhills region, which constitutes three-fifths of the basin, consists of grass-covered sand dunes and interdune meadows. The remainder of the basin is referred to as the dissected loess plains region. It consists of nearly level loess-mantled interstream divides that give way to moderately to steeply sloping loess-mantled hills, which in turn give way to stream terraces.
>
> "The sandhills region produces almost no overland runoff to streams. Precipitation, which ranges from an average 18 inches per year at the western end of the basin to 24 inches at the easternmost extent of the sandhills region, either returns to the atmosphere by evapotranspiration or infiltrates to the water table. Streams in this area have a very uniform discharge, which is maintained by seepage of ground water. Where streams leave the sandhills region and enter the dissected loess plains region their average annual flow is equivalent to 2 to 3 inches of runoff from their drainage areas.
>
> "The Middle Loup River, North Loup River, Cedar River, and Beaver Creek are the principal streams that rise in the sandhills region and flow into the dissected loess plains region. There the Middle Loup and North Loup join near St. Paul to form the Loup River. Cedar River and Beaver Creek are tributary to the Loup. Within the dissected loess plains region stream discharge increases owing to both influent seepage and overland runoff. Because the latter occurs only after precipitation, stream discharge becomes

increasingly variable with increasing distance from the sandhills boundary. Only a small part of the flow of the South Loup River, which is tributary to the Middle Loup, originates within the sandhills region, the much larger part being derived from influent seepage of ground water and overland runoff within the dissected loess plains region. Mud Creek, a tributary to the South Loup, rises within the dissected loess plains area, and the flow of this stream consists wholly of overland runoff in its upper reaches and of overland runoff and a little influent seepage in its lower reaches. Streamflow generated within the western part of the dissected loess plains area is equivalent to 0.6 to 1.6 inches of runoff and within the middle and eastern parts is equivalent to 2 to 3 inches of runoff. As average annual precipitation on the dissected loess plains region ranges from 19.5 to 26.5 inches, the ratios of the runoff values to average annual precipitation are somewhat less than those for the sandhills region.

"The nearly uniform streamflow leaving the sandhills region provides a dependable year-round supply of water for use within the dissected loess plains regions."

One can see, by reviewing the Basin map, that the ground and surface water management within the upper reaches of the Loup Basin will ultimately affect those same resources in the Lower Loup River Basins. Figure 17 includes locations of the stream gages used by the Department of Water Resources and the U. S. Geological Survey to monitor stream discharges within the Basin. Since the discharge into streams is primarily ground water, monitoring streamflow provides an indication of both quantity and quality of ground waters.

Hydrographers have, on numerous occasions, eluded to the fact that the rivers and streams within the Loup River Basin are the most consistently flowing streams within the state. Table 4 provides a look at selected stream gages within the Basin from calendar years 1960 through 1982. Gage locations are indicated on Figure 17 and described from USGS Open File Report 7401.

Gage 7755 - Middle Loup River at Dunning, NE

Location: Blaine County on left bank just upstream from bridge on State Highway 2 at northeast corner of Dunning, 1 mile upstream from Dismal River.

Drainage Area: 1,760 square miles, of which about 80 square miles contribute directly to surface runoff.

Gage 7790 - Middle Loup River at Arcadia, NE

Location: Valley County. Left bank 80 feet downstream from State Highway 70 bridge at southwest edge of Arcadia.

Drainage Area: 4,730 square miles, of which about 820 square miles contribute directly to surface runoff.

ANNUAL DISCHARGE IN ACRE-FEET AT GAGE LOCATIONS

(Table 4)

Gage: No.:	MIDDLE LOUP DUNNING 7755	MIDDLE LOUP ARCADIA 7790	SOUTH LOUP ST.MICH. 7840	MIDDLE LOUP ST.PAUL 7850	NORTH LOUP TAYLOR 7860	CALAMUS BURWELL 7875	NORTH LOUP ORD 7885	NORTH LOUP ST.PAUL 7905	CEDAR FULLER. 7920	LOUP RIVER 7925 + 7930	BEAVER CREEK GENOA 7940
1960	287,181	601,259	218,686	848,344	344,477	228,986	664,358	758,150	201,086	1,781,185	128,392
1961	285,179	600,059	166,090	806,846	348,077	222,585	622,358	663,757	162,288	1,878,976	68,694
1962	296,892	697,864	262,082	1,046,932	404,073	274,381	779,248	872,941	207,386	2,010,367	114,292
1963	301,579	448,370	149,389	616,758	358,576	232,784	667,857	668,955	150,290	1,291,517	150,290
1964	303,880	547,964	153,989	740,350	349,577	235,384	654,557	694,255	190,286	1,557,064	100,893
1965	304,179	552,063	209,786	865,244	349,176	234,284	674,755	766,550	203,286	1,800,817	110,892
1966	295,843	532,865	158,061	719,605	349,597	225,995	664,431	743,258	266,370	1,601,619	117,890
1967	298,098	449,903	196,667	753,939	340,296	220,237	604,744	644,142	193,938	1,565,093	106,491
1968	278,801	481,916	195,471	719,143	334,062	214,657	598,887	610,042	155,070	1,476,395	63,306
1969	283,835	472,473	174,522	763,380	325,041	215,207	610,879	650,428	207,267	1,641,306	116,178
1970	278,436	408,432	118,824	569,316	306,966	201,384	558,863	569,470	145,478	1,290,496	64,292
1971	290,638	429,239	146,202	678,093	318,859	208,068	553,781	603,287	149,316	1,479,374	103,799
1972	292,810	408,811	140,097	602,015	318,569	325,531	587,339	617,687	152,485	1,385,629	82,145
1973	299,851	454,076	186,801	808,498	361,000	224,154	659,568	719,248	188,604	1,802,245	95,455
1974	294,292	479,316	146,733	661,839	313,640	214,459	600,655	620,214	124,977	1,335,814	56,271
1975	289,757	378,712	142,643	631,942	284,075	203,768	559,220	603,475	137,790	1,231,374	65,405
1976	283,874	451,295	128,321	641,996	304,179	210,787	557,685	600,950	132,732	1,342,219	52,762
1977	299,399	533,863	179,740	851,397	359,760	229,014	690,567	740,436	172,356	1,769,474	66,105
1978	297,035	494,531	229,349	836,200	323,548	226,608	656,807	702,065	194,777	1,753,313	88,883
1979	301,192	510,044	150,607	784,217	348,337	231,066	687,816	772,558	183,094	1,787,619	83,322
1980	301,676	447,116	115,678	645,899	330,682	218,575	598,770	612,353	143,685	1,428,978	53,889
1981	300,024	471,544	126,085	687,640	325,363	218,563	599,226	685,658	157,222	1,538,571	55,952
1982	305,111	595,343	148,931	865,458	350,440	238,598	678,240	759,414	197,903	1,833,592	157,386

Gage 7840 - South Loup River at St. Michael, NE

Location: Buffalo County at county highway bridge 0.6 miles northeast of St. Michael.

Drainage Area: 2,560 square miles, of which about 1,650 square miles contribute directly to surface runoff.

Gage 7850 - Middle Loup River at St. Paul, NE

Location: Howard County, 450 feet upstream from State Highway bridge on U.S. 281 and 6 miles upstream from confluence of North Loup River.

Drainage Area: 7,720 square miles, of which about 3,200 square miles contribute directly to surface runoff.

Gage 7860 - North Loup River at Taylor, NE

Location: Downstream from State Highway 183 bridge north of Taylor.

Drainage Area: 2,210 square miles, of which about 180 square miles contribute directly to surface runoff.

Gage 7875 - Calamus River at Burwell, NE

Location: From county highway bridge 130 feet downstream and 1.5 miles upstream from confluence with North Loup River.

Drainage Area: 1,260 square miles, of which about 110 square miles contribute directly to surface runoff.

Gage 7885 - North Loup River at Ord, NE

Location: Valley County, 150 feet downstream from State Highway 70 bridge.

Drainage Area: 3,960 square miles, of which 770 square miles contribute directly to surface runoff.

Gage 7905 - North Loup River at St. Paul, NE

Location: Howard County, 310 feet downstream from State Highway 281 bridge on right bank and 4 miles upstream from confluence with Middle Loup River.

Drainage Area: 4,460 square miles, of which about 1,270 square miles contribute directly to surface runoff.

Gage 7920 - Cedar River at Fullerton, NE

Location: Nance County on downstream pier of highway bridge, 5.8 miles upstream from confluence with Loup River.

Drainage Area: 1,220 square miles, of which 480 square miles contribute directly to surface runoff.

Gage 7925 - Loup Power Canal

Location: Nance County at Loup River Public Power District Canal Diversion.

Gage 7930 - Loup River at Genoa, NE

Location: Nance County at State Highway 39 bridge, 3 miles upstream from Beaver Creek and 6 miles downstream from diversion dam and Gage 7925.

Drainage Area: 14,400 square miles, of which 6,000 square miles contribute directly to surface runoff.

Gage 7940 - Beaver Creek at Genoa, NE

Location: Nance County on left bank in city park.

Drainage Area: 627 square miles, of which 410 square miles contribute directly to surface runoff.

Other gages do exist on the Dismal, Calamus, Cedar, and Loup Rivers, and on Beaver Creek. More detailed information on discharges at these gages can be found in U. S. Geological Survey Water Data Reports. Other gages have been discontinued because of budgetary limitations and from flood damage. Gages used in Table 4 provide the necessary information to understand surface water occurrence within the Loup River system.

The Lower Loup Natural Resources District began a stream gaging program on the upper Beaver Creek in December of 1979. The intent and purpose was to gather data on possible changes in the stream discharge from the sandhills area under pressure from center pivot development. Figure 18 indicates monitoring locations in Wheeler and Boone Counties. Table 6 shows the monthly discharges in cfs at the monitoring points when the stream was gageable.

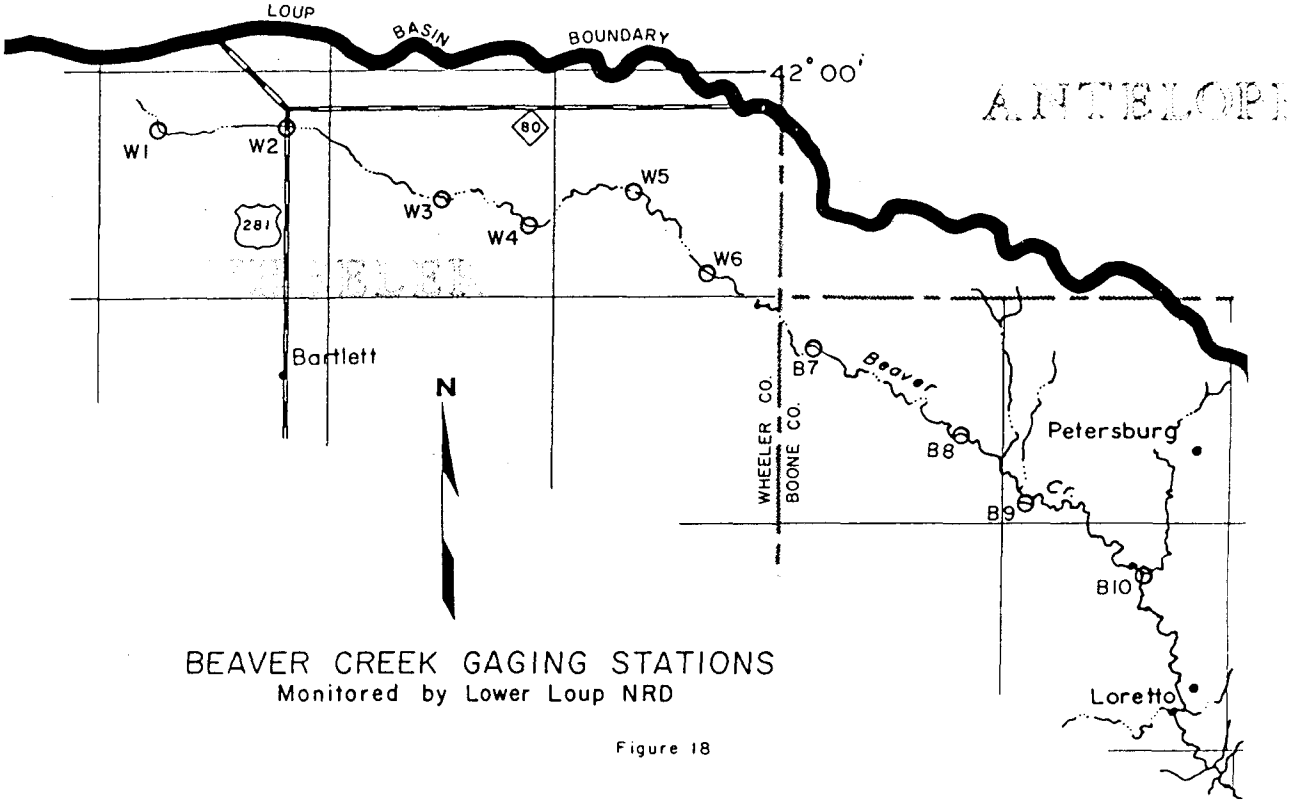
LOWER LOUP NATURAL RESOURCES DISTRICT
BEAVER CREEK STREAM GAGING READINGS

TABLE 6

DATE	W-2	W-4	W-5	W-6	B-1	B-2	B-3	B-4
LEGAL:	SW,SW,NW 12-23-11	SW,SE,SW 24-23-10	SW,NW,NE 21-23-09	SW,NW,NW 35-23-09	W,SW,NW 08-22-08	W,NW,SW 24-22-08	CENTER,E 31-22-07	W,SW,NW 11-21-07
CHECKED:	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
12-20-79	0.88	5.01	9.52	15.94	24.00	46.15	-	-
01-17-80	1.00	4.83	9.42	17.73	30.13	44.80	48.33	60.89
02-14-80	0.41	3.08	7.28	12.10	23.19	36.66	37.26	-
03-15-80	2.95	11.58	15.85	26.02	36.71	59.39	66.29	77.42
05-05-80	0.25	3.12	7.19	12.23	17.78	34.87	42.39	41.57
05-29-80	0.33	2.65	6.06	10.98	16.44	31.45	43.06	49.16
06-20-80	0.38	2.14	5.84	9.59	16.52	24.88	31.57	34.96
07-15-80	0.06	0.53	2.40	4.42	8.86	17.83	24.81	19.08
08-18-80	0.14	1.24	4.52	8.96	15.81	24.28	33.26	35.16
09-15-80	0.19	0.53	2.90	6.20	12.16	22.48	28.06	27.71
10-28-80	0.24	1.67	5.02	9.75	15.94	32.60	38.33	41.27
11-18-80	0.27	2.09	5.20	8.80	15.50	29.96	34.30	37.88
12-15-80	0.34	2.41	5.33	10.55	18.24	40.24	44.91	46.13
01-14-81	0.33	2.38	5.39	9.20	18.18	30.06	36.21	-
02-18-81	0.45	2.68	7.23	19.20	28.35	40.71	57.75	69.42
03-13-81	0.26	3.39	6.76	11.41	19.19	34.20	40.42	44.29
04-22-81	0.30	2.98	6.96	12.22	24.64	45.66	51.85	55.08
05-26-81	0.36	2.83	6.93	11.87	19.26	32.74	38.38	43.42
06-24-81	0.00	1.25	4.58	9.11	14.73	28.40	32.44	32.52
07-17-81	0.00	0.86	3.64	6.97	10.97	19.13	25.49	21.44
08-18-81	0.00	3.67	7.76	12.64	19.39	29.80	35.58	35.01
09-16-81	0.00	1.70	5.01	9.34	15.53	26.13	30.45	31.28
10-19-81	0.00	2.77	6.94	13.32	17.67	34.28	37.21	40.35
12-21-81	0.00	7.69	13.37	20.59	29.00	45.43	-	-
02-17-82	2.54	10.23	17.14	30.20	47.19	68.57	-	55.56
03-31-82	2.74	13.63	20.14	29.25	37.76	57.31	59.12	67.31
04-26-82	1.16	4.58	9.49	14.56	21.13	38.45	42.60	48.49
05-19-82	4.97	8.07	12.62	21.41	55.66	93.24	-	-
07-16-82	0.00	1.71	5.43	9.54	15.36	25.87	33.85	32.58
08-20-82	0.00	1.10	4.85	8.62	13.56	22.75	28.97	33.79
09-16-82	0.00	1.55	6.65	8.70	14.57	28.63	35.01	38.40
10-20-82	0.00	5.43	10.38	17.58	31.10	56.36	63.26	68.68
12-09-82	0.00	9.21	17.69	15.27	22.30	29.18	58.03	65.87
01-13-83	0.00	10.90	16.19	28.11	42.95	68.47	68.18	-
02-15-83	0.00	11.91	17.81	30.53	48.00	74.00	84.53	95.70
06-16-83	1.25	5.90	12.11	17.54	25.41	42.87	76.55	80.25
07-14-83	0.94	2.15	6.76	10.64	16.63	27.84	33.73	36.61
08-18-83	0.44	0.68	4.22	6.71	11.16	22.07	25.95	28.69
09-19-83	0.55	0.81	3.95	7.36	13.67	27.80	33.03	33.84
10-18-83	NA	1.95	5.32	10.04	17.96	32.34	37.52	42.19
11-21-83	0.95	5.50	10.21	16.53	29.26	48.90	58.89	62.77
05-18-84	11.72	-	-	-	-	-	-	-
06-26-84	25.30	45.39	59.87	87.11	104.96	138.16	145.89	150.75
07-16-84	3.58	8.91	13.58	17.17	24.14	38.46	43.39	52.93
08-27-84	1.27	3.61	7.32	11.22	18.06	32.05	36.84	38.61
09-21-84	0.00	1.54	5.13	8.72	15.26	30.27	29.51	33.29
10-23-84	10.78	23.21	28.47	35.07	45.11	64.89	73.78	76.74
12-19-84	2.67	8.95	15.54	20.61	34.78	52.26	69.17	-

LOWER LOUP NATURAL RESOURCES DISTRICT
BEAVER CREEK STREAM GAGING READINGS

DATE	W-2	W-4	W-5	W-6	B-1	B-2	B-3	B-4
LEGAL:	SW,SW,NW	SW,SE,SW	SW,NW,NE	SW,NW,NW	W,SW,NW	W,NW,SW	CENTER,E	W,SW,NW
	12-23-11	24-23-10	21-23-09	35-23-09	08-22-08	24-22-08	31-22-07	11-21-07
CHECKED:	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
01-15-85	1.43	5.02	-	-	-	43.79	-	-
02-21-85	9.05	30.49	31.39	43.76	62.93	93.37	-	-
03-18-85	4.40	14.10	22.09	30.68	44.81	68.59	79.01	85.44
06-12-85	1.10	3.51	8.28	12.66	19.98	36.57	43.85	51.72
07-15-85	0.81	1.86	5.94	9.79	15.71	27.16	33.79	31.66
08-15-85	1.18	3.45	7.47	12.18	18.96	33.73	40.57	42.61
09-17-85	9.84	26.62	36.43	37.80	48.82	64.97	75.23	82.72
10-21-85	6.69	14.72	20.66	26.01	44.19	60.00	71.01	77.65
11-25-85	2.41	7.46	-	16.25	-	45.77	-	-



BEAVER CREEK GAGING STATIONS
Monitored by Lower Loup NRD

Figure 18

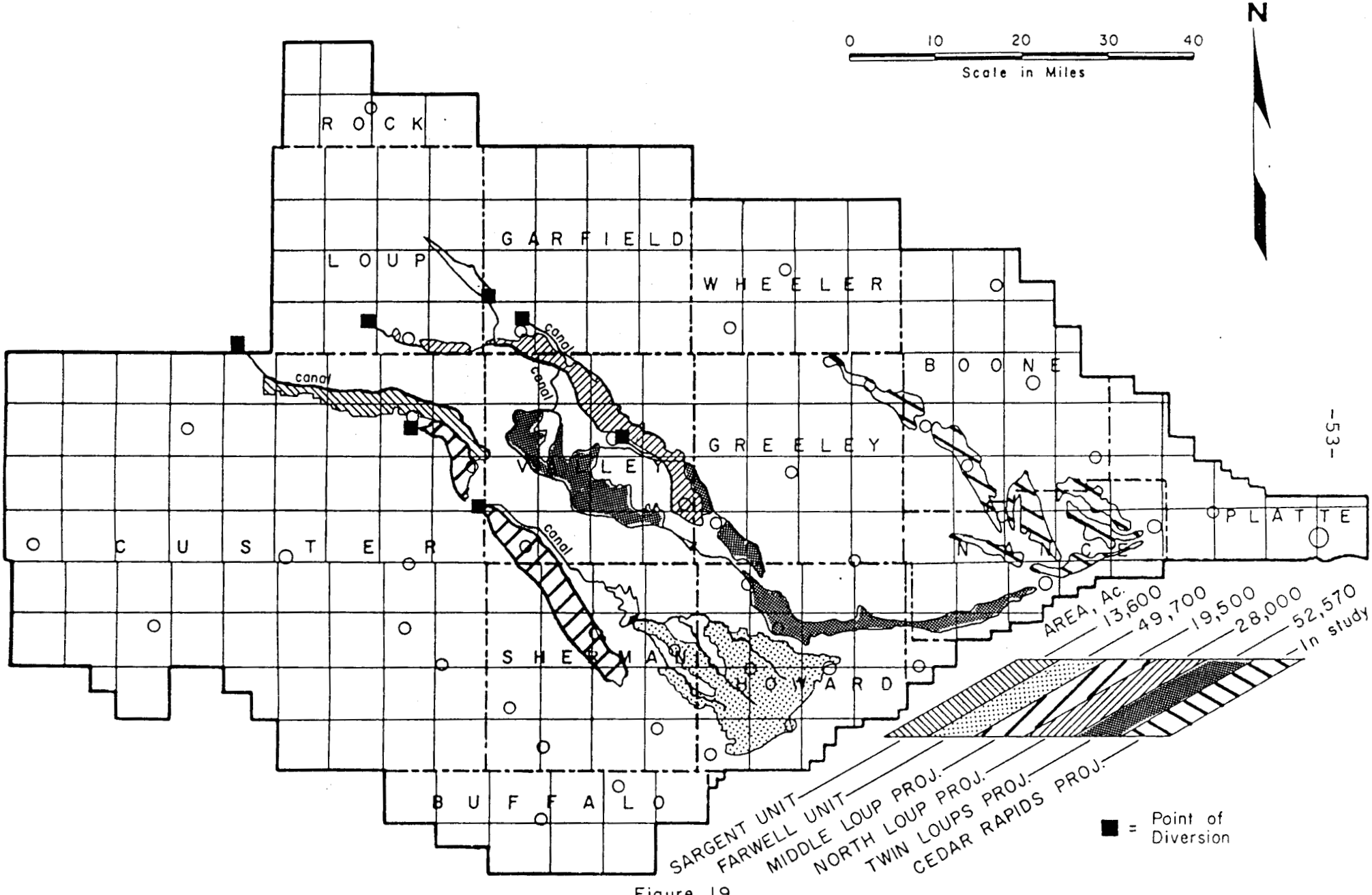


Figure 19

SURFACE WATER IRRIGATION PROJECTS

SURFACE WATER -- USERS

The Loup River Basin, and particularly the Lower Loup Basin, has had a long history of surface water development. Presently, approximately 110,800 acres are being irrigated from organized irrigation districts. One new project is currently under construction and one other is on the drawing board. Several thousand acres are being irrigated from direct river pumping. Figure 19 on the facing page shows the surface water irrigation districts and their points of diversion.

Middle Loup Public Power and Irrigation District -- Organized in 1936 according to provisions of Nebraska Senate File 310, this project originally had water rights dated December 28, 1932, and January 4, 1937, for 300 cfs and 98.48 cfs, respectively. Construction of its two diversion dams and four main canals was financed by the Public Works Administration. A dam at Sargent diverts water into Canals 1 and 2, which convey water to lands on both sides of the river in Custer County. The other dam, near the east boundary of Custer County, diverts water into Canals 3 and 4 to serve lands on both sides of the river in Valley and Sherman Counties. The irrigated land increased from 750 acres in 1938 to 19,500 acres in 1985.

North Loup Public Power and Irrigation District -- Organized under the provisions of Nebraska Senate File 310 and funded by the Public Works Administration, this project originally had a water right dated March 28, 1933, for 238 cfs. Construction of the project began in 1937 and first diversions were made in the summer of 1938. Major features consist of dams at Taylor, Burwell, and Ord that divert water into the Taylor-Ord, Burwell-Sumter, and Ord-North Loup Canals, respectively. The Burwell-Sumter Canal serves valley lands northeast of the North Loup River and the others serve valley lands south and southwest of the river. The irrigated area increased from 1,371 acres in 1938 to 28,000 in 1985.

The Sargent Unit -- This is a U. S. Bureau of Reclamation project consisting of irrigated valley land on the north side of the Middle Loup River in northeastern Custer County. This project, which became operative in April, 1957, has a water right dated July 6, 1954, for 198.20 cfs to serve 13,874 acres. Water is diverted into the Sargent Canal in southern Blaine County. The irrigated area increased from 2,567 acres in 1957 to 13,600 acres in 1985.

The Farwell Unit -- This is a U. S. Bureau of Reclamation project consisting of irrigated upland between the Middle and North Loup Rivers in eastern Sherman and western Howard Counties. It has a water right dated July 6, 1954, to store 68,120 acre-feet in Sherman Reservoir in northeastern Sherman County. The same dam that diverts water into Canals 3 and 4 of the Middle Loup Public Power and Irrigation District also diverts into the Farwell Feeder Canal, which conveys water to the reservoir. Water was first diverted into the reservoir on November 8, 1962, and was turned into the distribution system for a first time on May 1, 1963. Acres irrigated increased from 1,044 in 1963 to 49,700 in 1985.

Twin Loups Project -- this is a U. S. Bureau of Reclamation project consisting of irrigated valley and upland in Valley, Greeley, Howard, and Nance Counties. It has a water right dated June 17, 1957, to store 129,400 acre-feet in the Calamus Reservoir, and an additional right dated August 24, 1977, to store 35,000 acre-feet in the Davis Creek Reservoir and to divert 500 cfs directly from the North Loup River at Kent in Loup County. Water delivery will begin in 1987 until ultimately 52,570 acres will be under the system.

Cedar Valley Project -- As originally envisioned, the Cedar Valley Project would supply irrigation water to 26,800 acres from the Spalding dam and Belgrade diversion dam, both located on the Cedar River. Irrigation development within the Cedar River watershed caused the Bureau of Reclamation to reassess the potential water supply for the Project. This reassessment resulted in a scaled down project to 15,000+ acres. The Project was recently reauthorized by a popular vote within the service area. Presently, the Project is on hold pending action by Congress and Bureau of Reclamation officials.

More complete information on diversions by irrigation districts can be obtained from the District offices, the Department of Water Resources, and from the USGS.

In addition to the irrigation district's use of surface waters, numerous individual water rights are on file with the Department of Water Resources. Not all water rights are used continually. Table 7 illustrates water rights on file with the DWR.

TABLE 7

County	Acres	Irrigation	Power	Storage
Boone	6,190	77		8
Buffalo	6,504	35		4
Custer	35,000	119		7
Garfield	7,386	35		3
Greeley	2,957	41	1	
Howard	7,739	133		5
Loup	2,520	40		3
Merrick	89	2		
Nance	19,352	192	1	2
Platte	1,227	17		1
Rock	536	4		1
Sherman	4,173	77		4
Valley	8,880	59		9
Wheeler	703	6		2

Power Generation

During the first half of this century, water for power was developed at 37 sites in the Loup River drainage basin. Most power plants were small, either supplying the adjacent town with electrical energy or mechanical power for a grist mill. Problems caused by ice, floods, and deposition of sand resulted in abandonment of most of the electrical plants.

LOUP BASIN WATER SUPPLY AND USE 1982 WATER YEAR (IN ACRE FEET)

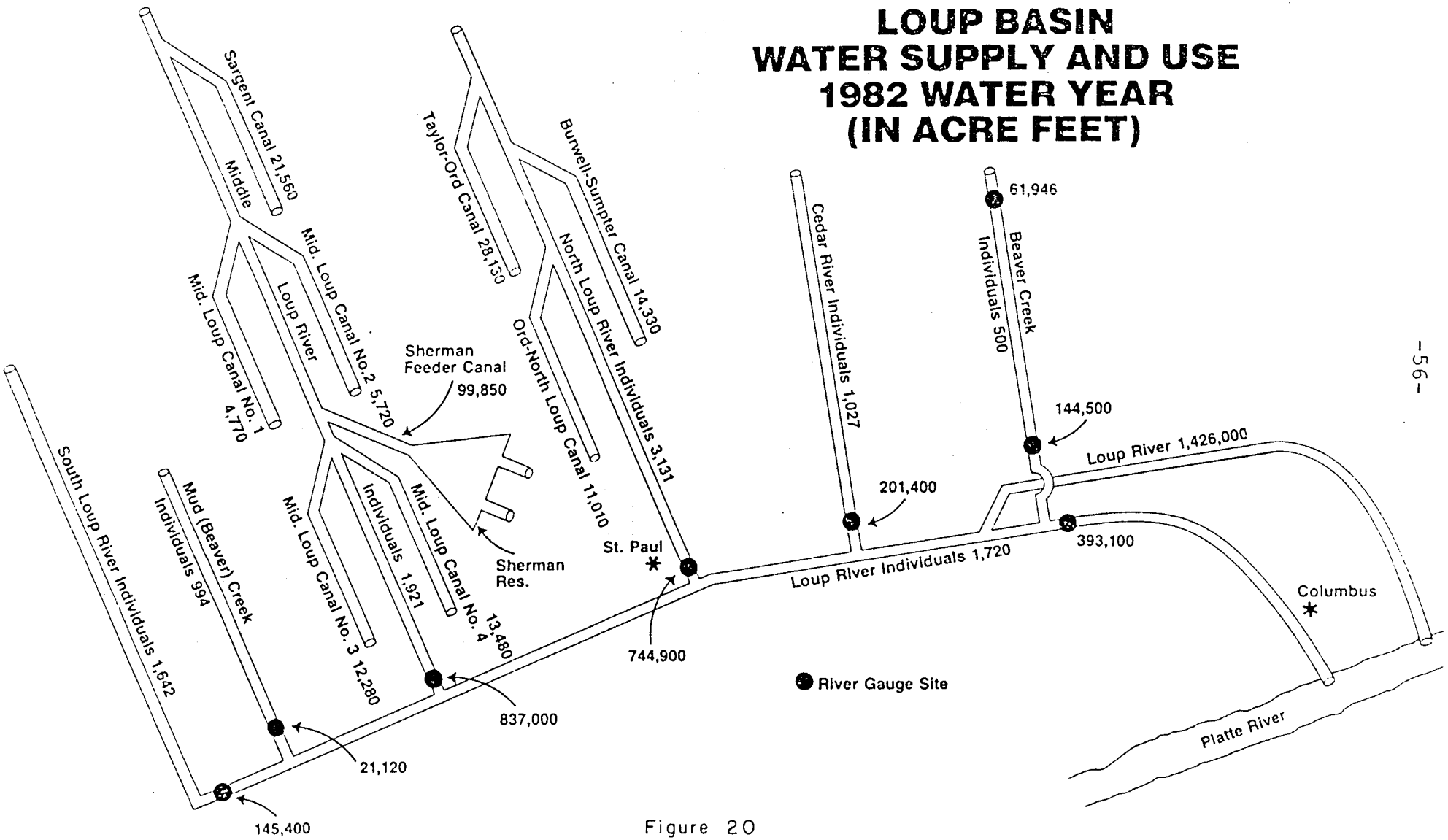


Figure 20

The Central Power Company in Howard County had an appropriation of 1,000 cfs dated July 14, 1914, and at one time was the largest hydro-electric powerplant in the state. Water was diverted from the Middle Loup River into the Boelus Power Canal about 5.5 miles upstream from the confluence of the Middle and South Loup Rivers and was discharged into the South Loup about 2 miles upstream from its confluence with the Middle Loup. This powerplant, located at the east end of the canal, continued to operate until the summer of 1972, at which time it was abandoned.

The Loup River Public Power District plant in Columbus is currently the principal producer of electricity in the basin. It began operations in December of 1936. It has 2 power plants on the Loup Power Canal, which divert from the Loup River in eastern Nance County. Because the water that passes through the plants via a 30-mile canal is not returned to the Loup River but discharges into the Platte River downstream from the mouth of the Loup, the discharge of the Loup at it's mouth is affected considerably.

The Loup River Public Power District's water right to divert 3,500 cfs from the Loup River is dated September 15, 1932. Subsequently, rights to divert water for irrigation at upstream locations were granted to the Middle Loup and North Loup Public Power and Irrigation Districts. As irrigation rights are superior to power rights according to Nebraska law and exercise of the junior upstream irrigation rights interfered with the senior right of the Loup River Public Power District, agreements were made whereby the Middle Loup and North Loup Districts would compensate the Loup River Public Power District for their interference with the District's water right. Individuals who also had junior rights to divert for irrigation at upstream locations were requested, beginning in 1955, to compensate the Loup River Public Power District for their interference. Several farmers who had obtained rights to pump irrigation water from the Loup River Power Canal similarly compensated the District. Because the Sargent, Farwell, and Twin Loups Irrigation Projects also are junior to the District and their operation would result in a further reduction of water available to the District for production of power, the U. S. Bureau of Reclamation entered into an agreement with the Loup River Public Power District whereby the irrigation projects would compensate the District for power interference by delivery of equivalent power from federal hydro-electric plants on the Missouri River.

The only other hydro-electric generation within the Basin in existence today is Right D1056 issued in 1890 for 290 cfs to the Cedar Valley Plant operated by the Village of Spalding on the Cedar River.

Domestic Users

As reported earlier in this plan, farm and ranch operations use surface waters for domestic livestock.

GROUNDWATER MONITORING

DISTRICT MONITOR WELLS

TRANSECT WELLS

DISTRICT RECORDER WELLS

AUTOMATIC RECORDER WELLS

HYDROLOGY - PLATTE/LOUP

GROUNDWATER -- MONITORING

The Lower Loup Natural Resources District began its Static Water Level Monitoring Program in 1975. A start-up grant from the U.S. Geological Survey assisted the District with the purchase of steel measuring tapes. USGS also provided staff training on proper methodology for monitoring and record keeping. The original program was directed at the monitoring of at least one irrigation well in each township in both spring and fall. A program of that magnitude called for 237 wells to be measured twice annually.

Fall measurements (after irrigation season) are taken to document the stress on the aquifer. Spring readings provide data on recovery and serve as the basis for determination of the condition of the supply.

Presently, monitoring is carried on from Albion where Earl Ramm, NRD Technician, measures wells in Boone, Platte, and Nance Counties; Dan Ray, NRD Technician at Spalding, measures wells in Greeley and Wheeler Counties; Lawrence Hansen measures wells in Valley, Howard, Sherman, and Buffalo Counties; Ray Guggenmos, NRD Technician at Burwell, measures wells in Rock, Loup, and Garfield Counties; and Tom Limbaugh and Orval Haumont measure wells in Custer County. The program currently has 233 monitored wells within the District.

Table 8 indicates spring and fall static water levels. In Table 8 the data for each county has a facing page with both static monitoring and water quality monitoring locations.

In 1985 the District will be adding 23 new measuring points in 10 well clusters located in Garfield and Wheeler Counties. These wells were established by the Conservation & Survey Division.

Measurements are recorded at the well site for benefit of the well owner. An observation well identifying sticker (see Figure 21) is attached at some convenient visible point. Readings, in feet to water, are recorded on the sticker for 5 years.

OBSERVATION WELL

Monitored for _____ *by* _____

The Lower Loup Natural Resources District

HADAR IND. PARK
N. Hwy. 11 - Ord, NE 68862
Ph. 308 728-3221

with cooperation from

This Landowner

• • •

The U.S. Geological Survey

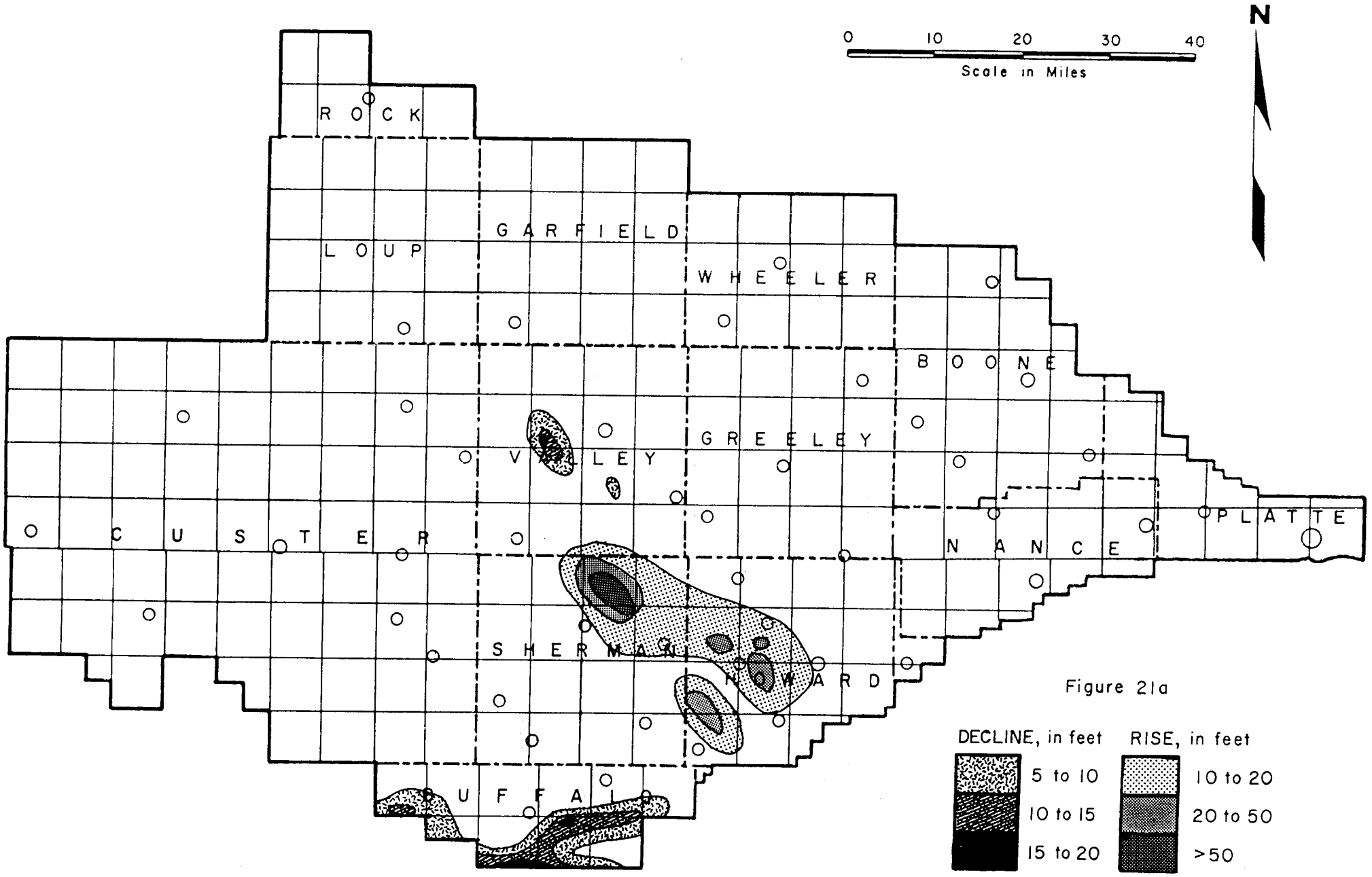
• • •

The Conservation and Survey Division of the University of Nebr.

Reg. Number

Date	Static level

Figure 21

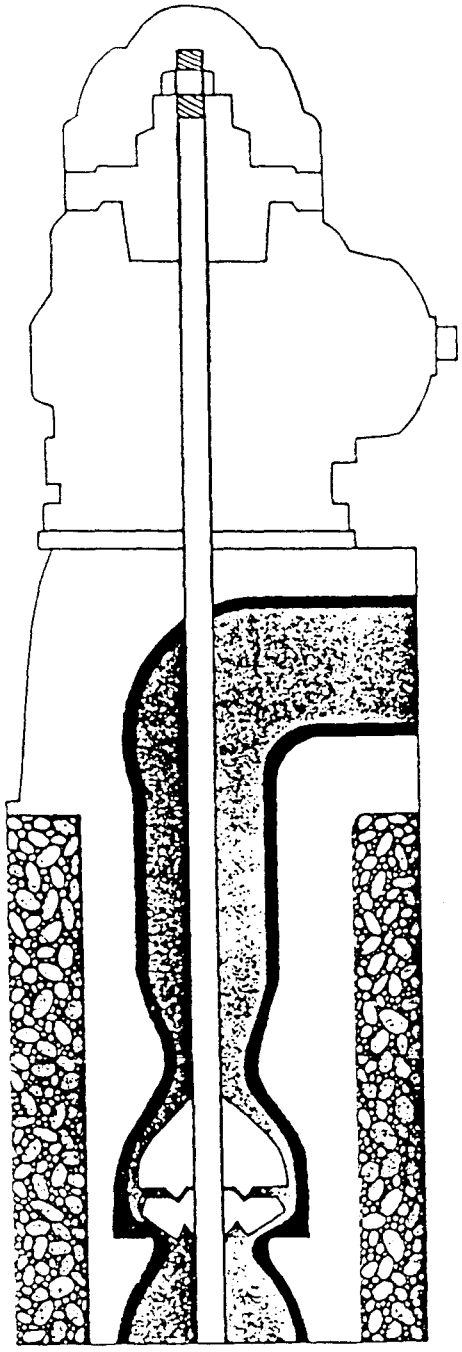


SIGNIFICANT RISES AND DECLINES IN LOWER LOUP NRD GROUNDWATER LEVELS SINCE THE BEGINNING OF LOCAL IRRIGATION TO FALL 1983 AS DOCUMENTED BY CONSERVATION AND SURVEY DIVISION, IANR, UNL

STATIC WATER LEVEL MONITORING PROGRAM

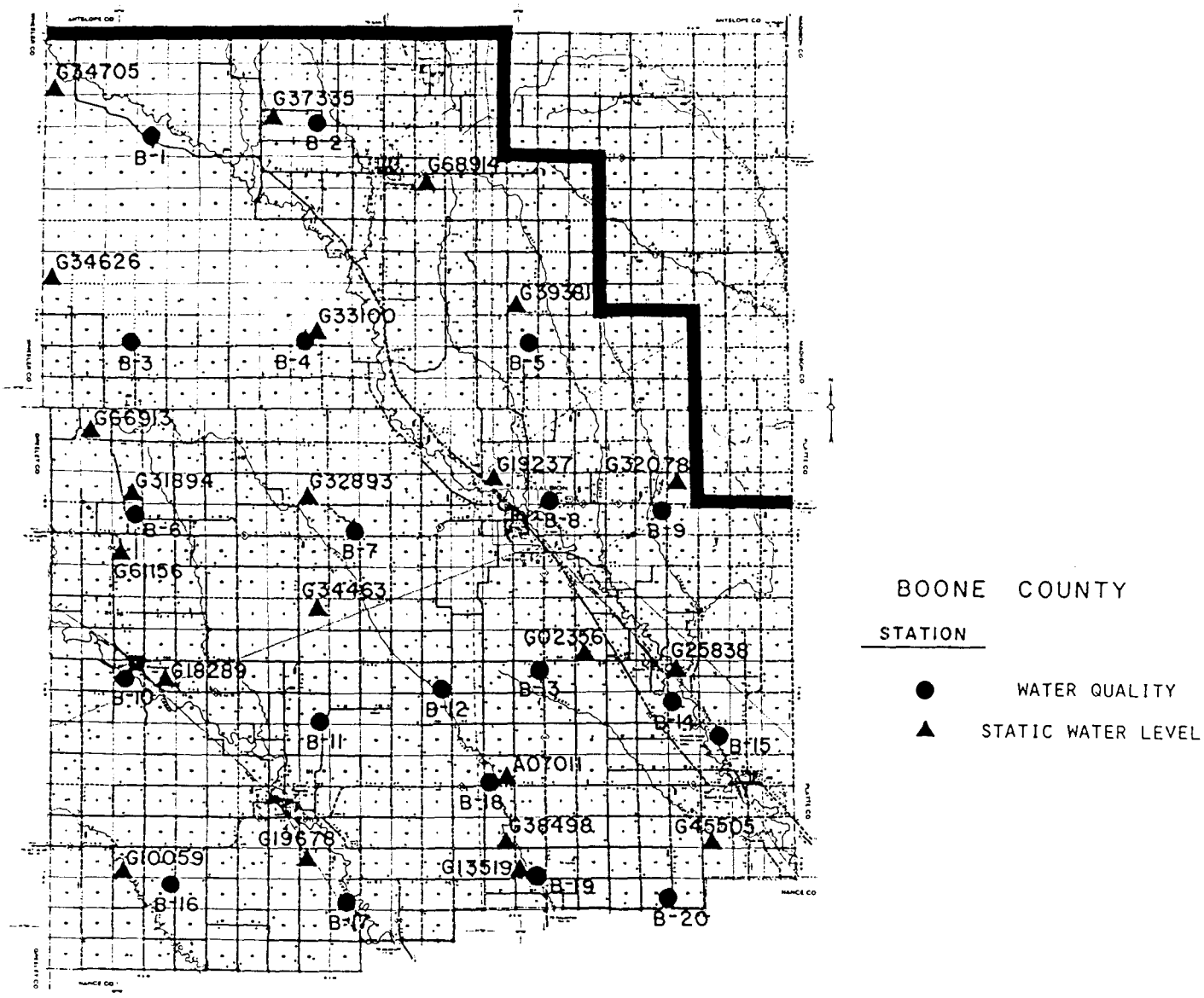
1985

Table 8



LOWER LOUP NATURAL RESOURCES DISTRICT

NO. HIGHWAY 11, HADAR INDUSTRIAL PARK
P. O. BOX 210, ORD, NEBRASKA 68862-0210
PHONE (308) 728-3221



Static Water Levels

Static water levels within the 23 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurement, and the Spring, 1982, base line measurement, all 23 are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Boone County in 1978. Twenty stations are included in the 1985 program.

Nitrate levels in 1985 range from a maximum of 12.9 mg/l in B-9 to 0.4 mg/l in B-4. The county average for years 1978-1985 for 172 tests is 3.1 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Boone County are: '77-2.2; '78-2.5; '79-2.6; '80-2.2; '81-3.6; '82-3.5; '83-5.8; '84-2.4; and '85-2.5.

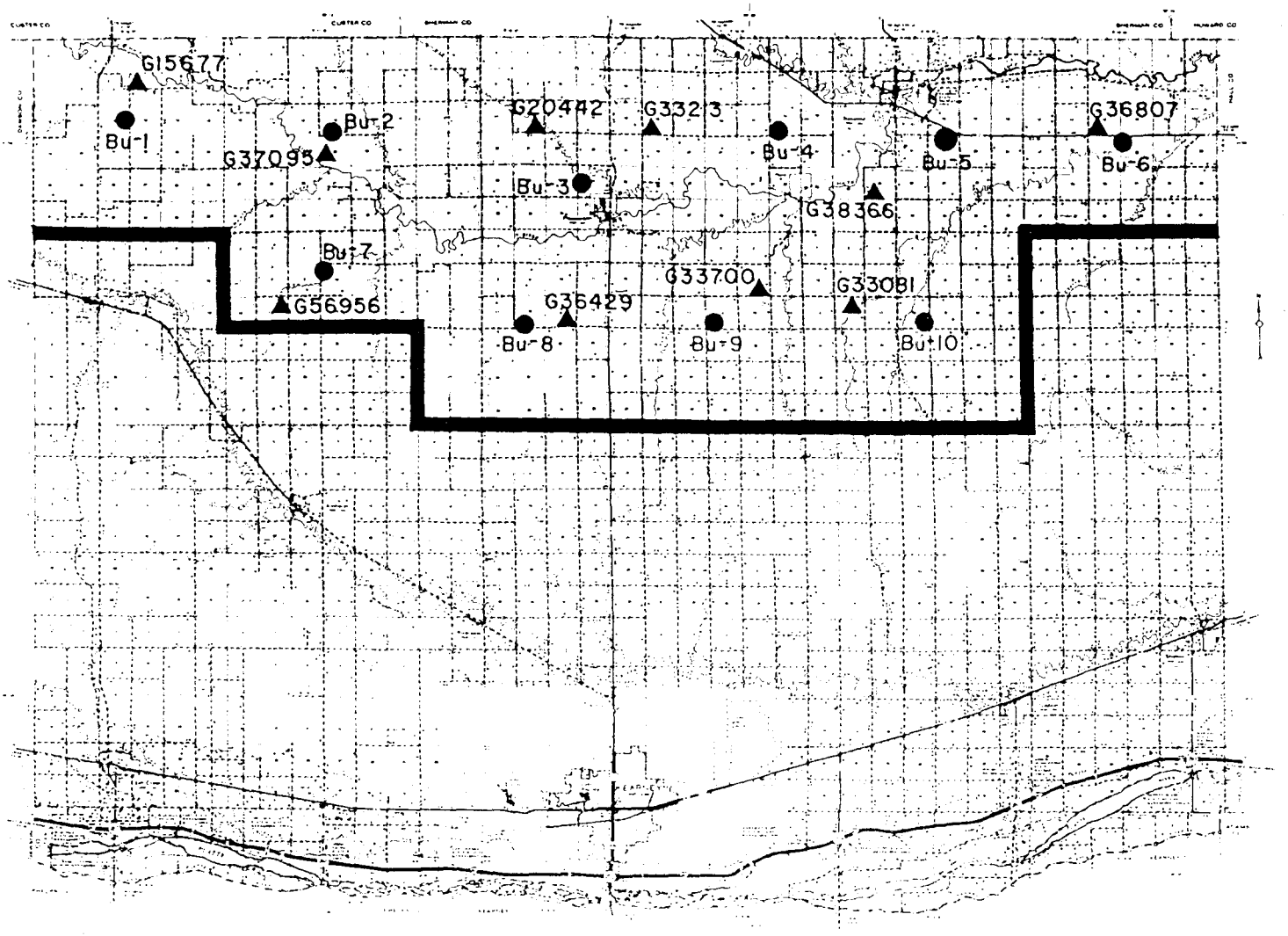
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, BOONE COUNTY

	NOBLE	WISE	BREM.	STORM	PELSTER	NIEW.	ROBERG	JOHNSON	ANDR.	IWAN	SHOTK.	BATEN.
REG. NO.	G34626	G18289	G13519	G25838	G37335	G39381	G32078	G19237	G33100	G32893	G02356	G19678
LEGAL:	7-21-8	15-19-8	15-18-6	16-19-5	17-22-7	15-21-6	16-20-5	16-20-6	21-21-7	16-20-7	12-19-6	16-18-7
DRILLED:	3-71	7-55	10-56	8-66	7-72	7-73	7-69	7-58	?	8-68	11-55	5-54
DEPTH:	165.00	20.00	60.00	27.00	50.00	63.20	178.00	60.00	?	129.00	?	40.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	176.12	19.54	54.70	26.80	49.30	50.00	178.00	36.10	-	125.80	121.10	41.93
F 1975	-	20.44	58.51	27.50	50.50	79.55	186.04	37.75	-	127.70	122.00	-
S 1976	175.10	19.80	55.80	26.24	51.86	70.20	182.88	36.19	-	126.39	119.86	41.45
F 1976	176.57	21.89	61.13	28.85	50.83	77.90	188.69	39.15	-	129.91	125.47	44.64
S 1977	175.46	20.17	56.80	27.29	50.25	66.70	183.94	37.24	-	127.63	120.80	41.57
F 1977	175.70	19.77	58.30	27.65	50.54	73.80	186.83	37.66	-	128.23	121.17	41.44
S 1978	175.64	18.40	55.55	25.89	52.11	65.81	183.82	34.95	147.27	126.90	119.87	38.17
F 1978	174.60	20.25	58.37	27.32	53.20	70.64	186.87	37.76	151.59	128.49	122.00	41.38
S 1979	175.82	18.60	55.42	25.45	51.85	65.03	183.28	34.87	148.80	126.80	119.05	39.05
F 1979	177.20	21.14	59.05	27.70	51.60	72.86	188.24	38.06	149.60	128.70	122.78	42.35
S 1980	175.20	19.31	55.60	26.10	51.30	63.45	183.46	32.07	148.00	126.78	119.19	40.34
F 1980	178.75	22.20	60.70	28.60	51.60	-	191.00	40.55	151.35	131.00	124.45	43.60
S 1981	178.80	20.63	57.43	25.32	51.40	69.53	185.50	38.40	149.27	128.60	121.38	41.28
F 1981	177.84	20.91	60.80	27.52	51.80	70.30	191.84	40.10	150.65	130.17	123.27	41.90
S 1982	177.05	19.89	57.58	26.40	50.25	70.10	188.00	37.94	148.90	128.75	120.60	40.34
F 1982	180.60	20.52	58.17	26.02	51.40	68.83	185.11	37.20	150.24	128.45	120.85	42.00
S 1983	176.70	18.52	54.83	24.51	50.22	67.10	182.86	34.45	148.90	127.22	119.70	39.71
F 1983	180.87	20.91	57.82	26.03	50.56	69.27	186.09	36.16	151.50	129.28	120.16	41.75
S 1984	178.10	16.96	52.57	22.87	48.97	67.04	181.08	31.63	147.63	126.81	116.67	38.40
F 1984	182.00	21.57	61.40	26.65	49.51	73.88	188.10	36.15	154.12	130.74	121.32	44.84
S 1985	175.10	19.03	51.07	24.86	48.16	71.76	179.63	34.75	146.28	126.13	116.83	38.93
F 1985	173.79	19.05	56.78	26.09	48.34	73.44	183.95	35.15	146.50	127.31	120.07	39.93

	LOWE	BAUM	KROHN	CARDER	CHOAT	CRUISE	WIEG.	BUET.	BUHLM.	FITZ.	RIECK
REG. NO.	G10059	G34705	G34463	A07011	G38498	G45505	G68914	G61156	G66193	G31894	G03431
LEGAL:	16-18-8	7-22-8	4-19-7	33-19-6	9-18-6	10-18-5	30-22-6	28-20-8	5-20-8	16-20-8	30-22-6
DRILLED:	10-56	5-71	9-70	4-54	4-72	4-75	6-83	11-78	7-81	5-69	3-57
DEPTH:	41.00	7.00	232.00	?	58.00	60.00	95.00	160.00	236.00	240.00	74.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	54.50	-	-	-	-	-	-	-	-	240.00	85.00
F 1975	-	6.50	223.40	-	-	-	-	-	-	241.00	87.50
S 1976	53.69	6.44	230.80	70.60	63.58	-	-	-	-	240.18	85.43
F 1976	55.64	6.59	234.50	74.20	66.60	58.80	-	-	-	242.10	89.26
S 1977	54.44	6.44	231.40	71.00	63.20	55.17	-	-	-	240.44	86.44
F 1977	46.70	6.10	233.04	72.20	64.30	56.40	-	-	-	241.09	87.44
S 1978	52.39	5.25	231.39	70.63	62.39	55.66	-	-	-	240.27	85.65
F 1978	53.49	6.54	233.10	72.22	64.40	56.74	-	-	-	241.23	89.54
S 1979	52.44	5.10	231.03	70.30	62.09	53.30	-	-	-	240.07	86.80
F 1979	54.00	7.00	233.59	72.66	65.40	57.56	-	-	-	241.06	89.09
S 1980	52.58	4.30	230.78	70.00	59.90	53.30	-	-	-	240.20	51.30
F 1980	55.10	7.50	236.20	74.65	-	58.45	-	-	-	243.08	-
S 1981	54.23	6.10	232.60	72.34	63.80	58.50	-	-	-	243.27	51.70
F 1981	54.50	7.35	234.80	74.10	65.80	60.90	-	-	-	241.38	52.65
S 1982	53.80	6.50	233.20	71.95	66.20	59.40	-	-	-	241.28	51.25
F 1982	54.30	7.32	232.89	71.90	67.33	59.85	-	-	-	241.66	52.31
S 1983	52.85	4.04	231.22	70.10	65.57	58.02	-	-	-	240.60	51.51
F 1983	53.47	5.87	234.02	72.30	64.10	54.74	91.10	161.00	234.77	242.35	53.22
S 1984	51.60	3.91	230.73	68.88	59.98	50.91	75.00	159.21	233.66	DISC.	DISC.
F 1984	53.46	5.82	235.82	76.45	71.36	56.50	82.80	162.21	235.98		
S 1985	50.43	3.53	230.37	68.03	58.66	51.58	73.70	158.60	233.04		
F 1985	50.77	3.00	232.31	70.69	62.35	54.81	75.64	159.38	233.28		



BUFFALO COUNTY

STATION

● WATER QUALITY

▲ STATIC WATER LEVEL

Static Water Levels

Static water levels within the 10 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurement, and the Spring, 1982, base line measurements, all 10 wells are within a few feet. Spring to fall measurements indicate drawdown in excess of 5 feet in 2 wells.

Water Quality

The District began its sampling program in Buffalo County in 1978. Eleven stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 4.7 mg/l in Bu-10 to 0.7 mg/l in Bu-3. The county average for years 1978-1985 for 102 tests is 2.5 mg/l. Tests for other parameters remain within normal limits except for Iron in Bu-6 which is above Public Health Service standards.

Nitrate-Nitrogen Trends

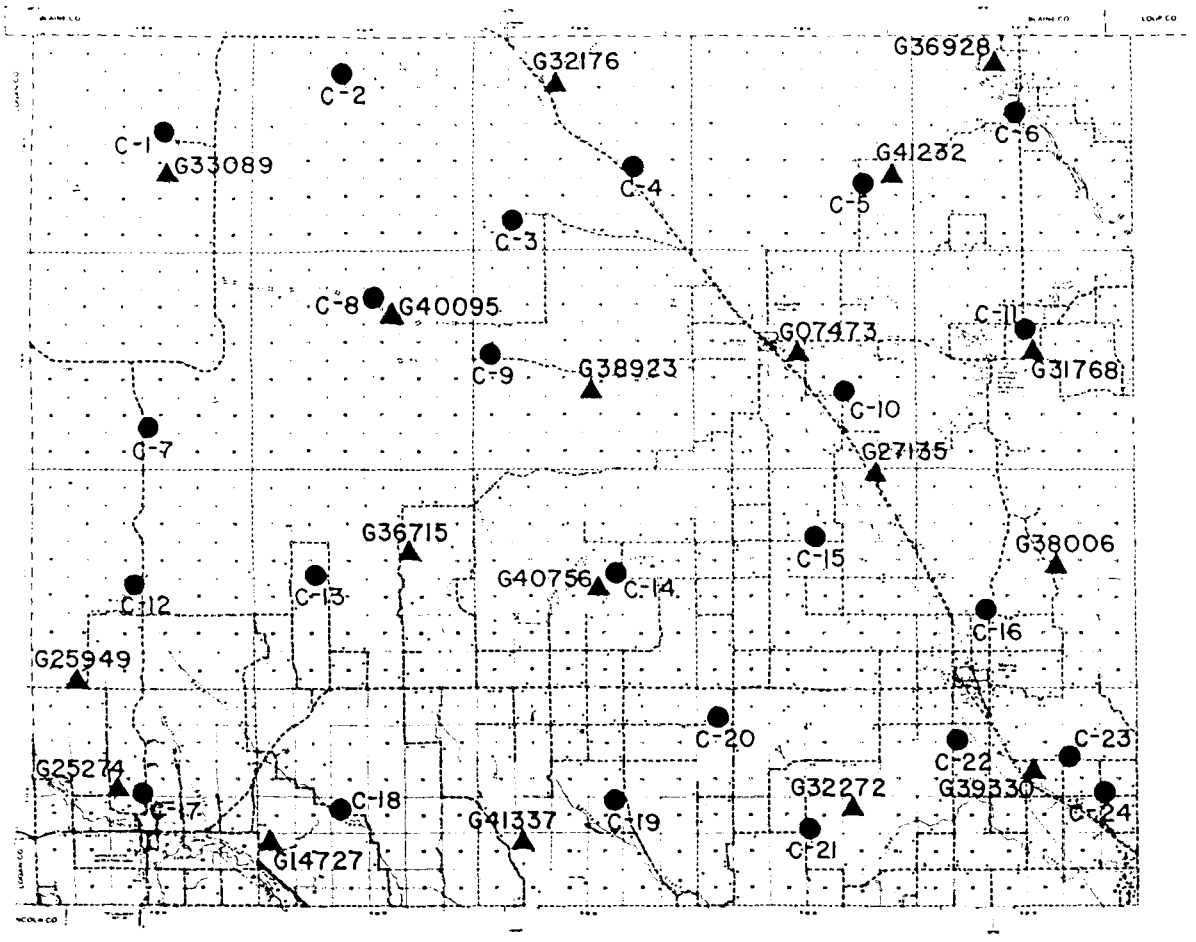
Nitrate-Nitrogen averages for years in mg/l for Buffalo County are: '78-6.7; '79-5.5; '80-1.1; '81-3.7; '82-1.8; '83-1.2; '84-1.4; and '85-1.7. High concentrations were evident in Bu-4 for '78, '79, '80, and '81 and were determined to be point source. A new well corrected the problem.

Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, BUFFALO COUNTY

	LINK	ROBINSON	MARTIN	TRIMBLE	KEILING	HARN.	TALBOT	FRIESEN	BETKE	SCHWARTZ
REG. NO:	G36807	G33700	G36429	G37095	G33081	G15677	G20442	G33213	G38366	G56956
LEGAL:	16-12-13	10-11-15	15-11-16	22-12-17	18-11-14	10-12-18	16-12-16	18-12-15	29-12-14	17-11-17
DRILLED:	4-72	9-70	4-72	6-72	4-70	7-58	7-59	7-70	10-69	5-77
DEPTH:	51.00	64.00	61.00	12.00	70.00	28.00	40.00	92.00	35.00	105.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	-	-	-	-	-	-	-	-	-	-
F 1975	-	62.40	59.10	10.50	76.90	23.30	43.50	73.10	28.00	-
S 1976	51.58	61.51	59.68	10.42	76.05	23.10	42.35	74.25	27.09	-
F 1976	54.30	66.21	60.58	11.39	79.85	23.20	47.51	75.66	29.24	-
S 1977	52.80	59.71	59.59	10.44	80.55	23.12	44.14	75.05	28.30	-
F 1977	53.10	65.17	60.48	10.89	79.18	22.72	45.24	75.72	28.58	106.88
S 1978	52.59	61.60	59.08	10.03	76.36	22.53	41.79	74.15	27.27	105.90
F 1978	54.60	64.25	61.03	11.59	79.98	22.64	46.57	75.81	28.56	107.42
S 1979	53.24	62.89	59.84	10.23	77.60	22.42	42.38	74.31	27.60	107.09
F 1979	55.41	65.37	62.00	11.79	79.90	22.89	46.85	75.98	28.73	108.05
S 1980	53.36	62.71	60.04	10.22	77.55	22.49	42.68	74.28	27.47	106.17
F 1980	56.56	68.54	63.15	12.78	83.11	23.79	49.52	77.10	30.13	110.69
S 1981	54.34	65.79	61.27	11.61	79.96	23.43	45.35	75.67	29.79	107.16
F 1981	57.13	68.81	63.32	12.42	82.82	24.60	49.95	77.09	29.90	111.03
S 1982	55.53	66.84	62.10	11.37	81.20	23.56	46.19	76.06	28.98	108.60
F 1982	56.54	69.76	63.73	11.93	83.65	23.84	49.74	77.65	30.27	111.39
S 1983	54.33	66.55	62.15	10.80	80.83	22.87	45.02	76.43	28.84	108.26
F 1983	55.41	67.73	62.85	12.59	84.73	23.37	46.60	78.44	29.90	109.65
S 1984	52.98	65.33	62.19	10.57	80.38	22.70	40.67	76.63	28.38	110.30
F 1984	54.66	69.09	64.40	11.98	85.41	21.82	47.65	78.58	31.87	112.54
S 1985	49.56	64.48	62.16	10.46	80.25	21.59	41.94	75.26	31.63	107.39
F 1985	49.60	26.00	65.52	62.49	9.68	113.06	80.16	21.40	42.99	75.58



NORTHWEST
CUSTER COUNTY

STATION

● WATER QUALITY

▲ STATIC WATER LEVEL

Static Water Levels

Static water levels within the 18 deep wells in the northwest quadrant of Custer County monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 18 are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in the northwest quadrant of Custer County in 1978. Twenty-two stations are included in the northwest quadrant in the 1985 program.

Nitrate-Nitrogen levels in the northwest quadrant in 1985 range from a maximum of 9.6 mg/l in C-22 to 0.3 mg/l in C-6. The northwest quadrant average for years 1978-1985 for 211 tests is 2.1 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for the northwest quadrant of Custer County are: '78-2.4; '79-2.2; '80-1.6; '81-2.1; '82-2.5; '83-2.1; '84-2.7; and '85-2.0.

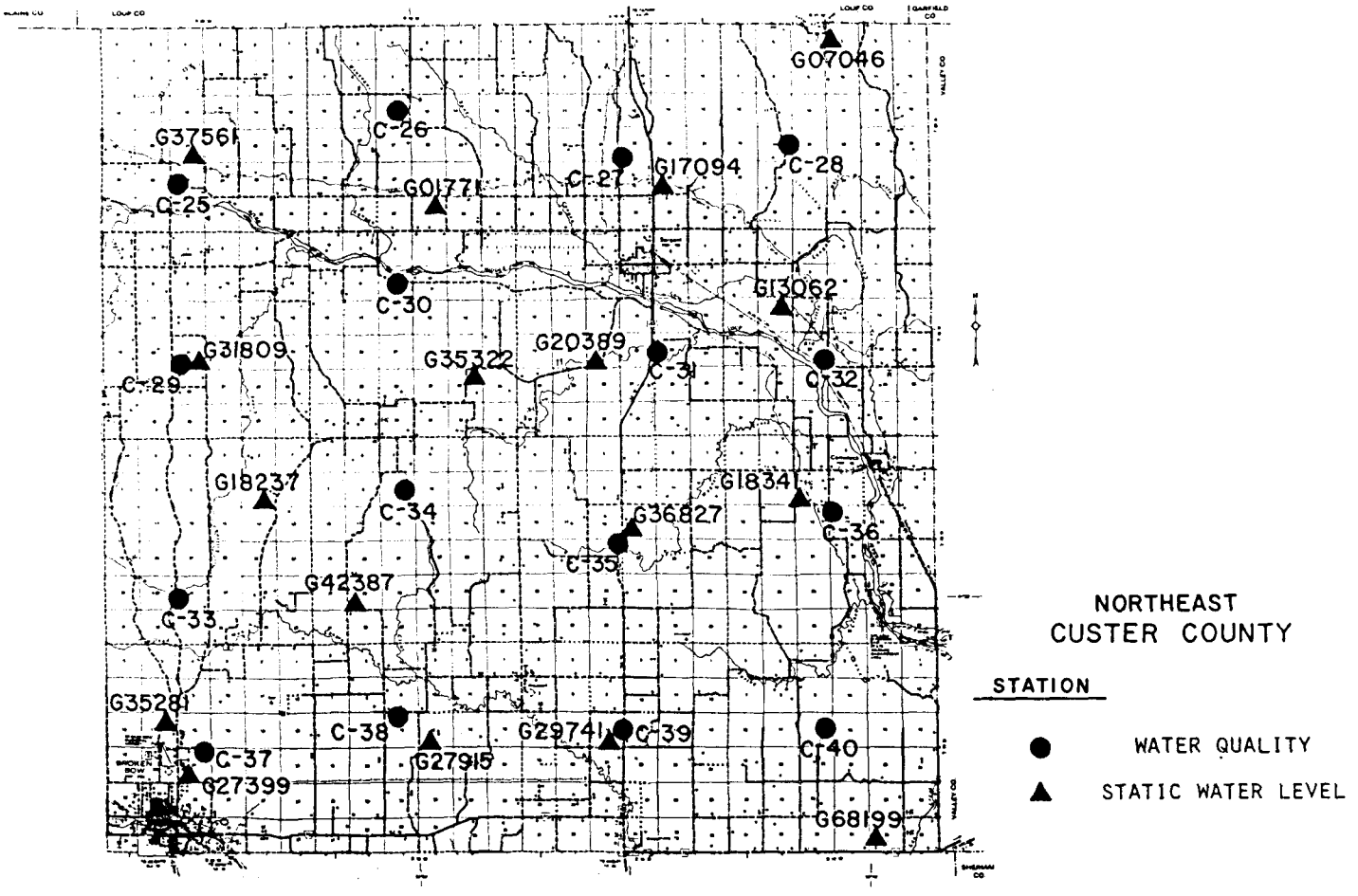
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, CUSTER CO. N.W.

	DEMARCO	KIRKPAT.	REICKS	ANDERSON	SPANEL	WERNER	GLEN	BURNETT	WILMOTH
REG. NO.	G36928	G41232	G32176	G33089	G31768	G38923	G40095	G38006	G27135
LEGAL:	4-20-21	24-20-22	9-20-23	22-20-25	15-19-21	22-19-23	9-19-24	15-18-21	2-18-22
DRILLED:	3-72	4-74	4-69	7-70	7-69	5-73	11-73	12-72	5-67
DEPTH:	10.00	170.00	55.00	60.00	40.00	97.00	26.00	150.00	47.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	45.50	168.40	53.90	56.70	41.00		22.00	147.00	50.60
F 1975	43.80	174.85	54.33	56.00	41.55	94.90	23.73	148.37	48.84
S 1976	7.48	169.64	54.10	60.40	40.80	94.18	29.25	147.76	48.56
F 1976	5.89	174.61	54.89	61.06	42.33	94.31	29.70	149.09	49.41
S 1977	6.44	174.47	54.34	60.59	41.25	94.20	29.50	147.90	48.71
F 1977	5.90	171.65	54.27	61.27	41.38	94.16	29.29	148.53	47.95
S 1978	5.82	172.85	53.10	59.86	39.89	93.19	28.48	146.87	47.52
F 1978	6.07	168.90	53.36	62.60	41.36	93.15	28.90	148.35	47.70
S 1979	5.61	164.60	53.50	63.42	40.25	92.36	27.82	146.60	46.87
F 1979	5.98	171.17	52.65	61.17	41.42	92.52	27.99	148.00	48.06
S 1980	5.33	169.78	51.51	59.13	40.00	92.05	27.47	146.68	47.25
F 1980	5.92	173.50	51.87	59.56	41.86	92.69	27.41	148.90	48.73
S 1981	6.35	167.04	51.15	59.01	41.10	92.33	27.19	148.04	47.41
F 1981	5.50	173.07	52.10	59.41	41.09	92.59	27.50	148.10	48.69
S 1982	5.82	166.62	51.26	59.03	40.52	92.28	27.48	147.55	48.25
F 1982	5.18	168.26	52.32	59.96	40.76	92.79	28.13	148.86	48.26
S 1983	4.89	166.64	50.71	59.27	40.16	92.05	27.65	153.05	48.41
F 1983	4.09	167.27	50.55	58.59	40.65		25.49	148.24	48.32
S 1984	3.15	165.36	48.00	56.85	39.00	91.38	24.79	147.02	47.26
F 1984	4.10	166.20	47.37	56.93	40.69	91.52	24.09	149.38	48.44
S 1985	4.56	164.66	46.02	55.59	39.62	90.40	23.12	147.45	47.32
F 1985	4.37	164.59	48.33	55.85	40.88	90.16	23.46	149.13	47.89

	LEIBHART	BARTAK	KOUBEK	LEWIS	WHITNEY	CROW	DAVEN.	ANDER.	VOGEL
REG. NO.	G40756	G36715	G25949	G07473	G39330	G25274	G41337	G32272	G14727
LEGAL:	15-18-23	14-18-24	32-18-25	16-19-22	15-17-21	16-17-25	29-17-23	23-17-22	30-17-24
DRILLED:	3-74	3-72	7-66	7-50	6-73	1-61	9-73	10-69	4-52
DEPTH:	147.00	188.00	89.00	30.00	124.00	40.00	186.00	196.00	42.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	147.00	193.00	87.30		121.00	36.80			
F 1975	149.07	193.54	89.22		122.49	35.66			
S 1976	147.44	193.54	88.05		121.12	34.71	193.13		
F 1976	148.55	193.89	89.40		123.20	34.02	189.58	196.74	
S 1977	148.13	193.69	88.13		121.63	34.59	193.18	195.90	
F 1977	148.01	193.98	88.62		122.07	35.04	194.05	196.54	
S 1978	147.00	193.40	87.22		120.15	33.95	193.2	194.95	
F 1978	147.80	194.00	89.16		121.58	35.65	194.23	196.35	
S 1979	146.74	193.25	87.56	29.25	119.71	34.29	193.28	194.80	
F 1979	147.41	193.53	89.85	29.78	123.07	35.82	194.69	196.57	45.72
S 1980	146.59	193.08	87.92	29.16	120.54	34.35	193.34	194.89	44.28
F 1980	148.05	193.40	89.63	30.02	124.37	36.36	194.66	194.66	45.90
S 1981	147.40	193.08	88.60	30.04	122.78	35.26	193.78	196.07	44.98
F 1981	148.02	193.37	89.25	30.28	123.33	35.33	194.24	197.32	45.25
S 1982	147.11	192.70	88.15	29.80	121.62	34.54	192.5	195.82	44.57
F 1982	148.16	193.19	89.92	30.44	124.38	35.94	194.48	196.69	45.74
S 1983	147.41	192.33	88.24	29.69	122.10	34.34	194	196.24	44.57
F 1983		192.54	88.56	28.48		34.99		197.35	44.55
S 1984	147.04	192.57	87.07	27.78	120.80	33.42	192.45	195.77	43.78
F 1984	148.28	190.92	88.38	28.34	125.34	35.29	193.85	200.3	45.68
S 1985	146.64	191.94	87.02	27.34	120.99	34.28	192.65	195.95	44.14
F 1985	146.98	191.93	88.46	27.78	123.68	34.81	193.53	198.2	44.99



Static Water Levels

Static water levels within the 17 deep wells in the northeast quadrant of Custer County monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 17 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in the northeast quadrant of Custer County in 1978. Sixteen stations are included in the northeast quadrant in the 1985 program.

Nitrate-Nitrogen levels in the northeast quadrant in 1985 range from a maximum of 7.4 mg/l in C-38 to 0.7 mg/l in C-27. The northeast quadrant average for years 1978-1985 for 142 tests is 3.0 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for the northeast quadrant of Custer County are: '78-2.9; '79-3.4; '80-3.0; '81-2.6; '82-3.8; '83-3.6; '84-3.5; and '85-2.7.

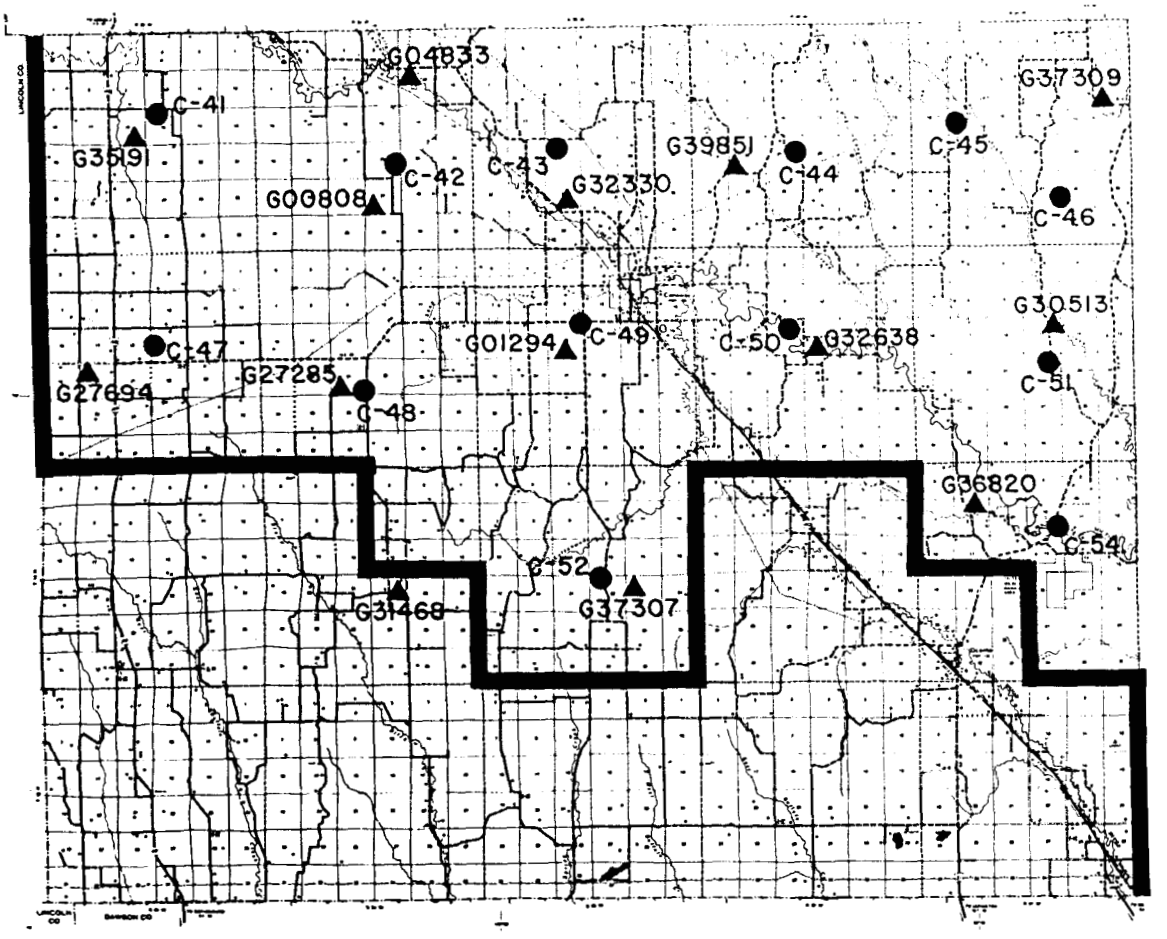
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, CUSTER CO. N.E.

	FULLER	FELLOWS	SLAGLE	HART	BARNHART	SCHWEIT.	TOBIAS
REG. NO.	G07046	G17094	G37561	G13062	G20389	G31809	G36827
LEGAL:	4-20-17	26-20-18	21-20-20	17-19-17	20-19-18	21-19-20	15-18-18
DRILLED:	9-48	8-35	8-72	5-56	7-59	7-69	5-72
DEPTH:	45.00	85.00	53.00	16.00	61.00	79.00	140.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	49.00	90.00	53.00	10.10	64.40	76.90	105.00
F 1975	53.58	85.11	53.55	10.36	65.93	78.38	106.69
S 1976	54.17	85.61	53.87	9.64	64.57	77.71	105.49
F 1976	53.70	88.52	53.35	10.05	66.10	79.24	108.22
S 1977	54.25	85.50	52.44	10.24	65.09	78.34	106.28
F 1977	53.57	84.84	53.07	9.26	65.44	78.65	106.47
S 1978	53.62	85.21	53.36	7.62	64.21	77.18	105.07
F 1978	52.96	84.10	52.80	10.41	65.22	78.90	108.06
S 1979	53.62	84.45	52.78	9.35	64.50	77.06	105.65
F 1979	53.41	81.72	53.22	10.22	65.90	78.25	109.06
S 1980	53.97	82.88	53.98	8.37	64.93	77.34	106.12
F 1980	53.35	81.19	53.44	10.54	68.83	78.89	108.77
S 1981	53.79	82.27	54.08	9.21	65.55	78.50	107.45
F 1981	52.96	80.73	53.35	9.54	65.69	78.37	107.89
S 1982	53.53	82.04	54.00	7.61	64.96	77.93	106.80
F 1982	52.90	80.98	53.29	8.91	65.78	78.99	109.10
S 1983	53.66	82.23	54.05	6.90	64.00	78.25	106.65
F 1983	52.59	83.71	52.64	8.58		79.13	107.60
S 1984	53.06	80.14	53.20	6.25	64.16	77.33	105.79
F 1984	52.47	78.17	50.49	9.31	65.08	78.91	108.76
S 1985	52.94	83.45	53.34	8.99	63.90	77.22	105.34
F 1985	51.71	77.98	49.83	8.59	65.02	78.79	106.99

	NELSON	HARROLD	HAUMONT	SHOTKOSKI	SHOTKOSKI	MATTOX	HAZLETT
REG. NO.	G18341	G42387	G18237	G68199	G68199	G35322	G01771
LEGAL:	9-18-17	29-18-19	11-18-20	26-17-17	26-17-17	26-19-19	34-20-19
DRILLED:	5-48	10-74	7-55	?	?	8-71	7-49
DEPTH:	18.00	73.00	96.00	?	?	142.00	-
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	20.90	70.60	96.35	80.20			
F 1975	19.06	71.45	97.87	82.48		163.50	
S 1976	20.18	70.60	97.42	80.44		143.07	
F 1976	17.92	72.16	98.40	82.90		144.79	46.11
S 1977	20.25	71.29	97.95	80.33		143.3	46.81
F 1977	18.69	71.54	97.44	80.64		143.86	45.39
S 1978	19.76	69.10	97.14	78.82		143.04	46.66
F 1978	18.63	71.10	99.65	79.30		143.84	45.48
S 1979	20.51	70.15	96.84	81.20		142.68	46.31
F 1979	18.53	71.45	98.20	81.80		144.37	45.87
S 1980	20.41	70.35	96.89	79.13		142.93	46.49
F 1980	18.96	72.17	98.70	82.34		144.47	45.01
S 1981	21.30	71.58	98.31			143.55	45.99
F 1981	19.48	71.64	98.30	83.80		143.64	45.16
S 1982	20.28	71.08	97.55			142.8	45.11
F 1982	19.02	71.62	98.39			143.84	45.34
S 1983	18.75	70.96	97.56		94.30	142.91	45.89
F 1983	18.27	71.55	98.52		94.19	141.89	44
S 1984	17.00	70.00	96.79		92.70	142.05	44.42
F 1984	16.79	70.62	97.90		94.42	143.5	43.56
S 1985	19.00	69.48	96.50		92.23	141.02	44.6
F 1985	16.50	70.36	97.75		93.37	142.91	44.22



SOUTHWEST
CUSTER COUNTY

STATION

● WATER QUALITY

▲ STATIC WATER LEVEL

Static Water Levels

Static water levels within the 14 deep wells in the southwest quadrant of Custer County monitored since 1975 have remained good with some declines from the District's first record, and 1-2 feet of decline and rise from Spring, 1982. Spring and fall measurements, however, show fluctuations up to 27 feet in G-31468, and lesser in G-37307, G-27285, and G-27694.

Water Quality

The District began its sampling program in the southwest quadrant of Custer County in 1978. Thirteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in the southwest quadrant in 1985 range from a maximum of 59.5 mg/l in C-52 to 0.8 mg/l in C-49. The southwest quadrant average for years 1978-1985 for 117 tests is 3.6 mg/l. Tests for other parameters remain within normal limits except for high Conductivity in C-52.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for the southwest quadrant of Custer County are: '78-2.3; '79-2.4; '80-2.9; '81-2.9; '82-5.7; '83-3.7; '84-3.5; and '85-7.4.

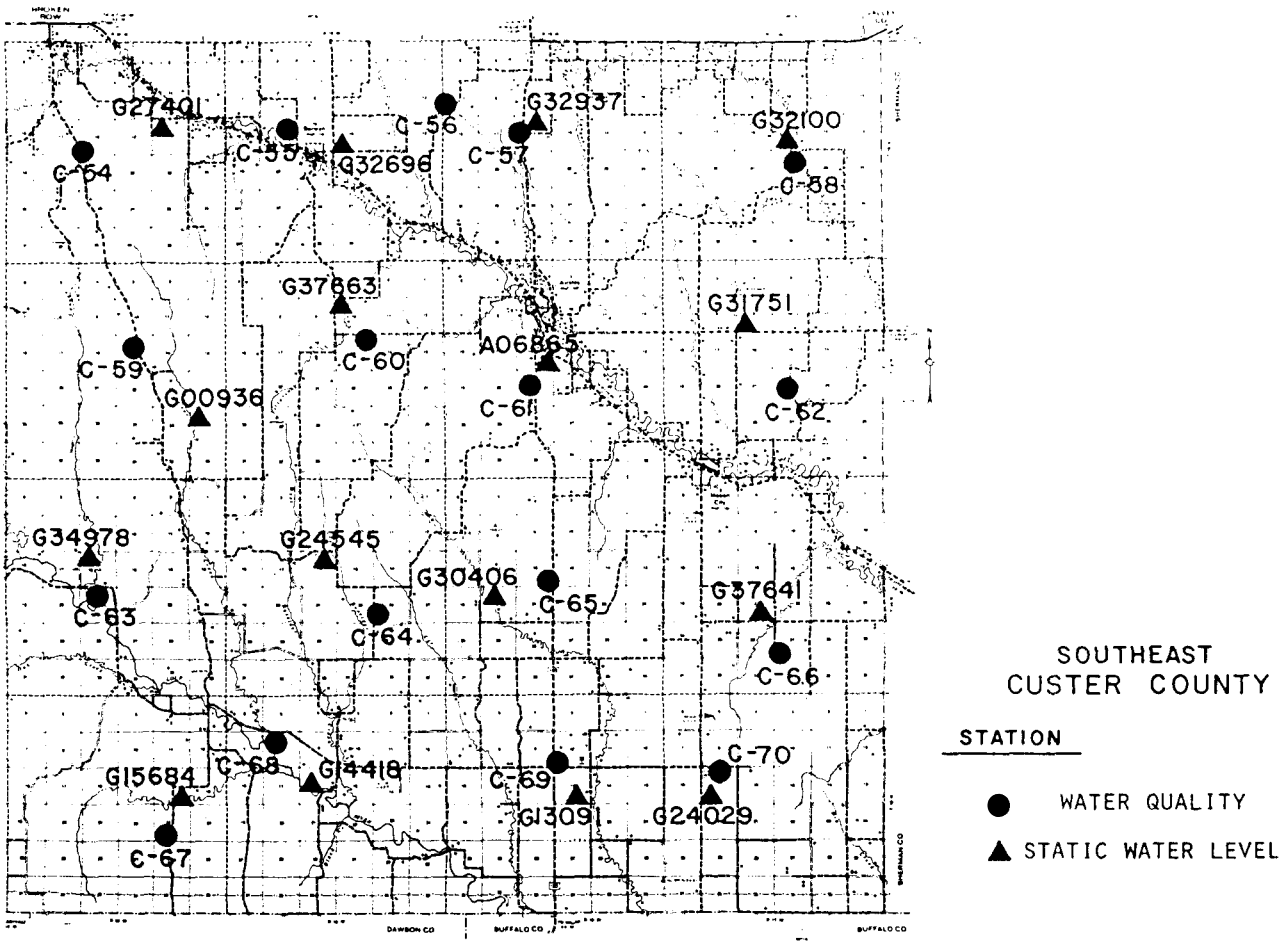
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, CUSTER CO. S.W.

	ADAMS	FISHER	G'SCHW.	VANCL.	KOLBO	CORBIN	LEIBART
REG. NO.	G37309	G39851	G32330	G04833	G00808	G35191	G30513
LEGAL:	13-16-21	20-16-22	28-16-23	11-16-24	27-16-24	16-16-25	15-15-21
DRILLED:	6-72	7-73	8-63	8-55	4-41	8-71	6-68
DEPTH:	186.00	63.00	19.00	9.00	-	105.00	57.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	179.70	62.00	17.40	7.90	77.70	100.00	57.50
F 1975	180.81	62.78	29.24	9.09	80.67	102.02	59.18
S 1976	182.07	61.89	27.46	8.25	78.09	101.28	58.98
F 1976	184.78	63.81	30.15	9.40	81.12	103.90	58.86
S 1977	182.57	62.02	27.96	8.47	78.57	101.64	58.90
F 1977	182.62	62.96	28.81	9.32	79.86	103.63	58.61
S 1978	179.57	61.24	26.90	7.86	78.06	99.85	58.86
F 1978	181.76	62.25	29.95	6.97	79.87	103.97	58.48
S 1979	179.88	61.48	27.52	8.44	78.26	101.10	58.05
F 1979	181.80	64.12	31.20	10.40	80.66	104.16	59.09
S 1980	179.50	61.84	28.06	8.64	78.91	101.68	58.26
F 1980	182.53	64.00	30.99	10.55	80.87	105.00	58.60
S 1981		62.58	29.27	9.37	79.67	102.63	58.57
F 1981	181.88	63.26	29.84	9.83	80.15	103.99	59.50
S 1982	180.27	62.24	28.65	8.05	79.33	102.12	59.00
F 1982	182.55	64.16	30.82	10.52	81.57	105.06	59.98
S 1983	180.37	62.36	28.51	8.95	80.17	102.78	59.20
F 1983	182.18	62.98	29.13				59.42
S 1984	181.30	61.75	27.57	8.12	79.17	101.57	58.53
F 1984	184.91	64.75	31.40	10.77	82.36	104.44	59.96
S 1985	181.46	61.90	28.10	8.71	79.10	101.50	58.68
F 1985	181.18	63.74	29.95	9.77	80.95	104.56	59.01

	HICKENB.	SCHUSTER	POTTER	ERIKSON	HORN	PHELPS	BUSS
REG. NO.	G32638	G01294	G27285	G27694	G36820	G37307	G31468
LEGAL:	15-15-22	16-15-23	21-15-24	20-15-25	8-14-21	23-14-23	22-14-24
DRILLED:	4-70	10-56	5-67	7-67	5-72	6-72	5-69
DEPTH:	11.00	-	251.00	258.00	35.00	220.00	-
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	6.00	25.00	252.50	258.00	33.00		
F 1975	7.28	26.72	255.78	261.80	33.15		
S 1976	6.97	24.74	252.86	261.30	32.86		
F 1976	8.18	28.41	263.05	264.90	34.37	227.45	184.79
S 1977	6.86	25.57	253.00	262.05	31.10	220.29	172.48
F 1977	7.50	26.72	259.32	264.85	33.47	227.18	185.03
S 1978	6.04	23.51	255.32	259.77	31.14	217.66	176.02
F 1978	8.04	28.58	262.42	266.37	33.64	228.47	187.28
S 1979	6.37	24.38	253.52	260.24	32.38	219.44	171.87
F 1979	8.38	30.10	265.22	267.74	34.29	231.01	193.35
S 1980	6.65	25.53	253.88	260.40	32.91	219.77	172.42
F 1980	8.89	29.02	270.90	270.51	34.81	233.61	199.59
S 1981	7.36	26.70	255.92	261.83	33.47	221.43	174.95
F 1981	7.59	27.30	258.86	264.12	33.68	224.50	180.65
S 1982	6.88	25.60	253.85	260.32	32.94	219.32	172.30
F 1982	7.91	28.12	262.90	267.52	34.34	228.91	188.80
S 1983	6.52	26.00	254.70	261.00	33.00	220.52	173.14
F 1983					33.62		
S 1984	5.77	24.70	251.70	260.58	32.15	219.55	171.87
F 1984	8.55	28.57	262.73	272.95	33.25	233.51	174.92
S 1985	6.85	25.39	254.89	261.45	32.62	220.37	173.33
F 1985	8.01	27.94	260.98	270.57	33.96	226.65	175.94



Static Water Levels

Static water levels within the 16 deep wells in the southeast quadrant of Custer County monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 16 wells are within a few feet. Spring to fall measurements, which indicate drawdown, show a few declining slightly; however, all recover within a few feet.

Water Quality

The District began its sampling program in the southeast quadrant of Custer County in 1978. Fifteen stations are included in the southeast quadrant in the 1985 program.

Nitrate-Nitrogen levels in the southeast quadrant in 1985 range from a maximum of 7.7 mg/l in C-64 to 1.5 mg/l in C-56. The southeast quadrant average for years 1978-1985 for 151 tests is 2.7 mg/l. Tests for other parameters remain within normal limits except for station C-68 which shows high Conductivity and Sulfate tests.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for the southeast quadrant of Custer County are: '78-3.4; '79-2.9; '80-2.6; '81-2.4; '82-2.6; '83-2.9; '84-2.9; and '85-2.9.

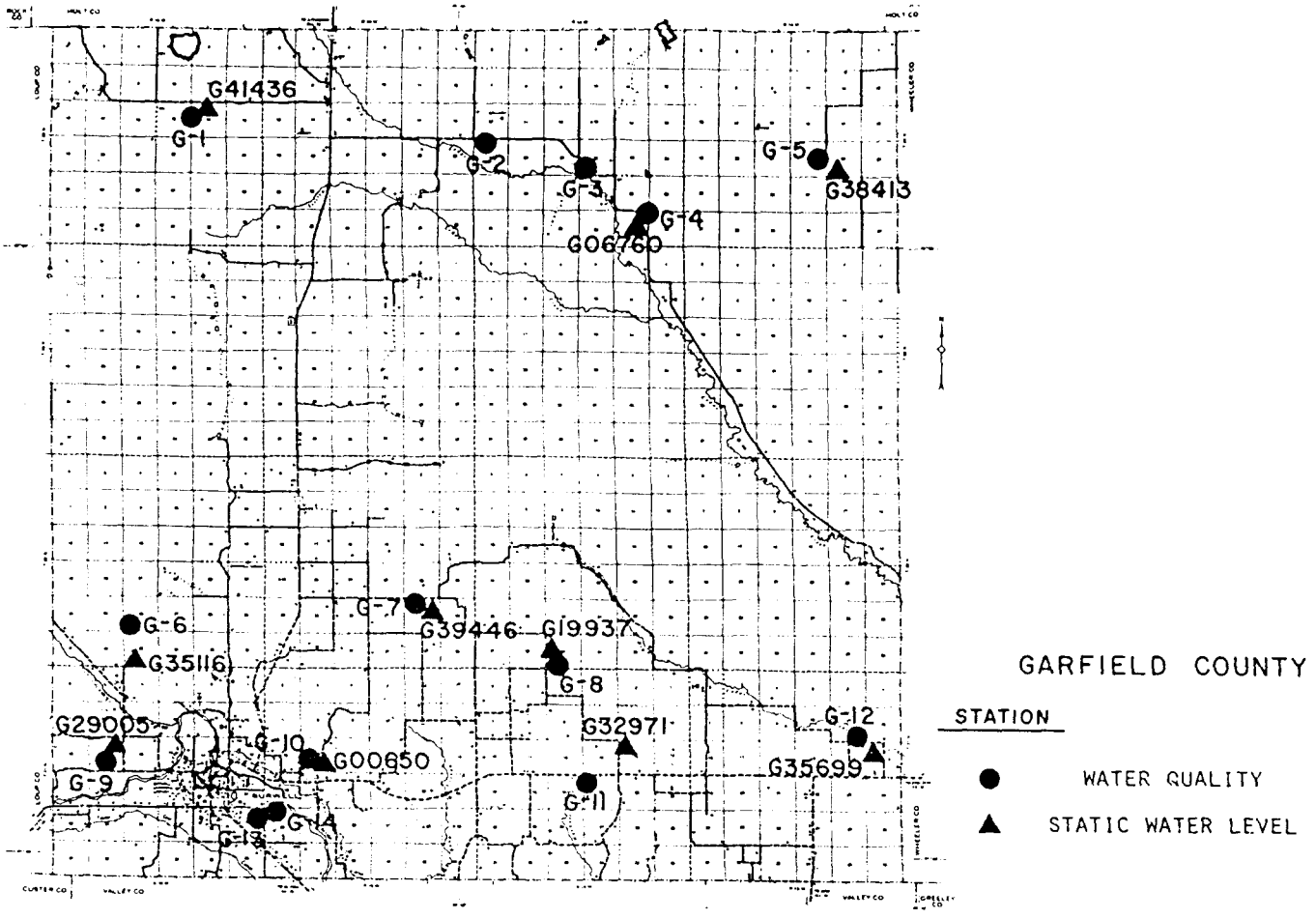
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, CUSTER CO. S.E.

	WEST	PETRICK	ALLEN	LARSON	KING	GEHRT	DOCK.	MCCLURE
REG. NO.	G31751	A06865	G37663	G00936	G24029	G13091	G15684	G37641
LEGAL:	9-15-17	16-15-18	10-15-19	25-15-20	17-13-17	15-13-18	14-13-20	21-14-17
DRILLED:	12-68	4-67	9-72	3-55	4-65	6-53	5-57	7-72
DEPTH:	89.00	23.00	64.00	-	172.00	45.00	68.00	55.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	98.10		58.70	96.00	168.00	55.00	53.40	50.80
F 1975	99.62	16.02	59.46	95.80	171.50	56.64	53.82	51.80
S 1976	99.89	15.86	59.12	100.89	170.19	55.44	53.47	50.87
F 1976	101.22	16.86	60.33	97.06	172.63	57.36	54.48	53.42
S 1977	99.44	16.00	59.49	96.16	169.98	56.14	53.91	51.74
F 1977	99.53	15.68	59.54	97.52	171.33	53.92	54.71	52.43
S 1978	98.84	14.67	58.63	96.23	168.48	50.89	53.97	46.57
F 1978	99.15	15.55	59.29	97.33	170.17	54.47	54.65	50.02
S 1979	97.40	24.99	58.98	96.22	168.03	52.63	53.41	49.11
F 1979	98.99	26.34	59.54	96.69	169.39	53.18	54.68	50.60
S 1980	97.97	14.80	58.75	96.07	167.43	52.84	53.46	49.73
F 1980	100.50	17.15	60.30	96.95	171.47	56.73	55.19	51.84
S 1981	99.05	15.93	59.51	96.44	168.36	55.53	54.61	51.11
F 1981	99.59	15.68	59.55	96.30	169.32	56.20	55.10	52.60
S 1982	98.70	15.38	59.02	95.75	167.60	55.33	54.10	51.51
F 1982	99.73	15.89	59.76	96.68	169.09	55.31	54.73	52.01
S 1983	98.38	14.50	58.85	96.05	167.72	54.89	54.07	50.90
F 1983	98.49	26.01	59.27		168.80	69.76	54.09	51.83
S 1984	97.27	12.95	58.40	96.15	167.33	52.72	53.33	49.84
F 1984	98.44	25.88	59.41	96.38	169.98	54.95	54.19	50.42
S 1985	96.88	14.58	58.49	95.99	167.49	53.55	53.32	48.59
F 1985	96.91	24.92	58.83	96.20	166.56	53.83	54.14	48.59

	ROLLAND	GRIFFITH	MYERS	CHERRY	STUNKEL	FERGUSON	FOSTER	OWEN
REG. NO.	G30406	G24545	G34978	G14418	G32100	G32937	G23696	G27401
LEGAL:	20-14-18	16-14-19	14-20-16	16-13-19	15-16-17	16-16-18	15-16-19	14-16-20
DRILLED:	8-68	6-65	7-71	4-57	10-69	6-70	4-70	5-67
DEPTH:	120.00	116.00	49.00	45.00	40.00	70.00	23.00	17.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	120.00	117.40	40.50		49	64	21.00	18.80
F 1975	121.46	118.50	40.82		50.5	65.07	21.33	20.20
S 1976	119.85	118.32	40.57	65.02	49.49	64.48	20.66	18.48
F 1976	121.31	118.89	41.93	46.26	51.61	65.91	22.62	21.51
S 1977	120.30	119.10	40.64	46.19	50.17	65.02	21.39	20.10
F 1977	121.03	119.12	40.87	47.06	50.61	64.98	21.12	19.68
S 1978	120.15	118.43	39.54	45.51	48.72	63.62	19.59	17.30
F 1978	120.81	119.35	41.12	46.73	49.59	63.53	21.31	19.31
S 1979	120.17	118.36	39.48	45.69	47.9	63.8	19.92	16.98
F 1979	120.57	118.78	41.39	47.13	49.65	64.38	21.28	19.24
S 1980	120.26	118.51	39.98	45.77	47.99	63.68	19.86	17.48
F 1980	121.52	119.28	43.90	48.33	51.55	65.72	22.25	21.02
S 1981	120.91	118.89	40.79	46.64	50.16	65.14	21.31	20
F 1981	121.75	119.38	46.24	47.70	50.65	72.43	21.07	19.6
S 1982	121.02	118.20	40.22	46.22	49.39	64.54	20.25	18.5
F 1982	122.67	119.31	41.17	47.64	49.99	65.2	20.88	19.78
S 1983	120.66	118.53	40.00	46.13	48.3	63.82	19.15	17.35
F 1983	120.15	119.31	40.84	46.71		65.09	20.02	18.26
S 1984	120.87	119.00	39.17	45.45	46.4	62.82	18.06	15.79
F 1984	121.75	119.48	40.67	47.77	47.47	64.4	20.97	18.84
S 1985	121.10		39.71	45.70	45.4	62.95	19.33	17.52
F 1985	120.93	119.08	40.84	46.31	46.66	63.62	20.87	19.18



Static Water Levels

Static water levels within the 11 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 11 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Garfield County in 1977. Thirteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 17.8 mg/l in G-14 to 0.8 mg/l in G-9. Tests for nitrates in G-13 and G-14 were high in a few of the years. It was determined that a neighbor attempted high yields on sandy soil by applying up to 40# of nitrogen for a period of 2 years. The county average for years 1977-1985 for 124 tests is 2.5 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

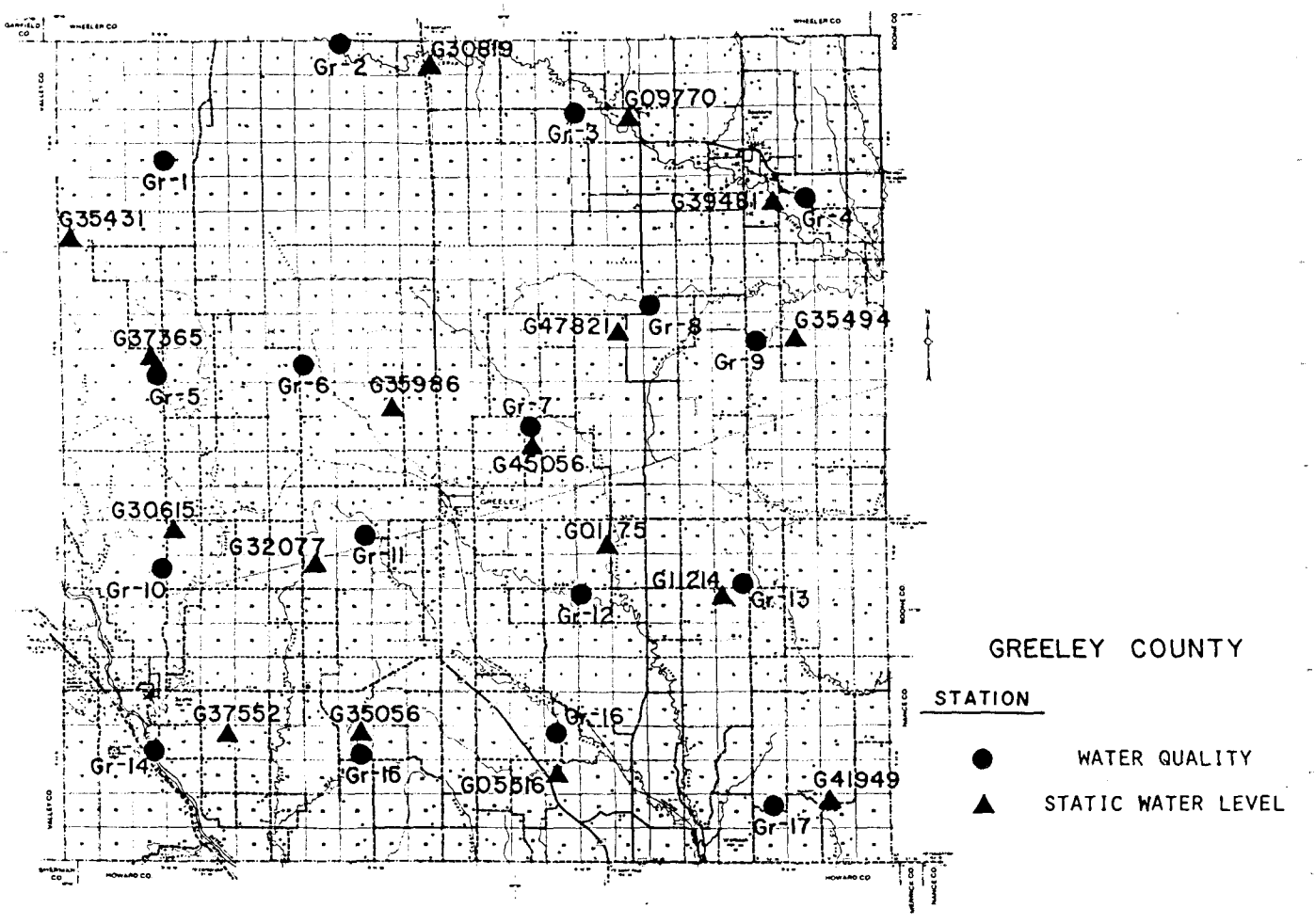
Nitrate-Nitrogen averages for years in mg/l for Garfield County are: '77-1.0; '78-1.5; '79-3.3; '80-2.4; '81-2.0; '82-1.9; '83-3.4; '84-3.8; and '85-3.0.

Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, GARFIELD CO.

	MARES	WHITE	STRUCK.	SCHNEIDER	DANCZAK	PITZER	BODYFIELD	JOHNSON	WESTOVER	HUGHES	CLEARWAT.
REG. NO:	G35116	G19937	G32971	G00650	G29005	G34147	G35699	G41436	G06760	G39446	G38413
LEGAL:	33-22-16	33-22-14	14-21-14	17-21-15	17-21-16	14-22-13	13-21-13	14-24-16	35-24-14	26-22-15	23-24-13
DRILLED:	7-71	10-49	6-70	3-56	7-67	2-71	12-71	7-74	7-48	6-73	?
DEPTH:	83.00	65.00	111.00	38.00	50.00	8.00	15.00	65.00	5.00	170.00	?
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	82.10	65.00	112.12	34.46	18.30	6.20	11.85	49.70	5.85	168.58	
F 1975	82.80	66.17	112.47	35.96	19.00	3.35	12.32	62.66	7.05	169.00	
S 1976	82.81	67.00	111.72	35.52	18.74	6.15	11.65	61.45	5.16	168.58	
F 1976	83.02	66.43	112.22	36.05	19.52	6.30	12.70	66.90	6.75	168.58	
S 1977	82.60	65.98	111.77	35.89	19.21	6.00	12.79	61.30	6.00	168.85	
F 1977	82.60	66.46	112.36	35.75	17.86	6.24	12.22	62.00	5.70	168.81	4.50
S 1978	82.50	66.26	111.97	35.50	17.15	5.74	10.83	61.00	3.85	169.16	
F 1978	82.58	66.73	112.81	35.91	18.56	6.43	12.08	57.40	6.72	169.10	5.71
S 1979	82.20	66.10	111.60	35.80		6.70	10.83	59.80	4.28	168.68	4.57
F 1979	82.23	66.33	112.36	36.23	18.73		12.19	57.50	5.70	169.00	4.85
S 1980	82.20	65.85	111.33	35.85	19.55		11.50	60.85	4.53	168.30	
F 1980	82.82	66.70	112.72	36.35	19.10		13.10	63.40	8.00	169.13	8.08
S 1981	82.20	66.60	115.02	36.00	19.50		13.10	58.40	6.98	168.97	9.20
F 1981	82.38	66.80	112.74	35.88	19.43		12.93	63.15	7.33	168.87	7.00
S 1982	82.14	66.40	112.10	35.50	17.48		10.30	48.32	4.35	168.56	
F 1982	81.07	66.32	112.59	35.77	17.88		10.30	46.66	5.15	168.22	4.10
S 1983	82.20	65.78	111.90	35.55	17.80		9.39	37.00	2.79	168.64	
F 1983	81.80	64.98	111.60	35.37	17.50		9.63	37.00	7.00	168.26	5.67
S 1984	81.82	63.69	110.29	34.89	16.83		7.58	28.75	2.21	167.17	
F 1984	83.39	63.00	110.12	35.38	17.20		8.29	40.50	5.44	167.69	4.02
S 1985	80.63	62.13	108.92	35.14	17.35		7.69	37.00	3.28	166.48	1.50
F 1985	80.36	61.67	108.35	35.11	17.51		7.07	45.12	3.52	166.20	1.28



Static Water Levels

Static water levels within the 18 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 18 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Greeley County in 1977. Seventeen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 7.9 mg/l in GR-14 to 0.5 in GR-3. The county average for years 1977-1985 for 151 tests is 1.9 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Greeley County are: '77-0.8; '78-1.6; '79-2.0; '80-1.8; '81-2.0; '82-1.9; '83-1.9; '84-2.6; and '85-2.5.

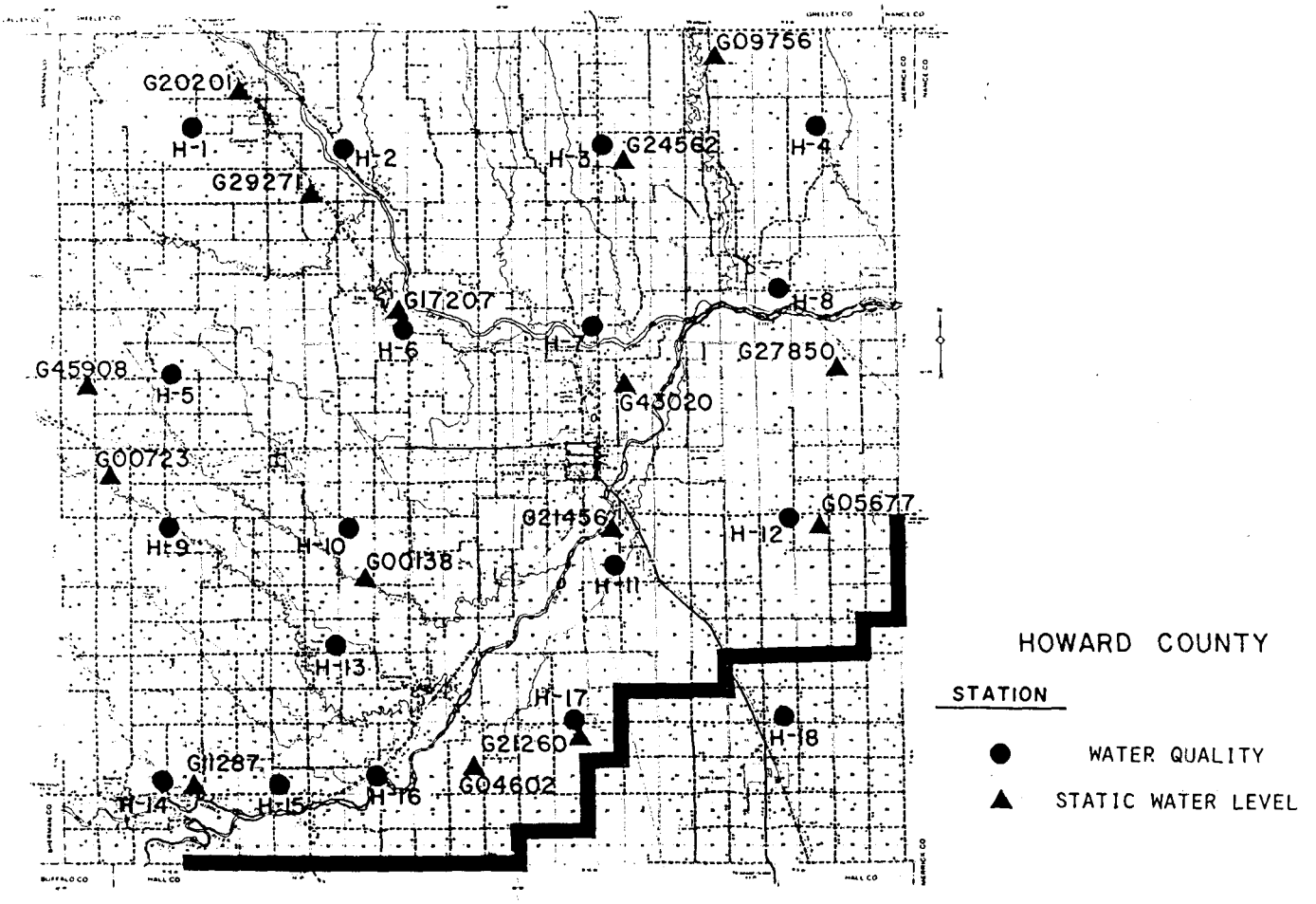
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, GREELEY CO.

	MCINTYRE	BARNES	WILLNERD	BIRKBY	DUTCHER	BAUER	MARROW	SCHMELT	WRAY	MALMSTROM	MOSIER
REG. NO:	G41949	G32077	G05516	G01175	G35986	G35494	G37365	G39481	G35431	G30615	G30819
LEGAL:	26-17-9	20-18-11	21-17-10	15-18-10	27-19-11	15-19-9	21-19-12	28-20-9	31-20-12	15-18-12	2-20-11
DRILLED:	7-74	10-69	11-54	10-56	12-71	10-71	7-72	8-73	5-71	10-68	6-68
DEPHT:	210.00	142.00	51.00	?	95.00	60.00	113.00	15.00	202.00	56.00	16.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	205.85	139.20	48.35	11.90	92.60	61.70	112.40	6.00	204.30	56.75	
F 1975					95.50						
S 1976	206.10	140.10	49.15	12.60	93.10	62.00	112.95	5.75	204.60	57.90	
F 1976	208.30	143.74	51.39	14.78	95.44	63.92	114.49	6.77	205.80	61.73	
S 1977	206.90	141.25	49.94	13.92	93.91	62.44	113.80	6.05	205.69	59.50	
F 1977	208.30	142.12	49.71	10.12	94.39	61.98	114.01	6.02	205.93	60.02	
S 1978	206.68	140.25	48.41	11.28	93.29	60.81	112.98	5.57	205.15	58.41	
F 1978	207.26	141.26	49.90	12.18	94.07	61.59	113.02	6.08	205.22	59.38	
S 1979	206.34	140.31	47.73	9.44	92.98	60.00	112.60	5.31	204.98	57.98	
F 1979	207.00	141.14	49.90	12.45	92.95	61.60	112.69	6.00	205.42	58.19	
S 1980	206.19	139.90	48.93	13.65	92.85	61.89	112.50	5.80	204.88	59.35	
F 1980	208.82	144.59	51.01	16.60	96.12	63.35	115.32	6.80	206.78	63.10	
S 1981	203.68	141.65	49.79	15.16	93.32	61.88	113.90	5.99	205.34	59.99	27.20
F 1981	207.80	142.70	50.43	15.56	94.55	63.36	114.13	6.34	205.55	61.17	27.78
S 1982	206.55	141.25	49.19	13.85	92.80	61.02	113.45	5.75	204.30	59.04	26.82
F 1982	207.70	142.22	48.93	14.79	94.95	61.77	114.25	6.14	205.62	60.30	27.64
S 1983	206.20	140.32	47.80	10.03	92.61	60.16	112.99	6.11	204.73	57.59	26.11
F 1983	208.03	142.65	48.36	15.02	95.28	61.20	113.66	6.14	205.68	58.87	27.17
S 1984	206.15	140.55	46.99	9.73	92.15	59.38	111.35	4.87	203.35	56.32	26.06
F 1984	208.21	142.80	47.23	12.61	94.19	60.19	113.45	5.87	205.26	58.68	27.14
S 1985	206.14	140.68	47.09	9.62	92.93	59.37	111.59	4.69	203.19	57.06	26.57
F 1985	205.62	140.52	45.98	11.19	91.04	58.94	112.05	5.61	203.63	56.41	26.62

	GOLDFISH	ONDRACEK	HANSEN	WALDOWIAK	RYAN	GLASER	HEINZ
REG. NO:	G35056	G11214	G37552	G47821	G45056	G09770	G25719
LEGAL:	16-17-11	30-18-9	14-17-12	14-19-10	32-19-10	?	16-20-10
DRILLED:	7-71	5-55	8-72	1-75	?	?	6-66
DEPHT:	131.00	?	?	162.00	?	?	64.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	129.40						
F 1975							66.30
S 1976	130.50	52.40	41.05				65.05
F 1976	132.25	61.30	45.13	129.64			66.24
S 1977	131.00	48.48	41.80	128.60			64.78
F 1977	130.27	47.20	42.94	128.84	81.28		65.63
S 1978	129.23	46.18	40.72	127.67	79.80		65.02
F 1978	129.40	47.35	40.58	128.44	81.09		65.50
S 1979	128.60	45.65	39.29	127.72	79.44		64.84
F 1979	129.37	47.20	38.84	127.41	79.42		64.83
S 1980	128.12	47.41	38.31	127.01	80.97		64.34
F 1980	131.03	50.95	42.05	129.71	82.60		66.38
S 1981	129.34	47.64	40.45	128.29	80.68		64.23
F 1981	130.15	49.31	42.98	128.94	81.31		
S 1982	129.18	47.03	40.55	129.74	79.98		
F 1982	128.65	48.22	41.17	128.75	81.35		
S 1983		36.82	39.51	129.60	79.48	11.57	
F 1983	128.57	48.02	40.45	128.36	81.18	12.43	
S 1984	127.12	44.63	37.73	126.88	79.23	11.33	
F 1984	127.85	46.04	39.78	127.79	80.75	13.30	
S 1985	127.38	44.68	37.62	126.46	79.22	12.58	
F 1985	125.71	44.37	37.78	125.80	78.40	12.52	



Static Water Levels

Static water levels within the 18 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, 6 wells are showing increases of 5-8 feet over 1975. All others are within a few feet. Spring to fall measurements are also within reason.

Water Quality

The District began its sampling program in Howard County in 1978. Eighteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 14.0 mg/l in H-11 to 0.6 mg/l in H-18. The county average for years 1978-1985 for 162 tests is 4.3 mg/l. Tests for other parameters remain within normal limits except for 2 tests showing high conductivity.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Howard County are: '78-3.5; '79-5.5; '80-2.7; '81-6.5; '82-7.4; '83-2.1; '84-2.4; and '85-2.4. High nitrate levels in H-11 and H-13 are thought to be from point sources.

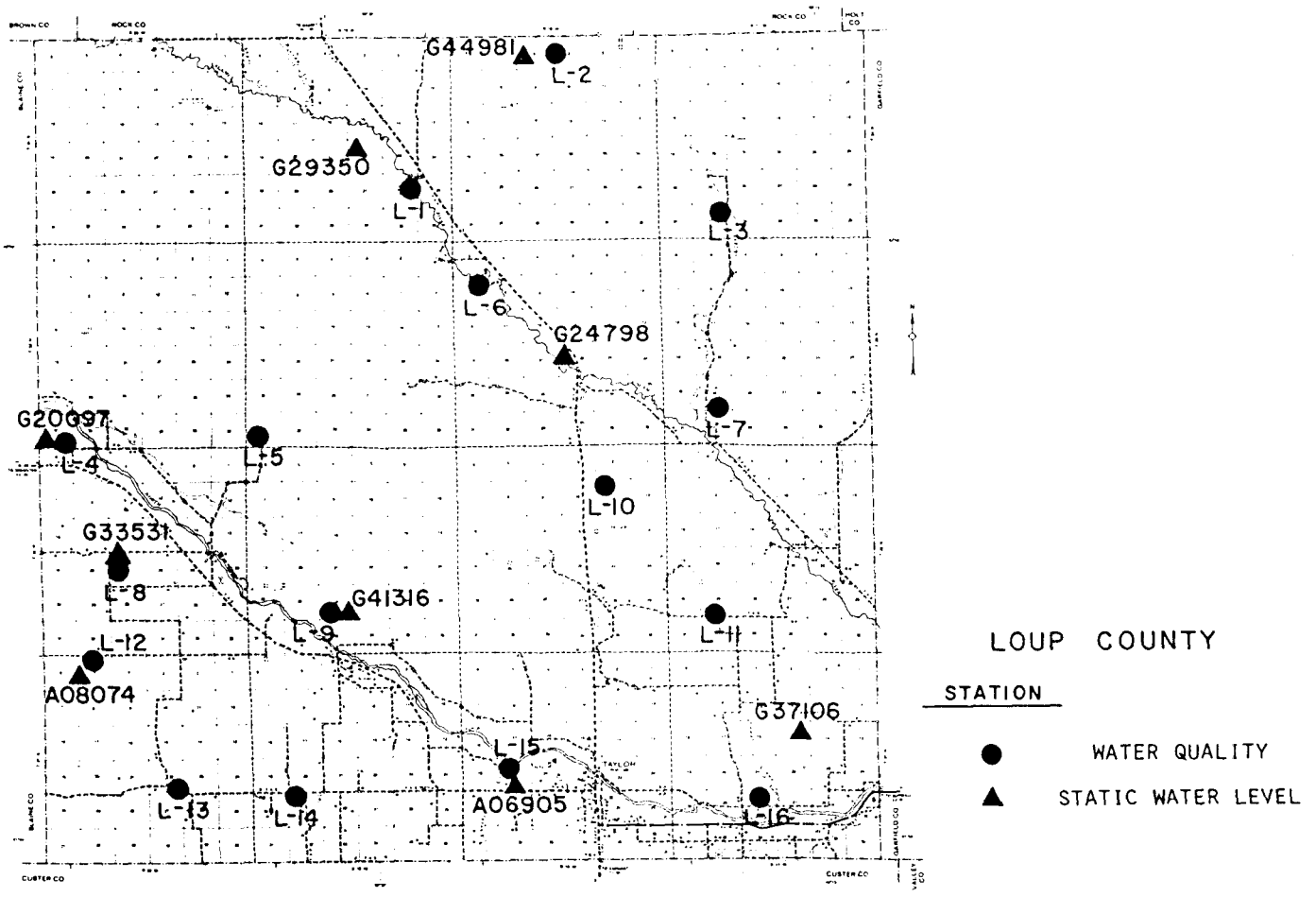
Trends in Other Tests

The high Conductivity in H-11 and H-13 is an indication of dissolved solids and is thought to be a local site condition. No significant trends are evident in the Howard County tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATERLEVELS, HOWARD CO.

	BLANCH.	SPILINEK	BAHENSKY	ECKSTROM	OAKESON	SCHEER	SWANSON	NIELSEN	KROEGER	ERIKSEN	GLENN
REG. NO:	G20201	G17204	G05677	G27850	G21456	G43020	G04602	G00138	G21260	G11287	G04665
LEGAL:	12-16-12	15-15-11	15-14-9	23-15-9	15-14-10	26-15-10	23-13-11	21-14-11	16-13-10	22-13-12	22-15-8
DRILLED:	4-59	4-67	7-57	4-67	4-61	5-73	3-57	12-54	4-61	7-54	5-56
DEPTH:	?	39.00	22.00	6.00	10.00	15.00	?	?	12.00	15.00	18.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975											
F 1975	43.30	37.60	12.80	8.60	10.90	13.60	8.50	17.50	10.50	6.40	16.30
S 1976	41.90	36.10	11.40	8.91	9.60	12.10	5.90	17.40	9.70	6.10	15.50
F 1976	44.40	37.90	13.80	9.50	10.80	12.70	8.60	17.50	11.50	5.60	17.10
S 1977	42.20	36.00	11.50	6.60	8.50	11.10	4.80	16.10	10.00	4.90	15.50
F 1977	41.70	35.40	12.00	6.80	9.70	10.90	5.00	17.00	10.50	5.40	14.60
S 1978	40.80	34.20	11.37	6.00	8.70	10.30	4.55	17.25	9.90	4.40	14.30
F 1978	41.70	35.70	14.12	8.40	10.75	12.80	9.90	17.80	11.80	4.90	16.00
S 1979	40.40	33.50	11.00	5.70	8.70	10.10	5.80	15.80	9.90	4.20	14.00
F 1979	41.41	34.51	14.07	8.61	10.53	10.57	6.69	17.49	11.95	4.02	17.94
S 1980	40.35	32.99	11.77	6.07	8.96	10.86	6.68	16.70	10.50	3.39	13.27
F 1980	42.93	35.25	15.85	9.36	10.63	13.85	10.86	18.32	12.38	3.76	17.22
S 1981	40.90	33.15	14.43	8.18	10.16	12.11	9.79	18.55	12.44	3.81	13.95
F 1981	42.70	34.09	15.73	8.33	10.69	13.47	9.89	18.04	13.38	3.78	14.30
S 1982	41.04	32.75	14.17	6.25	9.38	11.29	7.02	17.33	12.45	3.25	12.65
F 1982	40.76	35.60	13.44	7.25	10.19	11.72	6.80	16.40	12.71	2.75	12.45
S 1983	39.24	31.91	9.61	4.55	8.40	9.38	4.42	15.00	10.40	2.06	9.85
F 1983	40.44	33.66	11.24	7.18	10.09	12.15	7.34	16.65	12.13	2.85	12.68
S 1984	39.30	31.45	6.29	2.40	7.49	7.97	3.50	12.11	8.79	0.69	8.83
F 1984	40.58	33.32	7.76	6.50	10.50	12.70	5.09	15.55	9.60	2.60	12.70
S 1985	39.54	30.83	5.60	3.58	9.25	10.69	5.39	16.62	7.04	2.18	11.20
F 1985	40.07	33.05	4.58	3.20	8.88	9.56	3.31	15.31	6.38	1.80	11.26

	KOSMICKI	WAGNER	STEFANOW.	WELLS	BERGGREN	KASSON
REG. NO:	G00723	G09756	G45908	G29271	G56406	G24562
LEGAL:	5-14-12	6-16-9	30-15-12	29-16-11	15-16-10	14-10-14
DRILLED:	9-55	11-56	7-75	12-67	5-77	7-65
DEPTH:	?	60.00	99.00	30.00	175.00	175.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975						
F 1975	16.70					
S 1976	17.20	58.50	82.10	24.50		173.20
F 1976	15.90	58.70	85.70	28.40		176.40
S 1977	14.40	58.20	82.40	26.10		174.30
F 1977	15.50	57.50	83.30	25.10		174.40
S 1978	16.30	57.30	81.90	23.50		173.40
F 1978	15.00	58.52	83.60	25.70		174.50
S 1979	15.10	57.00	80.70	23.60		172.80
F 1979	15.00	59.02	73.59	25.03		174.53
S 1980	15.38	58.53	72.39	23.15		172.75
F 1980	15.56	60.04	83.52	27.44		175.22
S 1981	16.63	59.11	81.92	23.75		173.99
F 1981	15.39	59.61	82.55	26.32		176.34
S 1982	15.88	58.48	80.25	24.13	166.73	
F 1982	14.72	58.88	80.18	24.00	167.54	
S 1983	14.30	58.05	78.00	21.60	166.59	
F 1983	14.48	58.89	84.74	24.38	169.35	
S 1984	12.27	57.47	77.95	21.13	167.72	
F 1984	13.64	57.85	81.32	24.34	169.84	
S 1985	14.80	57.19	75.98	20.04	167.15	
F 1985	13.24	57.65	75.90	20.69	167.62	



Static Water Levels

Static water levels within the 9 deep wells monitored since 1975 have remained consistently good. When compared with the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 9 have increased or remain within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Loup County in 1977. Sixteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from 9.7 mg/l in L-7 to .06 mg/l in L-16. The county average for years 1977-1985 for 109 tests is 1.5 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

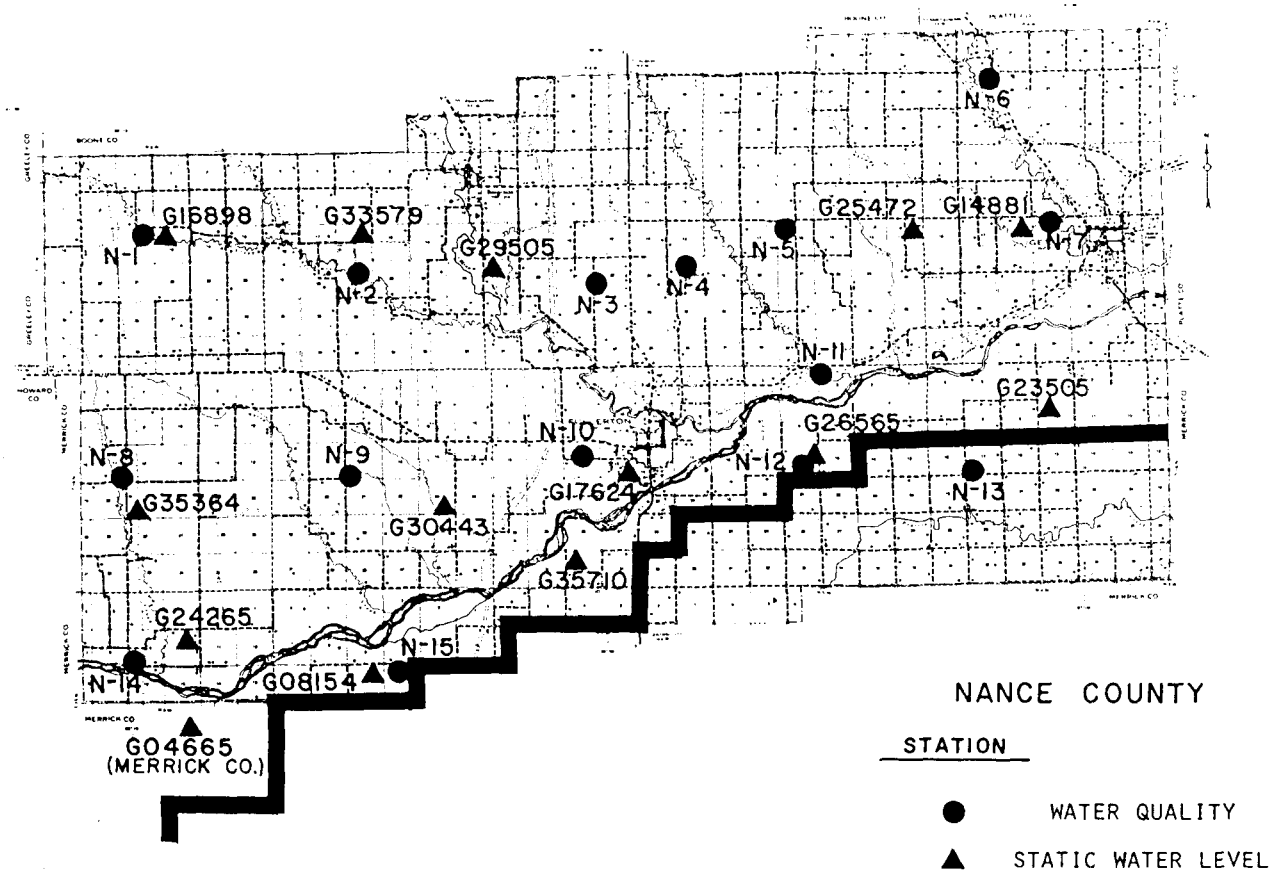
Nitrate-Nitrogen averages for years in mg/l for Loup County are: '77-0.8; '78-0.9; '79-1.7; '80-1.1; '81-1.6; '82-1.7; '83-1.4; '84-1.5; and '85-2.3.

Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, LOUP CO.

	GUGG.	SLANGAL	HARMON	DILLON	KOVARIK	CONE	MINDENHAL	PACKARD	WEILAGE
REG. NO:	G20097	G29350	A08074	G41316	A06905	G33531	G24798	G37106	G44981
LEGAL:	31-23-20	22-24-19	5-21-20	28-22-19	20-21-18	21-22-20	22-23-18	15-21-17	4-24-18
DRILLED:	3-58	4-68	5-55	5-74	8-43	7-70	8-64	4-72	6-75
DEPTH:	64.00	10.00	?	43.00	?	27.00	16.00	156.00	8.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	22.67	9.03	62.90	22.40	28.72	24.25	14.75	156.05	
F 1975	23.84	9.24	63.57	23.42	28.38	26.23	15.26	156.82	10.86
S 1976	23.50	8.67	63.21	23.21	28.77	25.23	15.35	156.58	11.45
F 1976	23.85	9.91	63.70	23.22	28.58	26.22	15.37	156.80	11.31
S 1977	23.46	9.55	63.06	23.05	28.74	25.19	15.12	156.58	11.54
F 1977	23.37	8.26	63.66	22.72	27.67	25.35	15.10	157.23	9.33
S 1978	22.70	7.65	62.46	23.50	27.55	23.94	15.07	156.88	8.71
F 1978	23.15	8.77	62.65	22.50	27.93	24.85	15.21	157.50	9.33
S 1979	22.58	8.02	61.45	22.50	28.65	24.60	15.11	156.37	9.10
F 1979	22.90	8.42	61.50	22.65	28.14	23.90	15.10	150.00	9.45
S 1980	22.50	7.65	60.87	22.90	27.80	24.40	15.08	155.60	9.15
F 1980	23.30	9.20	61.30	22.86	28.10	24.30	15.25	158.80	10.80
S 1981	22.92	9.40	61.05	22.80	28.75	24.37	15.21	156.87	13.46
F 1981	23.15	9.12	61.27	22.15	27.70	23.96	15.23	157.17	11.35
S 1982	22.60	6.40	60.65	21.02	27.60	22.90	14.75	156.57	
F 1982	23.10	7.90	60.68	21.60	27.69	23.40	15.13	152.20	8.28
S 1983	22.50	5.89	60.62	21.35	27.88	22.97	14.75	156.90	7.91
F 1983	19.93		59.45	20.14	26.27	21.60		156.59	8.00
S 1984	20.11	4.64	59.62	20.25	27.16	20.60	14.45	156.90	4.89
F 1984	20.97	7.00	57.25	19.28	26.20	20.33	14.96	157.45	6.24
S 1985	20.08	6.95	55.84	19.98	27.09	19.33	15.22	155.72	6.17
F 1985	21.21	7.52	55.48	20.48	26.51	20.08	15.09	151.78	7.18



Static Water Levels

Static water levels within the 13 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 13 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Nance County in 1978. Fifteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 26.0 mg/l in N-15 to 0.06 mg/l in N-11. The county average for years 1978-1985 for 142 tests is 5.6 mg/l. Nitrate-Nitrogen tests have been consistently high in N-15, averaging 21.6 mg/l over the last 8 tests. Stations N-12A and N-12B were high but dropped in 1985. Test N-13 was not run in 1985 but shows consistently high readings up to 51.0 mg/l in 1984. Tests for other parameters indicate high conductance and sulfate concentrations in N-11, N-12A, and N-12B.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Nance County are: '78-5.4; '79-4.9; '80-5.2; '81-4.6; '82-7.7; '83-6.2; '84-10.4; and '85-4.1.

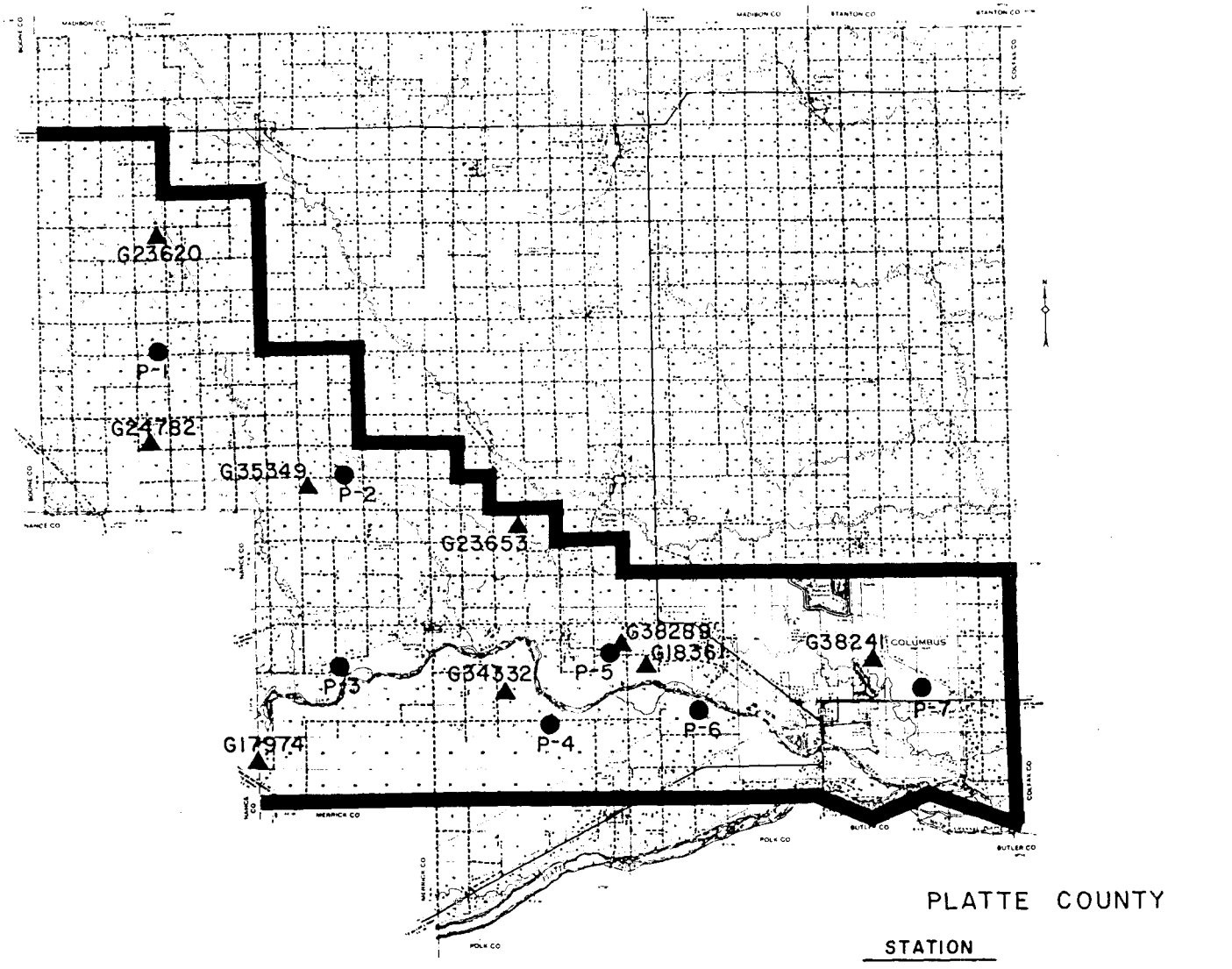
Trends in Other Tests

Except for those Sulfate and Conductivity tests mentioned, no other significant trends are evident.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, NANCE CO.

	SANTIN	LAMBER.	SHOT.	RUSSELL	ZYWIEC	CUNNING.	VALASEK	OLSON	MCPHILLIP
REG. NO:	G08154	G24265	G23505	G17624	G35710	G30443	G35364	G14881	G16898
LEGAL:	16-15-7	10-15-8	10-16-4	15-16-6	33-16-6	23-16-7	21-16-8	16-17-4	15-17-8
DRILLED:	1-55	7-65	1-64	3-47	6-71	5-68	9-71	4-57	7-53
DEPTH:	12.00	40.00	33.00	30.00	41.00	80.00	50.00	60.00	17.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	9.69	50.87	29.67	28.43	23.85	54.25	49.54	61.30	15.09
F 1975	11.70		30.79		24.50			63.10	
S 1976	11.78	50.80	30.78	29.38	24.47	42.15	49.76	61.30	15.59
F 1976	12.76	53.90	32.65	31.20	24.74	43.81	51.11	63.05	17.30
S 1977	12.70	51.80	32.36	29.79	24.58	44.81	49.79	62.04	15.89
F 1977	9.80	52.93	33.09	30.04	24.44	42.70	49.53	62.04	15.67
S 1978	8.10	51.00	31.10	27.94	24.10	40.88	48.05	61.20	14.77
F 1978	10.75	52.43	32.61	30.14	24.20	41.44	49.21	62.04	15.80
S 1979	9.05	50.81	32.20	26.86	25.69	41.05	47.47	61.80	14.93
F 1979	10.20	51.70	33.57	30.00	25.85	39.00	48.14	61.80	16.26
S 1980	8.10	50.12	32.78	27.60	24.15	38.10	47.24	61.80	14.80
F 1980	11.43	52.40	33.30	30.47	27.10	37.38	49.45	62.45	16.13
S 1981	12.00	51.29	33.22	29.70	26.52	39.20	48.40	62.27	15.46
F 1981	12.30	51.95	33.82	29.76	25.95	39.00	49.20	62.43	14.98
S 1982	11.69	50.98	33.30	28.88	24.26	39.76	48.24	62.30	14.70
F 1982	9.11	51.18	30.62	28.55	25.10	36.88	48.18	61.95	14.43
S 1983	5.47	49.48	29.64	27.79	23.43	35.66	47.07	60.73	13.38
F 1983	9.52	50.00	29.12	28.12	26.08	35.92	48.46	60.80	14.78
S 1984	4.47	47.62	26.43	25.10	22.97	33.81	45.91	59.08	12.28
F 1984	9.04	48.77	26.76	27.72	27.22	28.45	46.73	58.48	14.15
S 1985	7.77	45.15	26.47	26.00	23.87	32.67	44.64	56.98	13.18
F 1985	8.15	44.02	27.85	28.36	25.29	28.12	44.53	56.67	13.08

	TARNICK	TAYLOR	PENCAK	NELSON
REG. NO:	G26565	G33579	G25472	G29505
LEGAL:	16-16-5	16-17-7	13-17-5	19-17-6
DRILLED:	12-66	9-70	4-66	3-67
DEPTH:	8.00	133.00	140.00	18.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975				
F 1975	11.70		140.40	25.99
S 1976	11.80	131.07	140.18	25.80
F 1976	13.15	132.34	140.90	27.40
S 1977	12.10	131.28	140.69	26.55
F 1977	12.65	131.97	141.65	26.26
S 1978	11.43	130.60	140.86	21.88
F 1978	11.95	131.91	141.33	26.11
S 1979	10.10	130.67	140.34	24.88
F 1979	11.90	131.50	141.65	26.80
S 1980	11.30	130.46	140.55	25.67
F 1980	12.00	131.70	141.30	
S 1981	12.63	130.77	144.18	26.82
F 1981	12.48	131.20	144.70	26.63
S 1982	12.20	130.59	144.75	26.20
F 1982	9.22	130.27	141.70	24.95
S 1983	8.09	129.55	140.84	23.83
F 1983	7.64	130.15	138.90	22.72
S 1984	2.32	129.62	136.47	21.27
F 1984	8.51	129.35	132.89	22.40
S 1985	8.98	127.54	131.46	21.96
F 1985	9.27	128.08	131.60	23.22



Static Water Levels

Static water levels within the 9 deep wells monitored since 1975 have remained consistently good. When compaired to the drillers' logs, the initial 1975 measurement, and the Spring, 1982, base line measurement, all 9 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in 1978 in Platte County. Seven stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from 19.2 mg/l in P-4 to 0.5 mg/l in P-5. The county average for years 1978-1985 for 63 tests is 4.5 mg/l. Tests for Sulfate, Chloride, and Conductivity are high in P-7. Other tests within the program for Platte County are within normal limits.

Nitrate-Nitrogen Trends

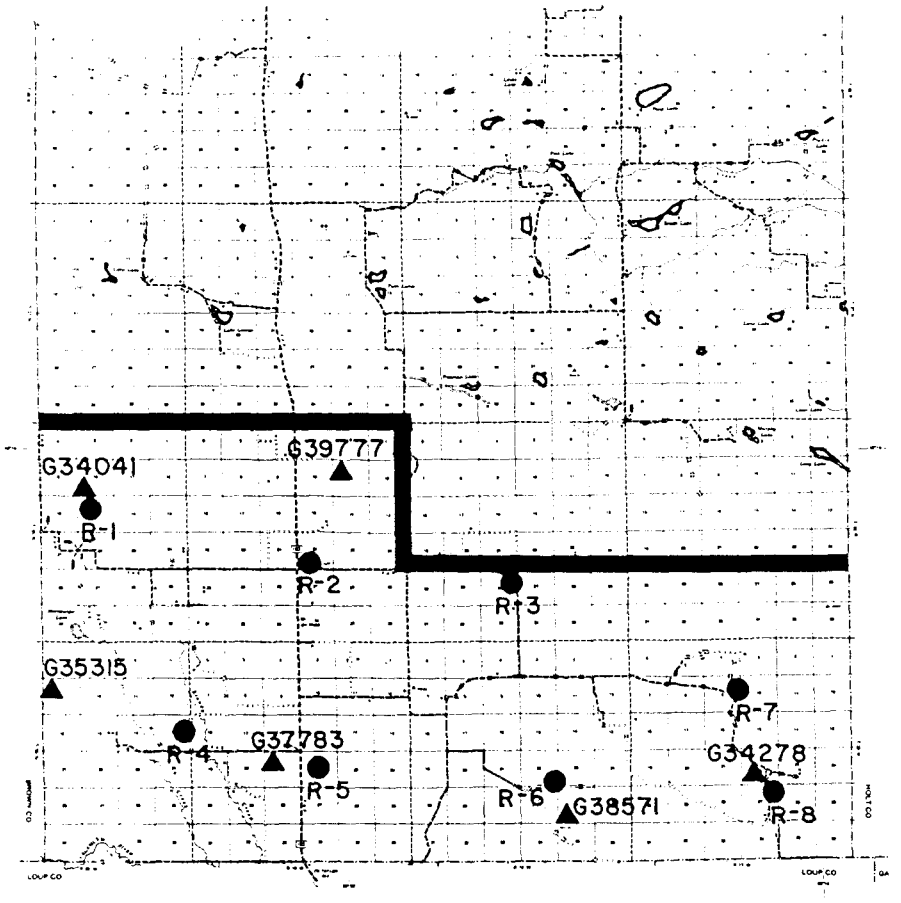
Nitrate-Nitrogen averages for years in mg/l for Platte County are: '78-4.2; '79-3.9; '80-4.9; '81-5.0; '82-5.7; '83-4.6; '84-5.6; and '85-4.2.

Trends in Other Tests

No significant trends other than those mentioned above are evident.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS,PLATTE CO.

	WERNER	TIADEN	SOULIERE	LUCHS.	PREISTER	OLSON	KLINK	NANSEL	SCHROEDER
REG. NO:	G24782	G34332	G23653	G38241	G35349	G23620	G18361	G17974	G38289
LEGAL:	3-18-4	16-17-2	21-18-2	8-17-1E	16-18-3	3-19-4	7-17-1	30-17-3	12-17-2
DRILLED:	8-65	6-65	4-63	6-72	8-71	6-64	5-56	3-57	8-72
DEPTH:	186.00	11.00	137.00	13.00	172.00	90.00	13.00	13.00	10.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	189.45	14.37	136.43	13.30	170.83				
F 1975	192.69	15.05	136.87	14.58	171.69	96.69	13.10	7.90	
S 1976	190.11	14.50	136.60	13.65	171.32	96.16	12.31	7.30	11.10
F 1976	190.93	16.92	137.55	15.84	173.08	98.55	14.28	8.35	13.90
S 1977	190.59	15.69	137.24	14.65	172.35	98.05	13.50	8.00	13.50
F 1977	191.37	15.60	137.66	13.89	173.45	99.33	13.77	8.16	13.04
S 1978	191.49	13.40	136.87	10.60	172.70	98.10	11.50	6.03	13.45
F 1978	191.00	15.57	137.55	14.30	173.00	99.10	13.70	7.45	12.65
S 1979	191.17	14.39	136.67	11.65	172.67	97.99	11.69	6.15	11.37
F 1979	191.64	16.06	138.05	14.30	178.87	100.45	14.30	7.65	13.68
S 1980	191.65	15.50	137.05	12.91	173.20	98.81	12.80	6.54	12.28
F 1980	195.10	17.25	138.08	14.65	174.20	101.14	14.40	7.80	13.78
S 1981	191.50	16.33	137.60	14.17	173.60	104.90	14.30	14.93	12.60
F 1981	191.95	15.72	137.50	12.32	174.06	101.02	14.29	14.35	12.39
S 1982	192.25	15.11	136.90	11.10	173.20	102.40	13.29	14.90	12.45
F 1982	192.80	13.92	136.20	10.78	175.70	103.58	12.10	10.62	7.76
S 1983	189.13	12.86	135.34	12.27	171.79	98.80	10.60	9.45	6.02
F 1983	191.23	13.28	135.64	15.00	171.66	99.52	12.88	12.07	10.28
S 1984	190.09	10.77	134.18	11.26	170.15	95.91	9.88	8.27	3.80
F 1984	190.80	12.28	135.05	14.69	169.95	102.55	12.70	12.38	10.64
S 1985	189.13	12.90	134.00	12.20	168.10	94.82	12.65	13.30	10.00
F 1985	190.06	13.89	134.64	13.44	168.67	95.42	12.77	13.23	12.15



ROCK COUNTY

STATION

● WATER QUALITY

▲ STATIC WATER LEVEL

Static Water Levels

Static water levels within the 6 deep wells monitored since 1975 have remained consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 6 wells have a higher static reading. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Rock County in 1977. Eight stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 3.3 mg/l in R-8 to 0.7 mg/l in R-1. The county average for years 1977-1985 for 51 tests is 1.1 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

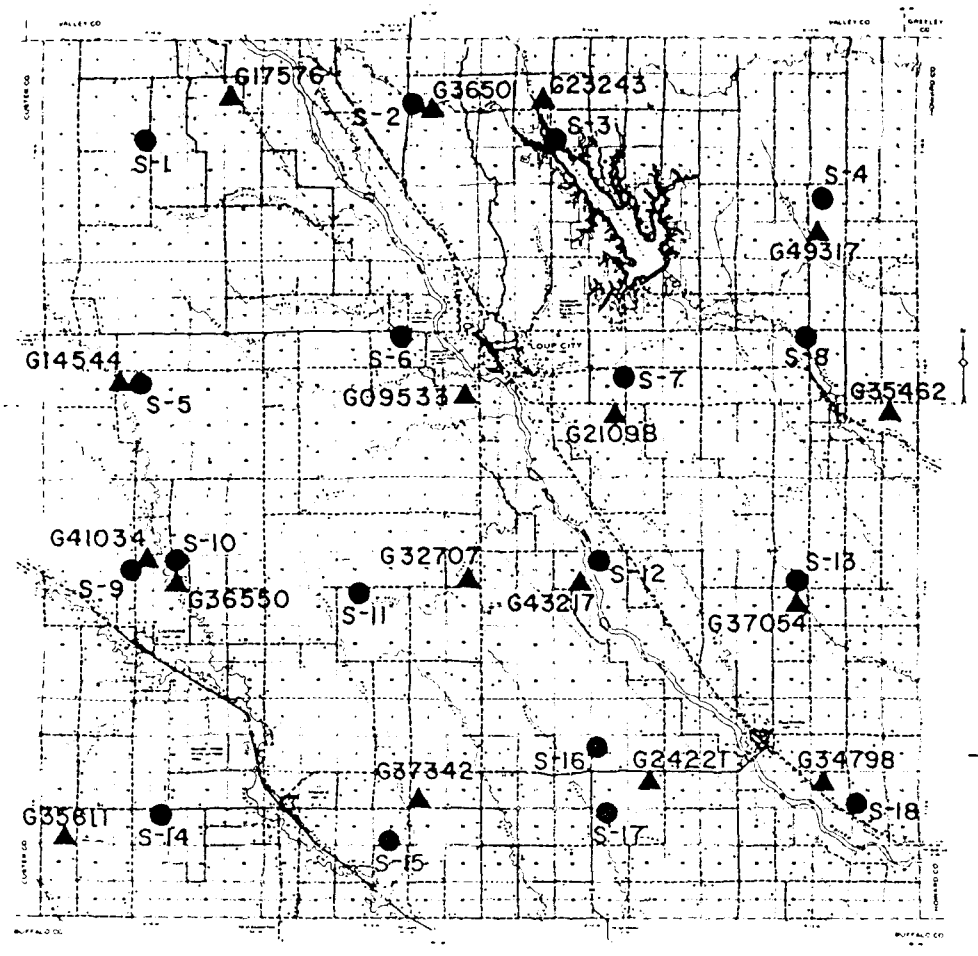
Nitrate-Nitrogen averages for years in mg/l for Rock County are: '77-1.4; '78-1.6; '79-1.6; '80-1.0; '81-1.2; '82-1.2; '83-1.2; '84-1.2; and '85-1.4.

Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEEVELS, ROCK CO.

	BARTA	PRUDENTIAL	MELLOR	ALLEN	GURNEY	HUTCHINSON
REG. NO:	G34041	G38571	G39777	G37783	G34278	G35315
LEGAL:	10-26-20	26-25-26	11-26-19	21-25-19	22-25-17	9-25-20
DRILLED:	6-70	2-73	5-73	10-72	5-70	9-71
DEPTH:	10.00	10.00	67.00	7.00	50.00	30.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	9.25	8.40	64.05	6.05	49.70	
F 1975	10.09	9.68	65.00	6.73	50.40	27.87
S 1976	9.75	8.96	64.75	5.88	50.12	27.52
F 1976	9.91	9.98	66.16	6.80	50.80	28.70
S 1977	10.37	9.70	65.65	6.23	50.73	27.94
F 1977	9.98	8.35	68.15	5.09	51.00	27.00
S 1978	9.30	7.37	66.38	4.50	50.21	26.31
F 1978	9.53	8.65	68.31	5.98	50.35	26.85
S 1979	8.50	7.70	66.45	4.55	49.55	26.30
F 1979	8.30	8.00	67.43	4.74	53.40	26.10
S 1980	7.55	7.42	65.63	4.47	48.65	25.92
F 1980	9.70	9.95	67.75	6.36	49.15	26.80
S 1981	9.35	10.11	67.00	6.53	49.23	27.10
F 1981	9.68	10.20	68.87	6.40	49.57	27.29
S 1982	8.10	9.70	66.20	4.36	48.22	26.50
F 1982	8.37	7.40	66.22	4.40	47.95	26.33
S 1983	6.34	5.94		3.37	47.16	25.37
F 1983	6.17	6.10			45.70	
S 1984	4.50	3.96		2.56	44.47	23.13
F 1984	5.33	5.53	60.88	3.81	43.84	23.90
S 1985	4.94	5.08	58.46	3.45	42.56	23.75
F 1985	6.22	6.11	60.33	4.68	43.62	24.55



SHERMAN COUNTY

STATION

● WATER QUALITY

▲ STATIC WATER LEVEL

Static Water Levels

Static water levels within the 18 deep wells monitored since 1975 remain consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 18 are within a few feet. Spring to fall measurements, which indicate drawdown, show some fluctuations both up and down, but all show recovery.

Water Quality

The District began its sampling program in Sherman County in 1978. Eighteen stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 10.2 mg/l in S-2 to 0.6 mg/l in S-15. The county average for years 1978-1985 for 161 tests is 2.3 mg/l. Tests for Chloride and Sulfate were higher than normal which brought the conductance up in S-2.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Sherman County are: '78-2.5; '79-2.4; '80-2.0; '81-2.5; '82-2.8; '83-2.1; '84-3.3; and '85-2.2.

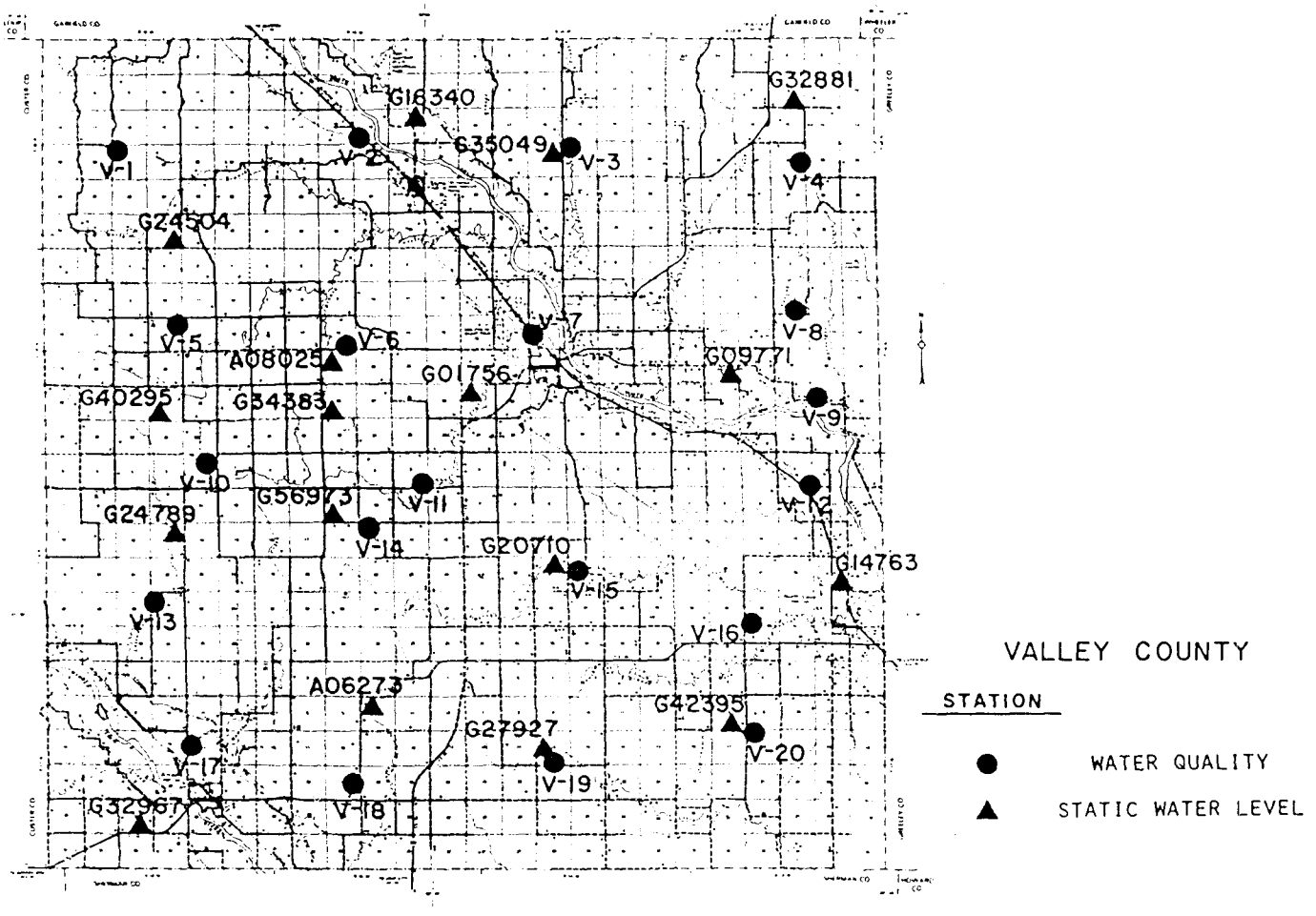
Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, SHERMAN COUNTY

	RADEMA.	POSPISIL	FULTON	BOYSEN	LORENTZ	CARKOWSKI	RAUN	SHOTKOWSK	KASLON
REG. NO:	G32707	G09533	G14544	G24221	G34798	G36501	G21098	G17576	G35462
LEGAL:	13-14-15	24-15-15	21-15-16	14-13-14	15-13-13	11-16-15	27-15-14	12-16-16	25-15-13
DRILLED:	5-70	8-47	7-58	6-65	6-71	4-72	12-60	12-47	1-71
DEPTH:	74.00	7.50	40.00	101.00	48.00	73.00	140.00	35.00	120.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	68.60	7.50	40.30	109.65	36.73	61.02			
F 1975	69.04	6.47	41.95	109.90	40.70		109.60	34.00	100.22
S 1976	64.02	7.36	41.00	110.22	27.69	60.73	111.13	37.80	98.89
F 1976	66.79	6.28	42.90	111.94	21.74	60.19	111.05	36.30	101.15
S 1977	64.67	7.00	41.90	111.69	38.35	59.73	110.48	38.21	101.01
F 1977	65.48	5.20	41.21	113.65	38.15	59.31	110.31	35.90	100.46
S 1978	63.62	6.40	40.06	111.85	37.13	59.25	109.06	37.52	98.88
F 1978	65.61	5.58	41.10	113.88	38.90	58.68	109.61	35.50	99.50
S 1979	63.26	5.35	40.12	112.36	37.79	58.04	108.85	35.69	98.05
F 1979	65.58	4.79	40.98	113.71	38.89	57.53	107.26	35.14	100.45
S 1980	62.82	4.53	40.08	111.89	35.00	56.84	106.83	37.41	97.20
F 1980	66.85	4.85	43.10	115.24	40.25	58.35	109.48	34.31	104.05
S 1981	64.53	7.00	41.06	114.32	38.74	57.43	111.09	38.15	99.64
F 1981	67.25	5.04	42.00	115.13	39.49	57.29	107.51	33.75	104.25
S 1982	64.95	5.41	40.93	114.00	38.18	55.40	106.71	33.12	103.21
F 1982	66.51	4.56	14.87	116.49	38.40	56.56	107.00	35.55	100.10
S 1983	64.43	4.69	39.83	114.46	36.38	55.45	105.72	36.80	96.66
F 1983	68.71	4.68	40.34	117.02	37.40	59.27	107.43	37.60	101.85
S 1984	64.43	3.48	39.29	114.57	35.80	56.69	104.80	35.78	97.42
F 1984	67.42	4.29	40.21	117.13	36.37	55.58	106.31	33.66	100.65
S 1985	63.15	5.83	38.81	113.81	33.90	55.24	103.53	36.55	94.23
F 1985	63.27	5.54	39.08	115.48	32.67	54.52	103.50	32.90	94.00

	GOC	HEAPY	UNICK	BALS	CARMEN	BECK	HARRING.	STANCZYK
REG. NO:	G37054	G41034	G35611	G34217	G37342	G36550	G23243	G49317
LEGAL:	21-14-13	16-14-16	19-13-16	16-14-14	14-13-15	15-14-16	8-16-14	34-16-13
DRILLED:	6-72	5-74	9-71	2-71	10-71	11-71	8-64	2-76
DEPTH:	77.00	?	158.00	15.00	112.00	47.00	84.00	160.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975								
F 1975			158.30	9.00	111.10			
S 1976	77.68	31.38	158.17	8.59	112.28	29.86		
F 1976	67.58	32.00	164.70	9.00	114.00	31.00	63.01	
S 1977	66.51	31.50	158.90	8.04	114.83	29.90	62.51	
F 1977	66.35	31.67	159.61	8.74	113.86	31.06	60.62	
S 1978	65.22	29.80	158.77	7.12	112.93	28.19	61.22	
F 1978	64.88	29.25	159.45	8.75	113.88	29.55	59.52	
S 1979	63.16	29.68	158.76	7.03	112.60	28.22	59.88	146.86
F 1979	63.24	30.48	159.29	8.38	113.26	29.13	60.30	146.95
S 1980	62.31	29.65	159.10	6.70	112.36	29.32	59.90	144.63
F 1980	63.54	31.68	161.98	9.96	114.59	30.65	61.43	147.65
S 1981	62.61	30.75	161.71	8.97		30.67	60.85	145.75
F 1981	62.82	31.75	162.25	9.22	114.69	30.26	58.63	145.55
S 1982	62.00	30.70	161.59	7.63	114.00	29.31	58.81	142.09
F 1982	62.50	31.07	163.28	8.95	115.04	29.58	58.50	144.24
S 1983	60.93	29.61	161.85	7.07	114.28	28.51	58.17	142.94
F 1983	59.81	30.70	160.10	9.45	115.39	30.20	60.31	148.80
S 1984	59.20	28.25	161.85	6.85	114.35	27.12	57.61	142.55
F 1984	59.52	29.65	164.15	8.35	115.49	28.42	59.30	143.92
S 1985	57.20	28.68	161.68	7.03	113.37	27.63	56.58	140.90
F 1985	56.43	29.30	162.10	6.50	113.48	27.53	55.50	141.15



Static Water Levels

Static water levels within the 17 deep wells monitored since 1975 have remained good. When compared to drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 17 wells are within a few feet. Spring to fall measurements, which indicate drawdown, show some fluctuations in G-24789, G-56973, G-34383, G-40295, and G-01756.

Water Quality

The District began its sampling program in Valley County in 1978. Twenty stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 12.0 mg/l in V-18 to 0.6 mg/l in V-7. The county average for years 1978-1985 for 177 tests is 2.0 mg/l. Tests for Sulfate and Conductivity are extremely high in V-14 and in V-18 for 1984-85.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Valley County are: '78-1.5; '79-1.9; '80-1.4; '81-1.9; '82-1.8; '83-1.8; '84-3.1; and '85-3.1.

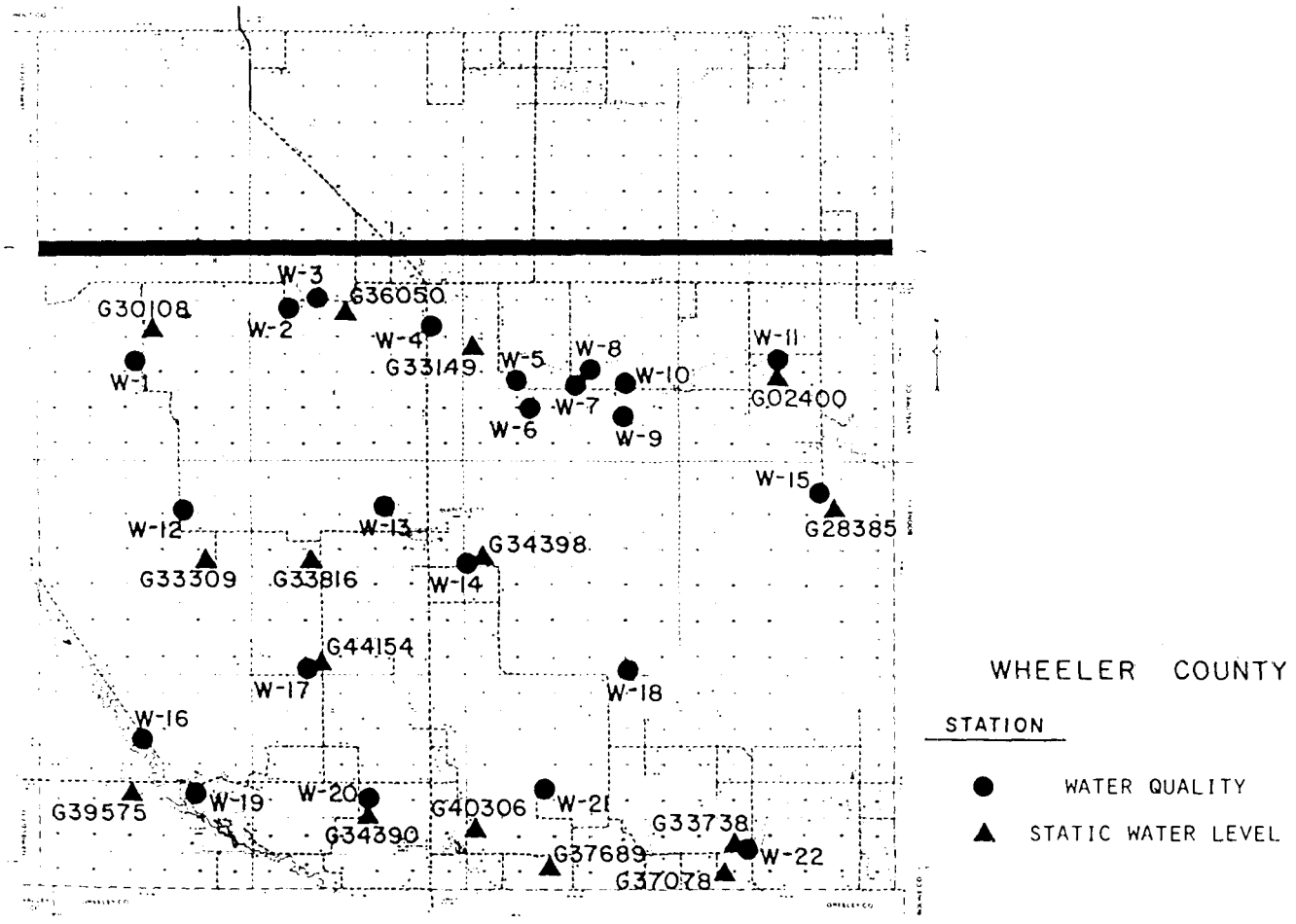
Trends in Other Tests

No significant trends are evident within the other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, VALLEY COUNTY

	KOKES	KUSEK	MISKA	WOLF	LEUDTKE	MILLER	HRUBY	EDWARDS	COLLINS	KOKES
REG. NO:	G24504	G16340	G35049	G09771	G32967	G14763	G24789	G27927	G32881	A08025
LEGAL:	34-20-16	14-20-15	21-20-14	20-19-13	28-17-16	23-18-13	15-18-16	16-17-14	10-20-13	21-19-15
DRILLED:	7-65	3-57	7-71	8-55	6-70	-32	10-65	8-67	5-70	5-55
DEPTH:	151.10	23.40	86.10	22.50	95.50	15.50	138.30	91.00	97.00	?
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	150.77	18.09	83.27	24.77	94.90					
F 1975					94.68	12.00	140.94			
S 1976	150.84	18.51	87.25	25.50	94.55	11.63	140.65	89.67	99.50	56.30
F 1976	156.20	16.90	88.12	23.04	95.00	10.91	143.53	92.10	100.70	58.56
S 1977	151.36	19.13	88.46	26.19	94.19	11.86	141.35	89.14	100.47	57.72
F 1977	151.43	16.27	87.19	26.20	95.00	9.34	142.06	90.42	100.80	57.90
S 1978	151.03	18.65	86.84	24.93	93.84	10.60	140.41	88.05	100.28	56.60
F 1978	151.16	16.90	87.42	21.47	94.16	11.06	144.69	90.43	100.41	57.56
S 1979	150.89	18.81	86.52	20.18	93.73	10.90	140.30	87.85	99.66	56.58
F 1979	151.18	15.29	87.41	17.43	94.65	10.00	146.61	90.61	100.11	58.65
S 1980	151.19	18.18	86.64	18.32	93.50	10.94	140.55	87.29	99.08	57.39
F 1980	152.08	18.79	87.80	21.61	95.84	10.96	149.03	92.94	100.73	
S 1981	151.72	18.53	86.50	20.39	95.26	12.77	142.18	89.94	99.40	60.58
F 1981	151.75	16.08	86.88	18.36	94.67	10.25	143.06	91.21	99.70	60.03
S 1982	151.44	18.73	86.42	18.14	94.32	10.95	141.45	88.93	98.75	58.43
F 1982	151.77		86.29	16.63	94.49	8.53	143.15		99.94	60.39
S 1983	151.22	17.26	85.89	14.96	93.45	8.05	140.23	86.30	98.93	57.51
F 1983	151.79	16.10	87.59	16.42	94.37	9.60	144.85	89.86	99.75	59.34
S 1984	150.32	17.05	85.79	15.00	92.88	7.39	138.97	86.81	98.09	56.85
F 1984	152.78	15.71	88.34	17.33	94.35	7.82	148.63	86.75	98.31	58.38
S 1985	150.39	16.59	85.70	12.55	92.85	10.31	139.28	85.49	96.38	56.51
F 1985	151.26	14.15	85.70	15.27	92.94	7.40	140.79	85.72	96.10	57.90

	LUECK	KNAPP	JOHNSON	NOVAK	PETSKA	PETERSON	SCHUDEL
REG. NO:	A06273	G56973	G34383	G40295	G01756	G20710	G42395
LEGAL:	10-17-15	9-18-15	28-19-15	27-19-16	30-19-14	21-18-14	8-17-13
DRILLED:	4-54	6-70	3-71	11-73	8-56	7-59	10-74
DEPTH:	?	112.00	?	157.00	?	70.00	68.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975							
F 1975							
S 1976	105.68	104.47	76.15	155.26	38.95	47.45	59.60
F 1976	107.65	112.50	82.19	158.90	44.08	52.79	60.91
S 1977	106.19	104.31	76.85	154.72	40.69	49.34	58.22
F 1977	106.88	102.28	77.37	155.24	39.32	48.86	58.32
S 1978	106.05	101.14	74.41	154.06	38.04	47.08	56.81
F 1978	106.71	104.47	77.63	157.55	40.32	48.79	57.53
S 1979	105.39	100.50	74.40	158.18	38.19	46.76	56.29
F 1979	106.02	107.35	80.53	160.04	40.43	47.89	58.09
S 1980	105.13	101.00	75.30	156.45	38.09	45.96	56.40
F 1980	107.62	110.74	86.00	163.10	42.59	49.65	60.77
S 1981	105.79	106.00	79.18	155.16	40.59	49.38	58.64
F 1981	106.72	105.57	80.89	157.53	37.78	50.55	59.50
S 1982	105.85	102.59	77.00	154.43	35.81	48.36	57.93
F 1982	106.40	104.26	80.49	157.11	36.71	50.58	57.95
S 1983	104.57	101.54	75.90	153.55	36.40	46.89	56.14
F 1983	106.68	106.48	80.17	158.68	39.38	47.69	57.32
S 1984	104.40	101.52	75.00	152.48	34.54	44.36	54.90
F 1984	108.15	113.31	83.37	161.51	39.06	45.42	59.00
S 1985	103.89	105.88	73.50	152.56	36.63	43.11	53.82
F 1985	104.26	103.12	76.98	154.28	37.31	44.05	53.43



Static Water Levels

Static water levels within the 15 deep wells monitored since 1975 remain consistently good. When compared to the drillers' logs, the initial 1975 measurements, and the Spring, 1982, base line measurements, all 15 wells are within a few feet. Spring to fall measurements, which indicate drawdown, are also within reason.

Water Quality

The District began its sampling program in Wheeler County in 1977. Twelve stations are included in the 1985 program.

Nitrate-Nitrogen levels in 1985 range from a maximum of 4.0 mg/l in W-13 to 0.7 mg/l in W-11, W-15, and W-17. The county average for years 1977-1985 for 188 tests is 1.3 mg/l. Tests for other parameters remain within normal limits.

Nitrate-Nitrogen Trends

Nitrate-Nitrogen averages for years in mg/l for Wheeler County are: '77-.75; '78-1.2; '79-1.6; '80-1.4; '81-1.3; '82-1.2; '83-1.2; '84-1.3; and '85-1.4.

Trends in Other Tests

No significant trends are evident within other tests.

LOWER LOUP NATURAL RESOURCES DISTRICT
TABULATION OF WELL MONITORING FOR STATIC WATER LEVELS, WHEELER COUNTY

	WALKER	PELSTER	OLSON	OLSON	DWYER	WALKER	NICKOLS	KASSELDER	ITA
REG. NO:	G33309	G39575	G33149	G30108	G28385	G33816	G36050	G34390	G40306
LEGAL:	14-22-12	18-21-12	18-23-10	17-23-12	11-22-9	17-22-11	9-23-11	22-21-11	30-21-10
DRILLED:	3-70	6-73	7-70	4-68	9-67	12-70	6-71	4-71	3-73
DEPTH:	92.00	13.00	8.00	55.00	6.00	12.00	9.00	78.00	88.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	97.95	5.50	6.50	48.00	6.25				94.10
F 1975	98.50	5.50	7.50	48.60	7.75	12.60	6.20	83.60	95.40
S 1976	97.60	5.60	5.70	47.70	6.80	12.20	4.20	82.50	94.70
F 1976	98.75	6.68	8.95	47.80	8.09	13.17	6.30	85.45	96.41
S 1977	97.96		6.65	48.11	8.03	13.19	5.51	83.52	94.82
F 1977	100.20	5.80	6.98	48.02	7.98	14.08	5.57	84.23	96.68
S 1978	98.76	5.38	5.24	48.14	6.99	13.75	2.91	82.62	94.12
F 1978	100.52	5.88	7.59	48.89	7.90	14.23	4.16	83.58	95.50
S 1979	99.21	5.24	5.80	48.00	6.62	13.96	2.07	82.33	94.19
F 1979	100.91	5.91	7.56	48.15	7.67	14.09	4.10	82.44	94.13
S 1980	99.88	5.22	5.86	48.61	6.43	13.99	2.57	82.68	94.10
F 1980	101.65	6.59	8.20	48.26	8.84	16.00	4.20	83.84	96.02
S 1981	100.40	6.25	7.30	49.91	8.26	15.28	3.65	82.32	94.30
F 1981	101.54	6.20	6.88	48.68	9.15	15.42	3.06	82.97	94.90
S 1982	100.35	5.33	5.47	49.22	8.33	14.41	3.19	81.68	93.85
F 1982	102.24	5.25	6.81	51.25	8.95	15.65	3.40	83.04	94.90
S 1983	99.59	3.32	3.86	48.04	6.93	12.03	1.09	80.32	91.85
F 1983	99.05	5.02	6.25	48.59	7.50	11.54	4.85	81.52	93.48
S 1984	95.75	2.76	4.53		4.93	8.50	1.73	79.07	91.18
F 1984	96.49	3.70	5.33	48.42	6.27	9.33	4.09	80.28	92.37
S 1985	98.84	2.80	3.19	48.00	5.59	12.11	1.90	77.59	90.13
F 1985	92.89	2.63	4.07	48.51	5.28	6.84	2.95	77.94	90.24

	SCHRUNK	SMITH	LANDGREN	HAGGERTY	BERNT	KALSER
REG. NO:	G02400	G44154	G34398	G37078	G37689	G33738
LEGAL:	21-23-9	32-22-11	18-22-10	32-21-9	33-21-10	29-21-9
DRILLED:	6-56	2-75	3-71	4-72	2-71	11-70
DEPTH:	?	90.00	85.00	148.00	63.00	160.00
DATE:	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)	DEPTH (FEET)
S 1975	8.00					
F 1975	8.10	90.12				170.90
S 1976	6.75					156.50
F 1976	8.64	91.05	89.31			156.66
S 1977	8.20	90.15	88.40			155.07
F 1977	8.51	91.70	91.63			153.72
S 1978	6.97	90.57	89.48			130.14
F 1978	8.62	91.56	91.80			129.78
S 1979	6.94	90.59	89.85			116.05
F 1979	8.08	91.00	92.40			
S 1980	6.89	90.63	90.25	148.41		
F 1980	9.24	92.00	94.52	150.36		
S 1981	8.46	91.20	91.40	149.74		
F 1981	8.50	92.10	92.98	150.14		
S 1982	7.08	91.30	93.62	149.64	60.29	
F 1982	8.23	92.55	94.90	150.54	60.09	
S 1983	5.11	89.99	91.78	147.97	58.79	
F 1983	6.76	90.51	96.64	149.98	59.27	
S 1984	3.56	89.01	92.32	148.84	57.39	
F 1984	5.48	88.06	95.90	149.68	58.14	
S 1985	4.88	85.06	89.98	147.89	56.39	
F 1985	4.14	85.00	87.46	147.80	56.27	

Transect Wells

The District measures 72 transect wells. These wells were installed in Garfield, Wheeler, and Boone Counties (see Figure 22) as part of the Eastern Fringe Sandhills Study by the Nebraska Natural Resources Commission. The transect wells are located in line with the area groundwater movement. Each transect site includes 3 to 4 wells drilled and screened to different depths.

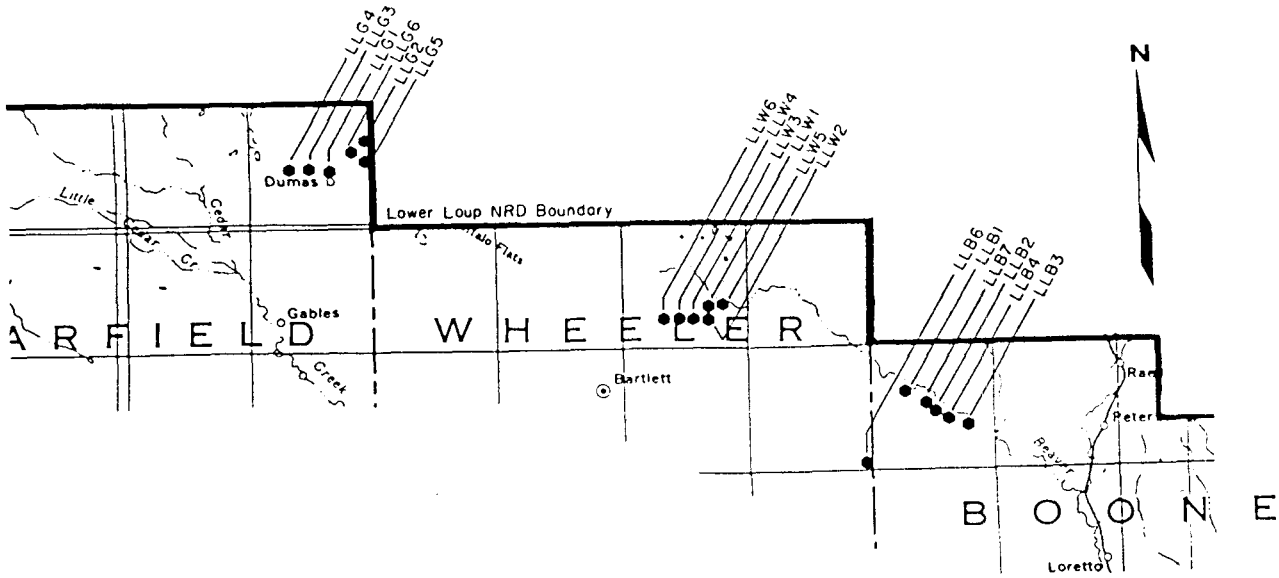


Figure 22
TRANSECT WELL CLUSTER LOCATIONS

The transect program called for both static measurements and quality sampling. The aquifer configuration in the sandhills area is such that the sands are separated by clay lenses. Wells were screened in the different sand formations. This enables geologists and water chemists to obtain water levels and quality samples from specified stratifications, with reasonable assurance that the sample represents a particular area.

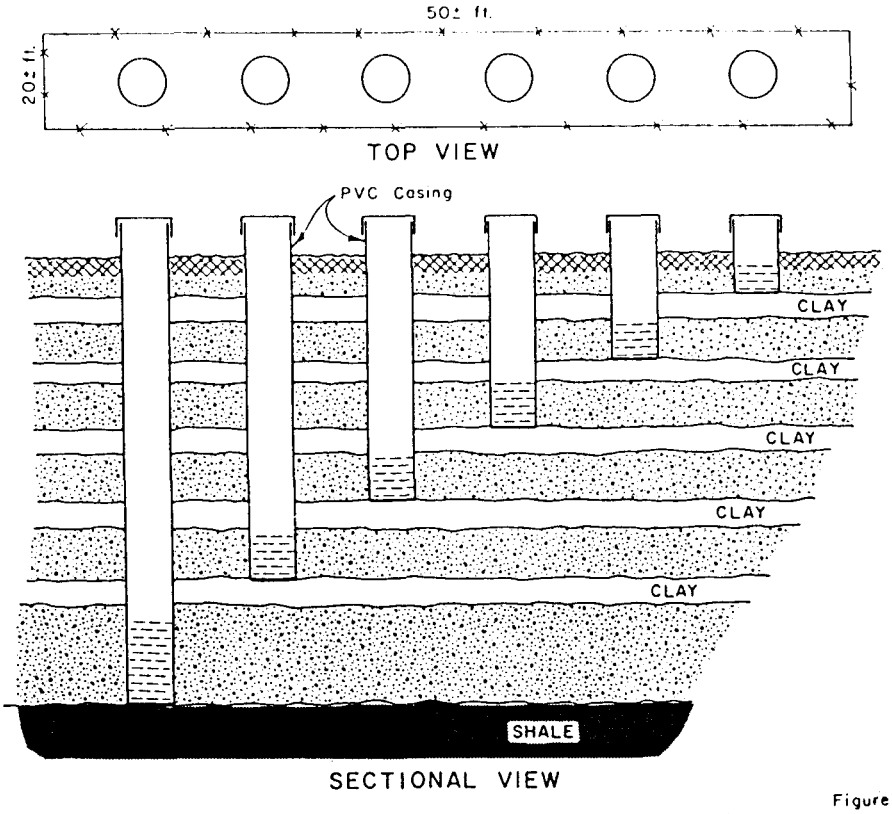


Figure 23

TYPICAL TRANSECT WELL CLUSTER

The District pumps the wells at least three times yearly and takes both static readings and water quality samples for its records and to assist other governmental units when they have need for more detailed samples. See Table 9 for static readings. Water quality data on the transects will be included in that section of the Plan.

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D. [TABLE 9]

TRANSECT WELL LLG 1-1 (SCREENED AT 155')

DATE:	S.W.L.	DRAW
7/7/82	19.66	19.80
8/24/82	27.30	
10/14/82	6.99	7.03
6/16/83	12.72	12.76
8/25/83	36.67	
10/5/83	17.86	17.89
7/18/84	35.84	35.99
9/24/84	26.66	26.60
6/10/85	14.85	14.85
8/13/85	29.34	29.30
10/7/85	14.35	14.42

TRANSECT WELL LLG 1-2 (SCREENED AT 60')

DATE:	S.W.L.	DRAW
7/7/82	6.90	7.27
8/24/82	9.60	
10/14/82	7.60	8.06
6/16/83	5.73	6.00
8/25/83	10.28	
10/5/83	8.51	8.58
7/18/84	9.02	9.17
9/24/84	9.50	9.60
6/10/85	6.68	6.80
8/13/85	8.84	8.95
10/7/85	6.48	6.60

TRANSECT WELL LLG 1-3 (SCREENED AT 40')

DATE:	S.W.L.	DRAW
7/7/82	6.85	7.28
8/24/82	9.55	
10/14/82	7.66	8.05
6/16/83	5.70	5.98
8/25/83	10.18	
10/5/83	8.46	8.55
7/18/84	8.90	9.03
9/24/84	9.47	9.54
6/10/85	6.64	6.78
8/13/85	8.75	8.86
10/7/85	6.48	6.57

TRANSECT WELL LLG 1-4 (SCREENED AT 15')

DATE:	S.W.L.	DRAW
7/7/82	5.60	5.90
8/24/82	8.08	
10/14/82	15.93	15.95
6/16/83	4.75	4.92
8/25/83	8.09	
10/5/83	7.75	7.81
7/18/84	6.66	6.74
9/24/84	8.04	8.10
6/10/85	5.77	5.86
8/13/85	6.90	7.07
10/7/85	5.66	6.72

TRANSECT WELL LLG 2-1 (SCREENED AT 148')

DATE:	S.W.L.	DRAW
7/6/82	2.65	66.50
8/24/82	11.87	
10/15/82	10.18	46.08
6/20/83	4.55	54.84
8/25/83	19.31	
10/5/83	9.49	40.80
7/18/84	13.51	41.25
9/24/84	16.35	36.66
6/10/85	7.28	31.02
8/13/85	21.98	36.20
10/7/85	8.98	15.02

TRANSECT WELL LLG 2-2 (SCREENED AT 71')

DATE:	S.W.L.	DRAW
7/6/82	1.00	3.90
8/24/82	6.39	
10/15/82	5.30	5.97
6/20/83	2.47	2.76
8/25/83	6.70	
10/5/83	6.70	7.07
7/18/84	5.10	5.29
9/24/84	6.69	6.89
6/10/85	4.74	4.87
8/13/85	5.93	6.07
10/7/85	4.95	5.21

TRANSECT WELL LLG 2-3 (SCREENED AT 50')

DATE:	S.W.L.	DRAW
7/6/82	4.88	3.78
8/24/82	6.32	
10/15/82	5.25	5.82
6/20/83	2.42	2.57
8/25/83	6.61	
10/5/83	6.65	6.83
7/18/84	5.04	5.16
9/24/84	6.62	6.72
6/10/85	4.69	4.80
8/13/85	5.80	5.94
10/7/85	4.91	5.07

TRANSECT WELL LLG 2-4 (SCREENED AT 32')

DATE:	S.W.L.	DRAW
7/6/82	3.50	3.73
8/24/82	6.32	
10/15/82	5.25	6.52
6/20/83	2.44	2.57
8/25/83	6.62	
10/5/83	6.67	6.87
7/18/84	5.04	5.17
9/24/84	6.61	6.73
6/10/85	4.68	4.80
8/13/85	5.83	5.93
10/7/85	4.91	5.09

TRANSECT WELL LLG 2-5 (SCREENED AT 13')

DATE:	S.W.L.	DRAW
7/6/82	3.75	3.66
8/24/82	6.21	
10/15/82	5.36	5.54
6/20/83	2.40	2.51
8/25/83	6.44	
10/5/83	6.73	7.25
7/18/84	4.98	5.67
9/24/84	6.54	6.68
6/10/85	4.75	4.86
8/13/85	5.74	5.85
10/7/85	5.04	5.08

TRANSECT WELL LLG 3-1 (SCREENED AT 168')

DATE:	S.W.L.	DRAW
7/7/82	11.15	37.82
8/24/82	35.08	
10/14/82	24.35	28.68
6/20/83		
8/25/83		
10/5/83	31.32	
7/18/84		
9/24/84	37.74	38.34
6/10/85	26.56	26.93
8/13/85	38.12	39.17
10/7/85	26.06	26.93

TRANSECT WELL LLG 3-2 (SCREENED AT 527')

DATE:	S.W.L.	DRAW
7/7/82	33.26	33.40
8/24/82	46.90	
10/14/82	32.53	32.60
6/20/83		
8/25/83	48.03	
10/5/83	34.90	35.09
7/18/84		
9/24/84	43.98	44.28
6/10/85	29.68	29.86
8/13/85	44.89	45.05
10/7/85	30.80	31.34

TRANSECT WELL LLG 3-3 (SCREENED AT 104')

DATE:	S.W.L.	DRAW
7/7/82	6.65	7.63
8/24/82	9.11	
10/14/82	6.88	8.04
6/20/83		
8/25/83	7.80	
10/5/83	6.70	6.95
7/18/84	5.79	6.83
9/24/84	7.58	7.65
6/10/85	6.03	6.03
8/13/85	7.80	7.67
10/7/85	5.75	5.74

TRANSECT WELL LLG 3-4 (SCREENED AT 20')

DATE:	S.W.L.	DRAW
7/7/82	3.60	4.21
8/24/82	3.95	
10/14/82	3.27	3.71
6/20/83		
8/25/83	1.81	
10/5/83	2.52	2.63
7/18/84	1.60	3.87
9/24/84	3.06	3.48
6/10/85	2.88	3.00
8/13/85	2.60	3.08
10/7/85	2.06	2.91

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D. [TABLE 9 cont.]

TRANSECT WELL LLG 4-1 (SCREENED AT 173')

DATE:	S.W.L.:	DRAW:
7/7/82	39.91	41.88
8/24/82	46.20	
10/14/82	36.33	36.34
6/16/83	32.69	32.70
8/25/83	47.80	
10/5/83	38.69	38.68
7/18/84	38.39	38.45
9/24/84	43.70	43.73
6/10/85	33.02	33.02
8/13/85	44.18	44.10
10/7/85	34.34	34.34

TRANSECT WELL LLG 4-2 (SCREENED AT 65')

DATE:	S.W.L.:	DRAW:
7/7/82	14.53	15.58
8/24/82	17.32	
10/14/82	13.98	15.02
6/16/83	11.68	12.18
8/25/83	16.31	
10/5/83	14.04	14.25
7/18/84	12.24	13.22
9/24/84	15.06	15.63
6/10/85	11.54	11.67
8/13/85	15.10	15.62
10/7/85	12.02	12.52

TRANSECT WELL LLG 4-3 (SCREENED AT 31')

DATE:	S.W.L.:	DRAW:
7/7/82	5.13	5.60
8/24/82	6.25	
10/14/82	5.48	5.69
6/16/83	3.30	3.70
8/25/83	4.70	
10/5/83	4.93	5.02
7/18/84	3.14	3.58
9/24/84	4.60	5.25
6/10/85	3.79	4.01
8/13/85	4.52	4.76
10/7/85	3.85	3.97

TRANSECT WELL LLG 5-1 (SCREENED AT 142')

DATE:	S.W.L.:	DRAW:
7/7/82	16.72	16.99
8/24/82	36.65	
10/14/82	5.08	5.29
6/16/83	12.64	12.65
8/25/83	43.27	
10/5/83	18.59	18.69
7/18/84	32.78	32.98
9/24/84	29.09	29.09
6/10/85	18.51	18.70
8/13/85	38.06	38.02
10/7/85	13.80	14.29

TRANSECT WELL LLG 5-2 (SCREENED AT 68')

DATE:	S.W.L.:	DRAW:
7/6/82	4.82	10.60
8/24/82	9.03	
10/14/82	5.51	5.81
6/16/83	3.70	4.42
8/29/83	9.54	
10/5/83	8.10	8.84
7/18/84	7.23	10.36
9/24/84	8.51	8.91
6/10/85	6.01	6.78
8/13/85	7.52	7.83
10/7/85	5.23	5.65

TRANSECT WELL LLG 5-3 (SCREENED AT 30')

DATE:	S.W.L.:	DRAW:
7/6/82	3.78	4.20
8/24/82	6.63	
10/14/82	6.59	9.79
6/16/83	2.62	2.99
8/29/83	6.85	
10/5/83	6.86	7.05
7/18/84	5.34	5.86
9/24/84	6.71	6.98
6/10/85	4.95	5.24
8/13/85	5.37	5.56
10/7/85	4.26	4.46

TRANSECT WELL LLG 5-4 (SCREENED AT 16')

DATE:	S.W.L.:	DRAW:
7/6/82	3.25	3.43
8/24/82	5.95	
10/14/82	15.76	15.83
6/16/83	2.20	3.20
8/29/83	3.23	
10/5/83	6.40	6.57
7/18/84	4.69	7.37
9/24/84	6.16	6.43
6/10/85	4.47	4.78
8/13/85	4.81	4.96
10/7/85	3.93	4.41

TRANSECT WELL LLG 6-1 (SCREENED AT 155')

DATE:	S.W.L.:	DRAW:
7/7/82	4.54	68.20
8/24/82	12.66	
10/14/82	6.41	57.79
6/16/83	3.57	73.36
8/29/83	19.11	
10/5/83	8.65	48.75
7/18/84	18.72	50.93
9/24/84	11.14	48.20
6/10/85	6.43	36.30
8/13/85	13.93	55.63
10/7/85	5.33	47.88

TRANSECT WELL LLG 6-2 (SCREENED AT 50')

DATE:	S.W.L.:	DRAW:
7/7/82	3.06	3.99
8/24/82	5.02	
10/14/82	3.77	5.00
6/16/83	2.79	3.15
8/29/83	5.38	
10/5/83	5.01	5.15
7/18/84	4.60	4.81
9/24/84	4.95	5.35
6/10/85	3.70	3.98
8/13/85	4.52	4.74
10/7/85	2.70	2.99

TRANSECT WELL LLG 6-3 (SCREENED AT 30')

DATE:	S.W.L.:	DRAW:
7/7/82	3.10	3.91
8/24/82	5.02	
10/14/82	3.80	5.29
6/16/83	2.69	3.22
8/29/83	5.30	
10/5/83	5.03	5.15
7/18/84	4.53	4.78
9/24/84	4.93	5.54
6/10/85	3.77	4.06
8/13/85	4.51	4.71
10/7/85	2.68	2.95

TRANSECT WELL LLG 6-4 (SCREENED AT 15')

DATE:	S.W.L.:	DRAW:
7/7/82	3.94	4.00
8/24/82	5.29	
10/14/82	4.44	4.49
6/16/83	3.81	3.79
8/29/83	5.28	
10/5/83	5.45	5.47
7/18/84	4.70	4.98
9/24/84	5.00	5.18
6/10/85	3.85	4.62
8/13/85	4.81	4.87
10/7/85	2.79	2.92

WHEELER COUNTY TRANSECT WELLS Lower Loup N.R.D. (TABLE 9 cont.)

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 1-1		
7/12/82	8.76	8.81
8/23/82	9.21	
10/12/82	6.60	6.60
7/6/83	4.63	4.64
9/6/83	8.06	
9/29/83	6.49	5.47
4/18/84	3.10	
7/10/84	5.32	5.35
9/20/84	7.25	7.28
11/1/84	4.98	
3/28/85	4.49	
6/12/85	4.93	4.95
8/14/85	5.89	5.95
10/15/85	4.69	4.73

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 1-2		
7/12/82	8.32	8.47
8/23/82	8.95	
10/12/82	6.68	6.82
7/6/83	4.54	4.83
9/6/83	7.75	
9/29/83	6.47	6.55
4/18/84	3.07	
7/10/84	5.23	5.36
9/20/84	7.15	7.25
11/1/84	4.92	
3/28/85	4.38	
6/12/85	4.93	5.35
8/14/85	5.85	6.09
10/15/85	4.80	4.87

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 1-3		
7/12/82	5.84	6.00
8/23/82	7.05	
10/12/82	6.41	6.37
7/6/83	3.90	3.95
9/6/83	6.50	
9/29/83	6.50	6.80
4/18/84	2.90	
7/10/84	4.65	4.83
9/20/84	6.79	7.26
11/1/84	5.27	
3/28/85	5.02	
6/12/85	4.66	4.79
8/14/85	5.55	5.72
10/15/85	5.39	5.50

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 1-4		
7/12/82	5.60	5.87
8/23/82	6.93	
10/12/82	6.19	6.32
7/6/83	3.55	3.65
9/6/83	6.48	
9/29/83	6.43	6.85
4/18/84	2.61	
7/10/84	4.52	4.76
9/20/84	6.72	7.30
11/1/84	5.18	
3/28/85	4.99	
6/12/85	4.45	4.60
8/14/85	5.44	6.35
10/15/85	5.37	5.53

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 2-1		
7/12/82	14.44	14.49
8/23/82	14.35	
10/12/82	10.82	10.96
7/6/83	8.50	8.58
9/6/83	12.59	
9/29/83	10.09	10.12
4/18/84	6.75	
7/10/84	9.40	9.48
9/20/84	11.43	11.52
11/1/84	8.53	
3/28/85	8.11	
6/12/85	8.67	8.70
8/14/85	9.71	9.79
10/15/85	8.21	8.49

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 2-2		
7/12/82	13.44	14.05
8/23/82	13.62	
10/12/82	10.34	11.09
7/6/83	7.88	8.40
9/6/83	12.12	
9/29/83	9.78	9.96
4/18/84	6.39	
7/10/84	8.91	9.42
9/20/84	11.02	11.25
11/1/84	8.27	
3/28/85	7.59	
6/12/85	8.30	8.54
8/14/85	9.31	9.58
10/15/85	5.93	9.78

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 2-3		
7/12/82	6.96	7.42
8/23/82	7.56	
10/12/82	6.51	7.00
7/6/83	3.36	3.61
9/6/83	5.93	
9/29/83	5.63	6.22
4/18/84	2.65	
7/10/84	3.67	4.15
9/20/84	5.89	6.35
11/1/84	4.50	
3/28/85	3.79	
6/12/85	3.92	5.18
8/14/85	4.60	5.14
10/15/85	4.43	4.93

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 2-4		
7/12/82	5.38	5.74
8/23/82	6.32	
10/12/82	5.88	6.15
7/6/83	2.77	3.50
9/6/83	5.12	
9/29/83	5.30	5.55
4/18/84	2.17	
7/10/84	2.99	3.46
9/20/84	5.35	5.55
11/1/84	4.10	
3/28/85	3.59	
6/12/85	3.48	3.75
8/14/85	3.98	4.16
10/15/85	4.05	4.19

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 3-1		
7/12/82	24.95	24.96
8/23/82	23.46	
10/12/82	19.06	19.09
7/6/83	15.80	15.83
9/6/83	22.67	
9/29/83	18.29	18.46
4/18/84	14.92	
7/10/84	18.50	18.70
9/20/84	20.50	20.94
11/1/84	16.49	
3/28/85	16.07	
6/12/85	17.14	17.10
8/14/85	18.04	18.17
10/15/85	15.96	16.08

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 3-2		
7/12/82	24.67	24.70
8/23/82	23.18	
10/12/82	1.80	19.03
6/21/83	15.50	15.60
9/6/83	22.30	
9/29/83	18.02	18.24
4/18/84	14.71	
7/10/84	18.20	18.31
9/20/84	20.18	20.40
11/1/84	16.42	
3/28/85	15.98	
6/12/85	16.80	16.88
8/14/85	17.75	17.88
10/15/85	15.96	16.08

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 3-3		
7/12/82	13.77	15.58
8/23/82	14.49	
10/12/82	12.57	13.30
6/21/83	8.47	11.18
9/6/83	10.39	
9/29/83	9.63	9.90
4/18/84	7.26	
7/10/84	7.74	16.72
9/20/84	12.42	14.38
11/1/84	10.70	
3/28/85	10.02	
6/12/85	10.95	12.55
8/14/85	11.46	14.19
10/15/85	11.15	11.50

DATE:	S.W.L.	DRAW
TRANSECT WELL LLW 3-4		
7/12/82	11.36	13.69
8/23/82	12.35	
10/12/82	11.47	11.58
6/21/83	8.25	13.77
9/6/83	10.12	
9/29/83	9.91	10.60
4/18/84	8.27	
7/10/84	8.66	9.69
9/20/84	10.35	11.67
11/1/84	9.36	
3/28/85	9.00	
6/12/85	9.26	11.25
8/14/85	9.30	11.09
10/15/85	9.45	9.98

WHEELER COUNTY TRANSECT WELLS Lower Loup N.R.D. [TABLE 9 cont.]

TRANSECT WELL LLW 4-1 (SCREENED AT 134')

DATE:	S.W.L.:	DRAW:
7/12/82	25.87	26.09
8/23/82	20.92	
10/12/82	13.73	13.74
6/21/83	9.60	9.62
9/6/83	21.95	
9/29/83	11.97	11.99
4/18/84	8.41	
7/10/84	16.77	16.91
9/20/84	15.82	15.76
11/1/84	10.07	
3/28/85	9.19	
6/12/85	10.94	10.89
8/14/85	12.80	13.25
10/15/85	9.35	9.37

TRANSECT WELL LLW 4-2 (SCREENED AT 77')

DATE:	S.W.L.:	DRAW:
7/12/82	25.39	25.70
8/23/82	20.52	
10/12/82	13.74	13.79
6/21/83	9.45	9.51
9/6/83	21.59	
9/29/83	11.79	11.84
4/18/84	8.21	
7/10/84	16.46	16.55
9/20/84	15.61	15.62
11/1/84	10.00	
3/28/85	9.57	
6/12/85	10.76	10.76
8/14/85	12.48	12.89
10/15/85	9.18	9.29

TRANSECT WELL LLW 4-3 (SCREENED AT 58')

DATE:	S.W.L.:	DRAW:
7/12/82	25.12	25.45
8/23/82	20.30	
10/12/82	13.41	13.65
6/21/83	9.34	9.44
9/6/83	21.41	
9/29/83	11.70	11.79
4/18/84	8.13	
7/10/84	16.28	16.46
9/20/84	15.45	15.52
11/1/84	9.90	
3/28/85	9.19	
6/12/85	10.67	10.70
8/14/85	12.33	12.90
10/15/85	9.15	9.19

TRANSECT WELL LLW 4-4 (SCREENED AT 25')

DATE:	S.W.L.:	DRAW:
7/12/82	11.12	11.46
8/23/82	11.62	
10/12/82	9.79	9.98
6/21/83	5.20	5.61
9/6/83	9.63	
9/29/83	7.79	7.88
4/18/84	4.07	
7/10/84	6.29	6.43
9/20/84	8.53	8.63
11/1/84	6.75	
3/28/85	6.38	
6/12/85	5.92	6.00
8/14/85	6.42	6.52
10/15/85	5.98	6.13

TRANSECT WELL LLW 5-1 (SCREENED AT 441')

DATE:	S.W.L.:	DRAW:
7/12/82	2.82	3.05
8/23/82	5.31	
10/12/82	3.06	3.04
7/6/83	0.00	0.18
9/6/83	4.03	
9/29/83	3.01	3.05
4/18/84	0.00	0.00
7/10/84	0.65	0.71
9/20/84	3.40	3.43
11/1/84	1.07	
3/28/85	0.19	
6/12/85	0.00	0.00
8/14/85	2.10	2.13
10/15/85	0.65	0.69

TRANSECT WELL LLW 5-2 (SCREENED AT 98')

DATE:	S.W.L.:	DRAW:
7/12/82	1.80	1.89
8/23/82	2.71	
10/12/82	0.73	0.77
7/6/83	0.00	0.00
9/6/83	1.84	
9/29/83	1.09	1.10
4/18/84	0.00	0.00
7/10/84		
9/20/84	1.45	1.45
11/1/84	0.00	
3/28/85	0.00	
6/12/85	0.00	0.00
8/14/85	0.39	0.41

TRANSECT WELL LLW 5-3 (SCREENED AT 56')

DATE:	S.W.L.:	DRAW:
7/12/82	4.48	4.78
8/23/82	5.32	
10/12/82	3.79	4.50
7/6/83	2.35	3.47
9/6/83	4.89	
9/29/83	4.31	4.50
4/18/84	0.79	
7/10/84	2.83	3.55
9/20/84	4.47	4.70
11/1/84	2.86	
3/28/85	1.86	
6/12/85	2.76	4.00
8/14/85	3.57	3.81
10/15/85	2.75	5.93

TRANSECT WELL LLW 5-4 (SCREENED AT 33')

DATE:	S.W.L.:	DRAW:
7/12/82	5.63	5.89
8/23/82	6.53	
10/12/82	5.07	5.56
7/6/83	3.89	4.47
9/6/83	6.32	
9/29/83	5.77	5.93
4/18/84	2.48	
7/10/84	4.30	4.68
9/20/84	5.81	5.96
11/1/84	4.30	
3/28/85	3.98	
6/12/85	4.23	5.00
8/14/85	5.00	5.15
10/15/85	4.24	6.58

TRANSECT WELL LLW 5-5 (SCREENED AT 11')

DATE:	S.W.L.:	DRAW:
7/12/82	7.78	7.80
8/23/82	8.80	
10/12/82	7.69	7.68
7/6/83	6.63	6.72
9/6/83	8.95	
9/29/83	8.56	8.60
4/18/84	4.83	
7/10/84	7.10	7.15
9/20/84	8.40	8.44
11/1/84	7.15	
3/28/85	6.72	
6/12/85	6.90	7.00
8/14/85	7.83	7.85
10/15/85	7.24	7.29

TRANSECT WELL LLW 6-1 (SCREENED AT 56')

DATE:	S.W.L.:	DRAW:
7/12/82	20.26	20.85
8/23/82	18.69	
10/13/82	14.01	14.25
11/3/82	13.10	
6/21/83	9.00	9.74
9/6/83	19.72	
9/29/83	12.48	12.91
4/18/84	7.66	
7/10/84	12.35	13.88
9/20/84	13.68	14.14
11/1/84	9.98	
3/28/85	8.14	
6/12/85	9.56	9.77
8/14/85	10.38	11.35
10/15/85	9.03	10.05

TRANSECT WELL LLW 6-2 (SCREENED AT 130')

DATE:	S.W.L.:	DRAW:
7/12/82	24.20	24.18
8/23/82	20.50	
10/13/82	13.81	13.83
11/3/82	13.04	
6/21/83	9.35	9.35
9/6/83	23.55	
9/29/83	12.31	12.33
4/18/84	8.05	
7/10/84	16.61	16.70
9/20/84	14.31	14.31
11/1/84	9.86	
3/28/85	8.51	
6/12/85	10.25	10.30
8/14/85	11.56	12.59
10/15/85	8.85	8.85

TRANSECT WELL LLW 6-3 (SCREENED AT 28')

DATE:	S.W.L.:	DRAW:
7/12/82	15.51	15.55
8/23/82	17.06	
10/13/82	14.35	14.45
11/3/82	13.16	
6/21/83	8.34	8.72
9/6/83	14.83	
9/29/83	12.32	12.40
4/18/84	6.88	
7/10/84	9.54	9.81
9/20/84	12.66	12.84
11/1/84	10.28	
3/28/85	9.99	
6/12/85	8.40	8.64
8/14/85	9.98	10.10
10/15/85	9.15	10.10

TRANSECT WELL LLW 6-4 (SCREENED AT 16')

DATE:	S.W.L.:	DRAW:
7/12/82	13.91	13.64
10/13/82	14.78	14.79
11/3/82	13.60	
6/21/83	8.14	9.12
9/6/83	13.78	
9/29/83	12.65	13.60
4/18/84	6.41	
7/10/84	7.80	8.53
9/20/84	12.86	15.53
11/1/84	10.68	
3/28/85	9.14	
6/12/85	7.74	7.86
8/14/85	9.63	11.94
10/15/85	10.30	9.82

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D. [TABLE 9 cont.]

TRANSECT WELL LLB 1-1 (SCREENED AT 170')

DATE:	S.W.L.	DRAW
7/13/82	9.13	8.95
8/23/82	8.75	
10/12/82	4.71	4.73
7/7/83	3.19	3.20
9/6/83	5.19	
9/28/83	3.77	3.78
7/11/84	6.06	6.00
9/19/84	3.50	3.50
11/1/84	0.07	
6/13/85	2.99	3.00
8/26/85	3.37	3.35
10/8/85	1.85	1.82

TRANSECT WELL LLB 1-2 (SCREENED AT 100')

DATE:	S.W.L.	DRAW
7/13/82	9.11	9.00
8/23/82	8.72	
10/12/82	4.77	4.88
7/7/83	3.26	3.38
9/6/83	5.27	
9/28/83	3.90	3.92
7/11/84	6.10	10.65
9/19/84	3.62	3.67
11/1/84	2.19	
6/13/85	3.04	14.45
8/26/85	3.48	8.14
10/8/85	1.91	3.12

TRANSECT WELL LLB 1-3 (SCREENED AT 65')

DATE:	S.W.L.	DRAW
7/13/82	9.05	8.98
8/23/82	8.72	
10/12/82	4.77	4.95
7/7/83	3.29	3.30
9/6/83	5.28	
9/28/83	3.90	3.95
7/11/84	6.10	6.12
9/19/84	3.63	3.66
11/1/84	2.20	
6/13/85	3.10	3.18
8/26/85	3.48	3.51
10/8/85	1.85	1.98

TRANSECT WELL LLB 1-4 (SCREENED AT 30')

DATE:	S.W.L.	DRAW
7/13/82	8.29	8.33
8/23/82	8.08	
10/12/82	4.54	4.78
7/7/83	3.33	5.76
9/6/83	5.29	
9/28/83	4.20	4.37
7/11/84	5.69	5.79
9/19/84	3.76	3.89
11/1/84	2.15	
6/13/85	3.20	3.40
8/26/85	3.50	3.55
10/8/85	1.96	2.13

TRANSECT WELL LLB 1-5 (SCREENED AT 12')

DATE:	S.W.L.	DRAW
7/13/82	6.18	7.32
8/23/82	7.16	
10/12/82	4.54	4.48
7/7/83	3.60	3.83
9/6/83	5.36	
9/28/83	4.80	4.99
7/11/84	4.90	5.12
9/19/84	4.29	4.40
11/1/84	2.13	
6/13/85	3.57	4.53
8/26/85	3.71	3.84
10/8/85	2.12	2.90

TRANSECT WELL LLB 2-1 (SCREENED AT 145')

DATE:	S.W.L.	DRAW
7/13/82	9.70	9.79
8/23/82	11.00	
10/12/82	6.45	6.45
7/7/83	5.20	5.20
9/6/83	6.47	
9/28/83	5.80	5.90
7/11/84	7.50	9.44
9/19/84	5.54	5.52
11/1/84	4.06	
6/13/85	5.36	5.39
8/26/85	5.22	5.20
10/8/85	3.74	3.73

TRANSECT WELL LLB 2-2 (SCREENED AT 100')

DATE:	S.W.L.	DRAW
7/13/82	9.60	21.78
8/23/82	10.90	
10/12/82	6.43	6.45
7/7/83	5.16	6.50
9/6/83	6.45	
9/28/83	5.81	5.83
7/11/84	7.46	7.45
9/19/84	5.52	5.57
11/1/84	4.05	
6/13/85	4.95	5.43
8/26/85	5.20	5.23
10/8/85	3.71	3.86

TRANSECT WELL LLB 2-3 (SCREENED AT 65')

DATE:	S.W.L.	DRAW
7/13/82	9.62	9.77
8/23/82	10.92	
10/12/82	6.46	6.47
7/7/83	5.16	5.26
9/6/83	6.46	
9/28/83	5.82	5.87
7/11/84	7.54	7.47
9/19/84	5.55	5.62
11/1/84	4.10	
6/13/85	5.35	5.55
8/26/85	5.23	5.27
10/8/85	3.65	3.92

TRANSECT WELL LLB 2-4 (SCREENED AT 30')

DATE:	S.W.L.	DRAW
7/13/82	9.19	9.39
8/23/82	10.73	
10/12/82	6.50	7.04
7/7/83	5.20	5.27
9/6/83	6.59	
9/28/83	6.01	6.10
7/11/84	7.39	7.46
9/19/84	5.79	5.90
11/1/84	4.26	
6/13/85	5.37	5.65
8/26/85	5.52	5.50
10/8/85	3.85	4.30

TRANSECT WELL LLB 2-5 (SCREENED AT 12')

DATE:	S.W.L.	DRAW
7/13/82	5.60	5.64
8/23/82	7.31	
10/12/82	6.03	7.44
7/7/83	3.39	3.97
9/6/83	6.58	
9/28/83	6.78	6.85
7/11/84	5.40	6.07
9/19/84	6.58	10.85
11/1/84	4.80	
6/13/85	4.24	5.33
8/26/85	5.90	6.28
10/8/85	4.69	6.58

TRANSECT WELL LLB 3-1 (SCREENED AT 135')

DATE:	S.W.L.	DRAW
7/13/82	8.00	8.00
8/23/82	9.13	
10/12/82	6.78	6.78
7/7/83	5.40	5.39
9/6/83	6.60	
9/28/83	6.20	6.22
7/11/84	6.86	6.88
9/19/84	5.75	5.76
11/1/84	4.34	
6/13/85	4.47	4.50
8/26/85	5.18	5.18
10/8/85	4.00	4.00

TRANSECT WELL LLB 3-2 (SCREENED AT 80')

DATE:	S.W.L.	DRAW
7/13/82	7.90	7.90
8/23/82	9.02	
10/12/82	6.71	6.77
7/7/83	5.30	5.35
9/6/83	6.54	
9/28/83	6.13	6.16
7/11/84	6.78	6.89
9/19/84	5.70	5.77
11/1/84	4.28	
6/13/85	4.41	4.52
8/26/85	5.10	5.18
10/8/85	6.92	3.98

TRANSECT WELL LLB 3-3 (SCREENED AT 25')

DATE:	S.W.L.	DRAW
7/13/82	8.15	9.18
8/23/82	9.19	
10/12/82	6.95	8.99
7/7/83	5.83	8.20
9/6/83	7.15	
9/28/83	6.84	6.98
7/11/84	7.12	7.51
9/19/84	6.48	7.00
11/1/84	4.95	
6/13/85	4.98	5.22
8/26/85	5.80	6.00
10/8/85	4.70	5.88

TRANSECT WELL LLB 3-4 (SCREENED AT 12')

DATE:	S.W.L.	DRAW
7/13/82	5.66	6.22
8/23/82	6.68	
10/12/82	5.80	6.32
7/7/83	4.55	4.60
9/6/83	6.38	
9/28/83	6.58	9.46
7/11/84	5.63	6.99
9/19/84	6.48	9.53
11/1/84	5.00	
6/13/85	4.41	5.64
8/26/85	5.66	8.05
10/8/85	4.92	5.64

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D. [TABLE 9 cont.]

TRANSECT WELL LLB 4-1 (SCREENED AT 90')

DATE:	S.W.L.:	DRAW:
7/13/82	8.38	8.51
8/23/82	9.88	
10/12/82	6.40	6.45
7/7/83	5.10	5.16
9/6/83	6.43	
9/28/83	5.87	5.95
7/11/84	7.93	8.00
9/19/84	5.65	5.76
11/1/84	3.96	
6/13/85	4.71	4.78
8/26/85	5.15	5.17
10/8/85	3.60	3.78

TRANSECT WELL LLB 4-2 (SCREENED AT 60')

DATE:	S.W.L.:	DRAW:
7/13/82	8.26	8.55
8/23/82	9.85	
10/12/82	6.44	6.65
7/7/83	5.13	5.65
9/6/83	6.50	
9/28/83	5.99	6.23
7/11/84	7.85	8.36
9/19/84	5.80	6.22
11/1/84	4.03	
6/13/85	4.78	4.93
8/26/85	5.24	5.50
10/8/85	3.69	4.65

TRANSECT WELL LLB 4-3 (SCREENED AT 12')

DATE:	S.W.L.:	DRAW:
8/23/82	7.85	
10/12/82	7.45	8.74
7/7/83	7.19	9.14
9/6/83	7.42	
9/28/83	5.10	5.64
7/11/84	6.36	7.17
9/19/84	7.38	8.53
11/1/84	4.89	
6/13/85	5.14	7.20
8/26/85	6.43	8.02
10/8/85	5.12	5.85

TRANSECT WELL LLB 6-1 (SCREENED AT 175')

DATE:	S.W.L.:	DRAW:
8/23/82	100.13	
10/12/82	92.97	
7/7/83	92.64	92.44
9/6/83	94.37	
9/28/83	91.55	91.55
7/11/84	98.71	98.75
9/24/84	91.30	91.35
11/1/84	88.86	
6/13/85	88.31	88.09
8/21/85	93.15	93.54
10/8/85	87.00	86.97

TRANSECT WELL LLB 6-2 (SCREENED AT 118')

DATE:	S.W.L.:	DRAW:
8/23/82	92.94	
10/12/82	93.00	
7/7/83	89.70	
9/6/83	91.97	90.25
9/28/83	90.32	89.59
7/11/84	90.96	94.10
9/19/84	89.35	89.64
11/1/84	87.68	
6/13/85	84.64	84.88
8/21/85	87.74	87.85
10/8/85	85.00	85.34

TRANSECT WELL LLB 7-1 (SCREENED AT 110')

DATE:	S.W.L.:	DRAW:
7/13/82	8.90	8.90
8/23/82	9.65	
10/12/82	5.28	5.30
7/7/83	4.02	4.08
9/6/83	5.36	
9/28/83	4.62	4.59
7/11/84	6.60	6.55
9/19/84	4.27	4.22
11/1/84	2.94	
6/13/85	4.36	4.42
8/26/85	4.07	4.07
10/8/85	2.67	2.68

TRANSECT WELL LLB 7-2 (SCREENED AT 65')

DATE:	S.W.L.:	DRAW:
7/13/82	8.76	8.82
8/23/82	9.51	
10/12/82	5.24	5.30
7/7/83	3.98	4.05
9/6/83	5.35	
9/28/83	4.60	4.64
7/11/84	6.54	6.52
9/19/84	4.25	4.27
11/1/84	2.92	
6/13/85	4.30	4.38
8/26/85	4.09	4.12
10/8/85	2.60	2.70

TRANSECT WELL LLB 7-3 (SCREENED AT 30')

DATE:	S.W.L.:	DRAW:
7/13/82	8.47	8.62
8/23/82	9.23	
10/12/82	5.33	5.54
7/7/83	4.05	4.50
9/6/83	5.53	
9/28/83	4.90	5.04
7/11/84	6.42	6.65
9/19/84	4.52	4.71
11/1/84	2.96	
6/13/85	4.41	4.70
8/26/85	4.34	4.61
10/8/85	2.92	3.25

TRANSECT WELL LLB 7-4 (SCREENED AT 14')

DATE:	S.W.L.:	DRAW:
7/13/82	5.82	5.95
8/23/82	7.34	
10/12/82	5.44	5.58
7/7/83	4.30	4.54
9/6/83	6.20	
9/28/83	6.02	6.25
7/11/84	5.15	5.19
9/19/84	5.55	6.80
11/1/84	3.17	
6/13/85	4.60	4.90
8/26/85	5.59	5.84
10/8/85	3.80	4.46

District Permanent Recorder Wells

The Lower Loup NRD has installed two permanent recorder wells. The Garfield County, or Quinn Recorder, is located in the southeast quarter of the southeast quarter of Section 15, Township 24 North, Range 14 West. See Figure 24 for location and Table 10 for water levels. The Boone County, or Wagner Recorder, is located in the southeast quarter of the southeast quarter of Section 23, Township 22 North, Range 8 West. See Figure 24 for location and Table 11 for water levels.

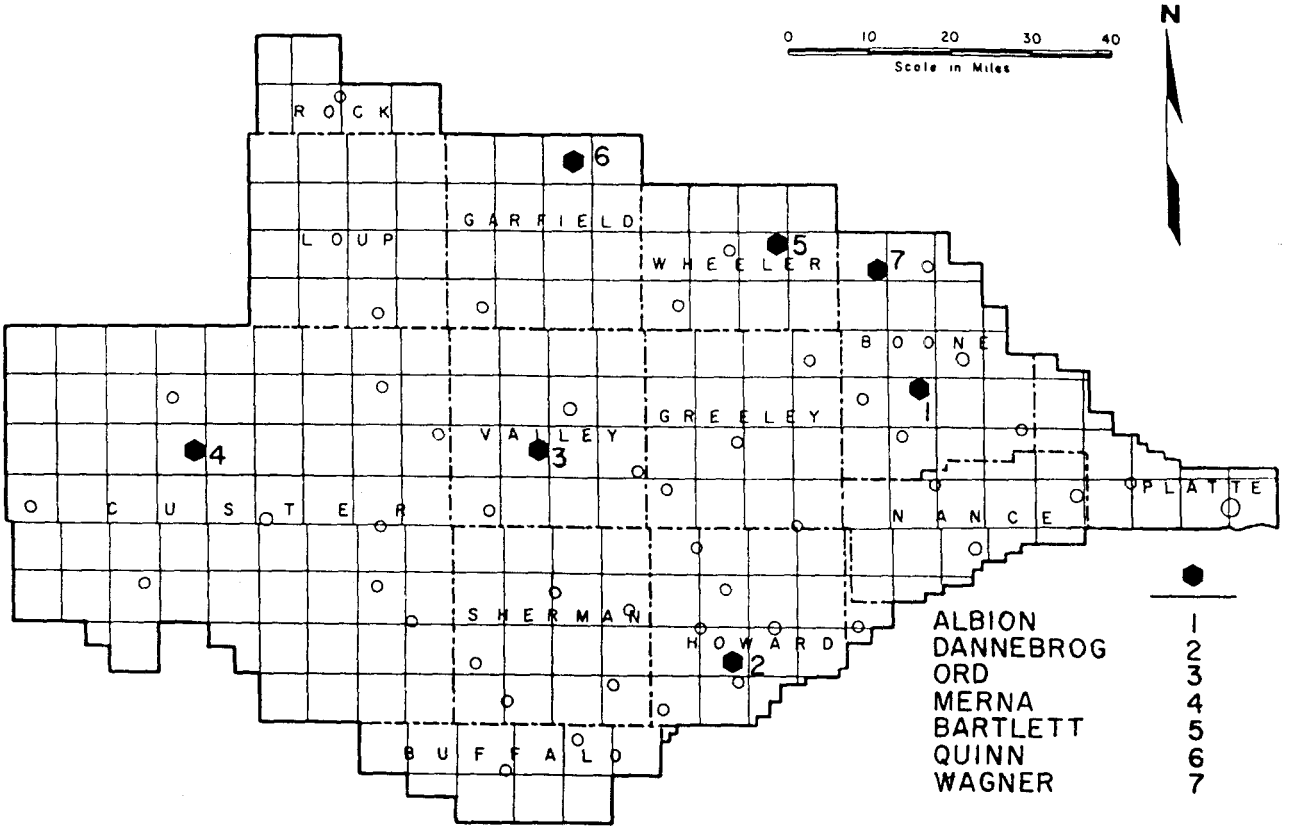


Figure 24
DISTRICT RECORDER WELL LOCATIONS

Chart Recorder Wells

Permanent chart recorder wells are located at Merna in Custer County, at Dannebrog in Howard County, at Ord in Valley County, at Albion in Boone County, and in Wheeler County (see Location Map, Figure 24).

The Albion recorder well was installed through a cooperative effort between the Lower Loup NRD, the Conservation & Survey Division, and the U.S. Geological Survey. The Wheeler County well was installed by agreement with the Conservation & Survey Division. All recorder wells are read and maintained by the USGS except for the Wheeler County well which is read and maintained by the District.

Recorder well information in available from the Nebraska Natural Resources Commission Data Bank and is published in Ground Water Levels in Nebraska by the Conservation & Survey Division and the U.S. Geological Survey. Figures 25 through 29 are plots of the permanent recorder wells located within the Lower Loup NRD.

TABLE 10

QUINN RECORDER WELL Garfield County Lower Loup N.R.D.

SE 1/4, SE 1/4, 15-24-14

DATE:	S.W.L.:	DATE:	S.W.L.:
11-30-79	2.55	1-17-83	1.13
12-28-80	1.90	2-15-83	0.98
2-22-80	1.55	3-16-83	0.46
6-9-80	5.40	4-14-83	0.00
7-2-80	13.95	6-16-83	0.98
7-14-80	21.10	7-13-83	3.20
7-21-80	20.10	8-29-83	8.88
7-28-80	22.60	9-19-83	7.79
8-4-80	21.80	10-17-83	6.66
8-12-80	19.85	11-18-83	2.90
8-14-80	19.30	12-18-83	2.17
8-19-80	16.95	1-20-84	1.86
8-29-80	15.18	2-16-84	1.30
9-15-80	11.70	3-28-84	0.41
10-13-80	6.76	4-16-84	0.00
11-14-80	4.63	5-18-84	0.00
12-17-80	3.80	6-19-84	0.00
1-15-81	3.60	7-13-84	5.76
2-16-81	3.45	8-2-84	8.29
3-16-81	3.35	8-15-84	11.00
5-13-81	4.70	9-24-84	7.68
6-16-81	6.50	10-23-84	3.83
7-15-81	21.67	11-26-84	1.72
8-14-81	15.32	12-18-84	1.34
9-15-81	9.92	1-15-85	1.18
10-15-81	13.75	2-21-85	1.24
11-16-81	9.75	3-18-85	1.03
12-15-81	5.85	6-14-85	1.87
1-15-82	2.75	7-15-85	5.78
2-16-82	3.00	8-19-85	4.88
3-16-82	2.08	9-16-85	3.68
4-4-82	1.30	10-16-85	2.22
5-14-82	1.50	11-20-85	1.40
6-16-82	1.00		
7-15-82	11.80		
7-29-82	15.10		
8-16-82	10.33		
8-31-82	11.75		
9-14-82	8.69		
10-15-82	4.41		
11-19-82	2.20		

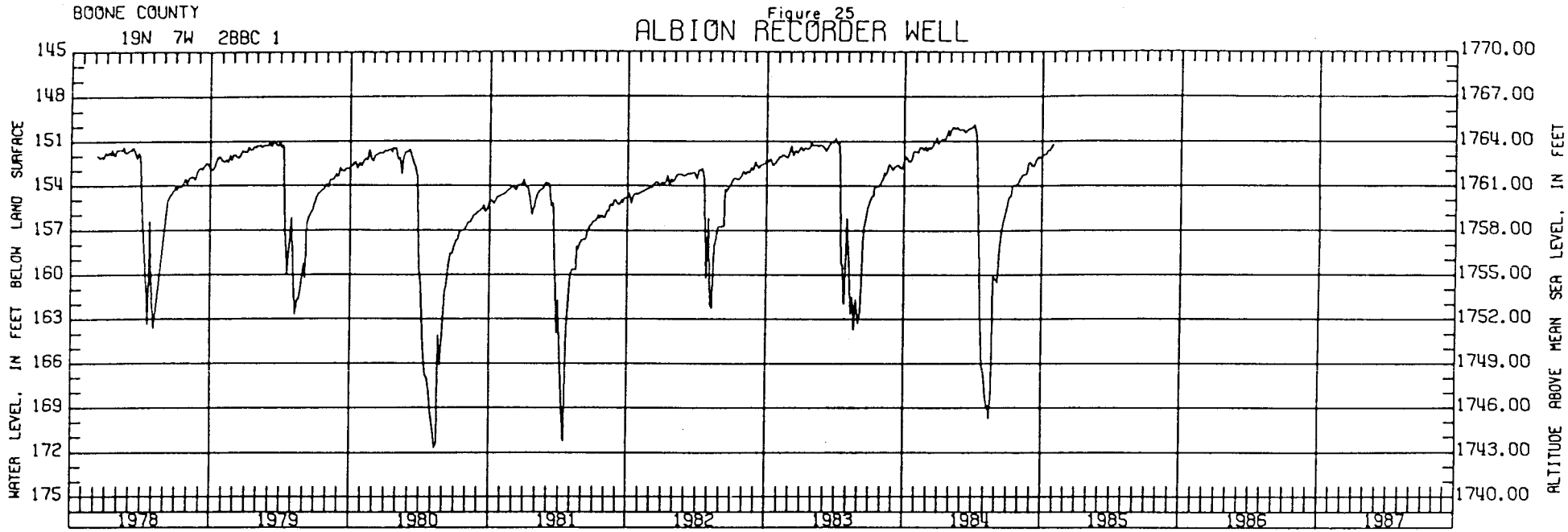
TABLE 11

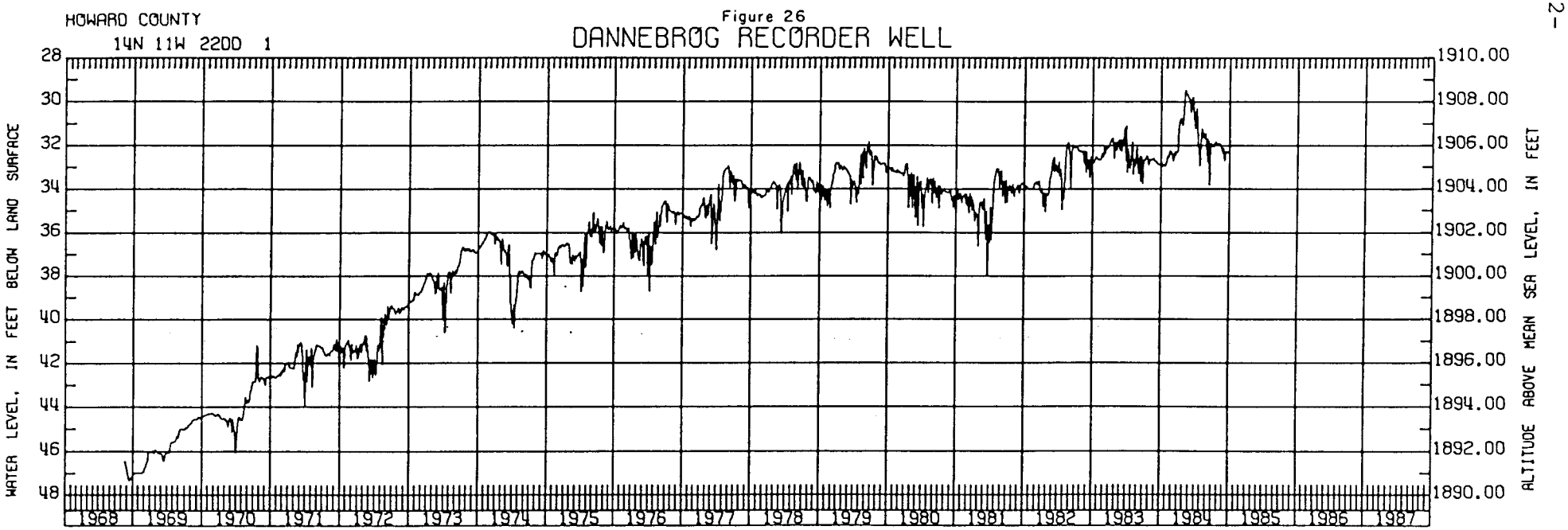
WAGNER RECORDER WELL Boone County Lower Loup N.R.D.

SE 1/4, SE 1/4, 23-22-8

DATE RECORDED:	S.W.L.
NOV 8, 1979	5.52
DEC 19, 1979	5.42
JAN 17, 1980	5.54
FEB 14, 1980	6.17
MAR 17, 1980	6.33
APR 22, 1980	6.69
JUN 26, 1980	6.58
JULY 15, 1980	6.71
JULY 30, 1980	6.67
AUG 8, 1980	6.62
AUG 18, 1980	6.50
AUG 25, 1980	6.62
SEP 15, 1980	6.50
SEP 22, 1980	6.35
OCT 16, 1980	6.08
NOV 19, 1980	5.92
DEC 15, 1980	5.79
JAN 14, 1981	5.75
FEB 16, 1981	5.67
MAR 16, 1981	5.71
APR 15, 1981	5.75
MAY 26, 1981	6.00
JUN 25, 1981	6.54
JUL 14, 1981	8.33
AUG 18, 1981	7.92
SEP 16, 1981	7.25
OCT 19, 1981	6.58
DEC 21, 1981	6.00
FEB 17, 1982	6.00
MAR 31, 1982	5.67
APR 26, 1982	5.77
MAY 19, 1982	5.65
JUL 16, 1982	6.96
AUG 20, 1982	7.00
SEP 16, 1982	6.67
OCT 20, 1982	5.87
DEC 9, 1982	5.75
JAN 13, 1983	5.29
FEB 15, 1983	5.25
JUN 16, 1983	4.71
JUL 14, 1983	4.92
AUG 18, 1983	5.54
SEP 19, 1983	5.46
OCT 18, 1983	5.21
NOV 21, 1983	4.79
DEC 15, 1983	4.21

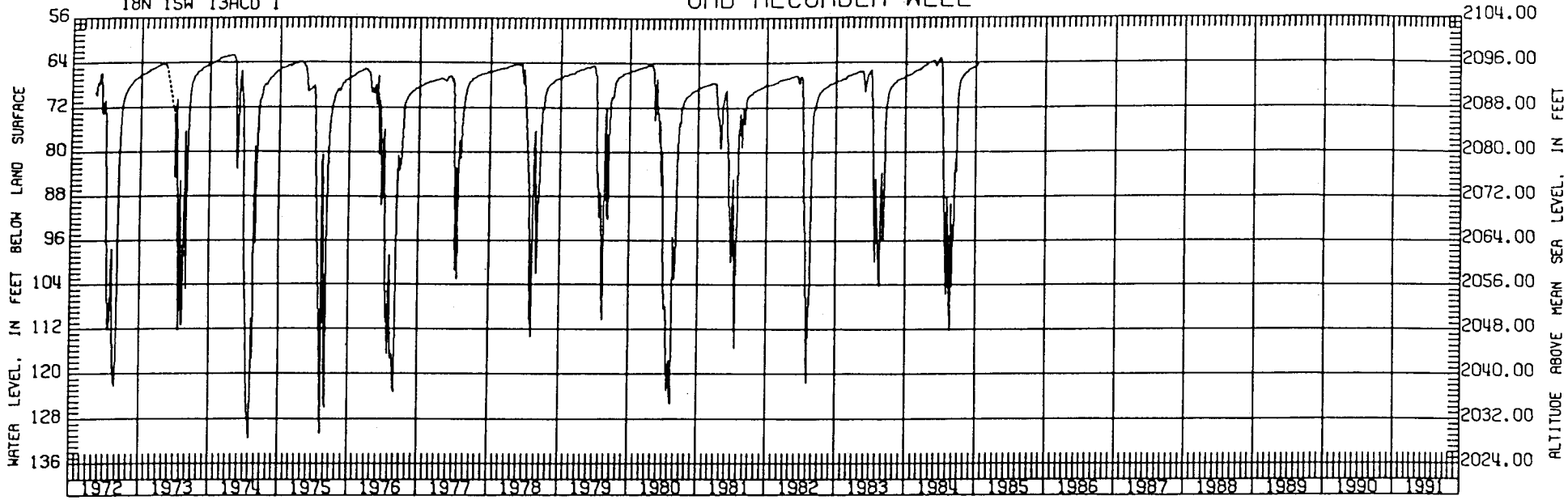
DATE RECORDED:	S.W.L.
JUN 25, 1984	3.75
JUL 16, 1984	5.25
AUG 27, 1984	4.98
SEP 18, 1984	4.98
OCT 23, 1984	4.08
DEC 19, 1984	3.67
JAN 15, 1985	3.71
FEB 21, 1985	3.50
MAR 18, 1985	3.46
JUN 12, 1985	3.58
AUG 15, 1985	4.79
SEP 9, 1985	3.71
OCT 21, 1985	3.37
NOV 25, 1985	3.25


BOONE COUNTY
19N 7W 28BC 1
Figure 25
ALBION RECORDER WELL
WATER LEVEL, IN FEET BELOW LAND SURFACE
145
148
151
154
157
160
163
166
169
172
175
ALTITUDE ABOVE MEAN SEA LEVEL, IN FEET
1770.00
1767.00
1764.00
1761.00
1758.00
1755.00
1752.00
1749.00
1746.00
1743.00
1740.00
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987


HOWARD COUNTY
14N 11W 22DD 1
Figure 26
DANNEBROG RECORDER WELL
WATER LEVEL, IN FEET BELOW LAND SURFACE
28
30
32
34
36
38
40
42
44
46
48
ALTITUDE ABOVE MEAN SEA LEVEL, IN FEET
1910.00
1908.00
1906.00
1904.00
1902.00
1900.00
1898.00
1896.00
1894.00
1892.00
1890.00
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987

VALLEY COUNTY
18N 15W 13ACD 1

Figure 27
ORD RECORDER WELL



CUSTER COUNTY
18N 22W 24CCCC1

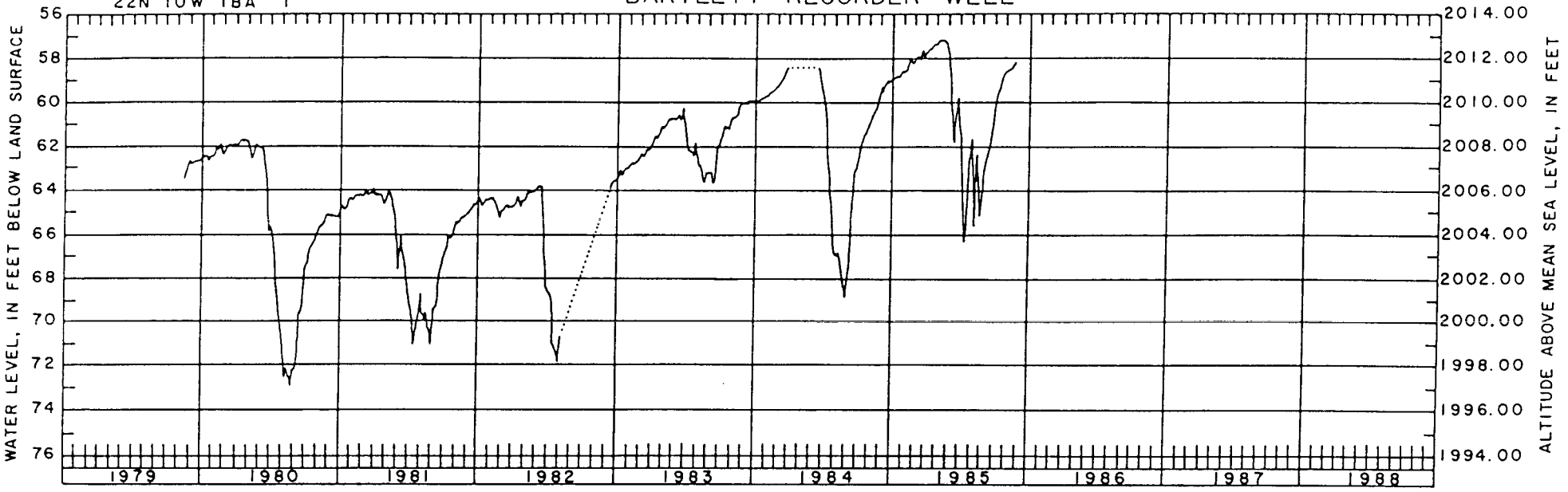
Figure 28
MERNA RECORDER WELL

WHEELER COUNTY

22N 10W 1BA 1

Figure 29

BARTLETT RECORDER WELL



Hydrogeology of Parts of the Central Platte and Lower Loup NRDs

(Loup/Platte Study)

In November of 1976, the Board of Directors took action to enter into a cooperative study of the land area between the Loup River and the Platte River. This study encompassed the area of the Lower Loup NRD between the South Loup and Loup Rivers and the southern District boundary. This constitutes a rather thin slice of the District and one that could have common characteristics with the Central Platte NRD to the south. The study was to be undertaken by the U.S. Geological Survey with funding of 80% by the Central Platte NRD and 20% by the Lower Loup NRD.

In their Purpose and Scope of the study, USGS reported in WATER RESOURCES INVESTIGATIONS, Report 83-4219.

Purpose and Scope

"There are two principal purposes for this study. The first is to describe the hydrogeologic system of the study area. The second is to develop and demonstrate a capability for evaluating, quantitatively, the effects of different management alternatives on water levels and on streamflow in the study area.

"In this study, the different components of the hydrologic system--surface water system, soil zone, unsaturated zone, and saturated zone-- were analyzed using mathematical programs whenever possible. These programs are linked to form a single model of the system so that the responses of the entire system to variations imposed on it can be simulated mathematically. The surface water system is included in the model only to the extent necessary to determine the effects of surface water on recharge to the groundwater reservoir, or the converse.

"Few new field data were obtained for this study. Hydrologic and geologic data obtained by previous investigators were reviewed and reinterpreted using numerical techniques. Also, large amounts of data on land use, climate, and water use were obtained from others. Such data are essential input in evaluating the effects of different management alternatives on the water resources of the study area."

The report is summarized by USGS and will serve as same for this Plan. We will include, as added information, maps showing declines relative to different stress placed on the groundwater reservoir over time.

Summary of Conclusions

"Maps and tables presented in this report indicate that water levels will decline in the future throughout much of the study area even without additional development beyond the 1980 level unless reductions are made in the volume of groundwater used. These reductions might be

attained either through cutbacks in the acreages irrigated or through cutbacks in the amount of ground water applied per acre. A variety of methods can be employed to accomplish these reductions; some have been previously discussed.

"Declines ranging from 0 to about 139 feet will occur in Hall County and in Merrick County before 2020, depending on the assumed rate of groundwater development (up to 8 percent per year). Similarly, declines ranging from 0 to about 79 feet will occur before 2020 from Buffalo County westward. Declines of up to about 99 feet will occur by the year 2020 a few miles northeast of Gothenburg for the development rate of 8 percent per year.

"Water-level declines occur in areas where aquifer discharge exceeds aquifer recharge. As areas where the depth to water exceeds 5 feet increase, the volume of ET salvage will reach a maximum, and ET losses from the groundwater will decrease and apaproach a minimum. Also, additional groundwater will be removed from storage in order to satisfy pumpage requirements. Finally, as water levels decline, more surface water will move into the aquifer and less groundwater will move into the streams.

"The pumpage, storage (water removed from storage), and inflow (water moving from the stream to the aquifer) rates will increase with additional groundwater development; however, the rates of recharge, ET losses from groundwater, and outflow (water moving from the aquifer to the stream) will decrease.

"The relationship between the aquifer and the surface water system is important in determining future water levels in the study area. The simulations indicate that the movement of water from the streams to the aquifer will increase with time and that the rate of increase will be proportional to the rate of new irrigation development. Also, decreases in streamflow probably will occur because of additional surface water diversions, additional groundwater development west of the study area, and changing farming practices west of the study area. These decreases in streamflow may affect water levels if the streamflow reductions are large enough to significantly lower the stream stages."

Approximately 581,760 acres within the Lower Loup NRD were included in the study area from Custer County east to Platte County. The next several pages (Figures A through L) include a series of maps of the study area with the Lower Loup NRD boundary shown.

Figures A through D are projected water-level declines by 2000 and 2020 assuming there is no new irrigation development after 1980.

Figures E through L are projected water-level declines by 2000 and 2020 for different rates of irrigation development and water application.

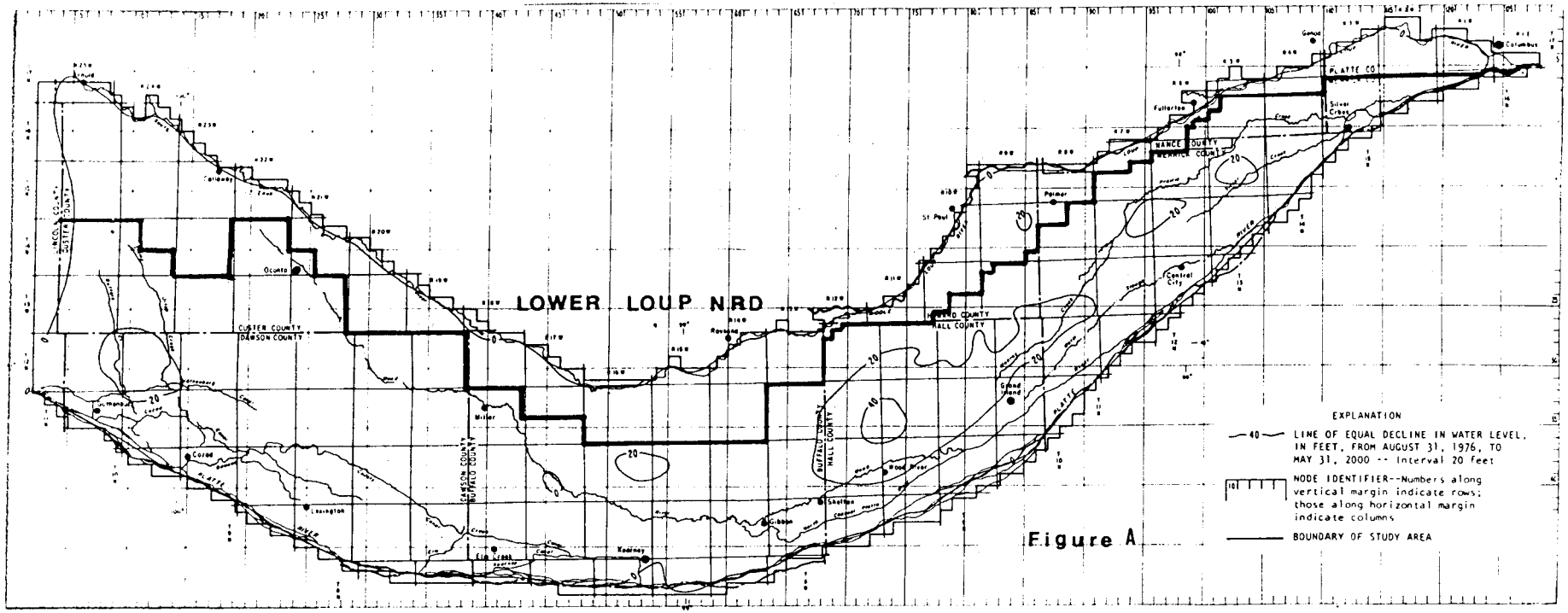


FIG. A - PROJECTED DECLINES BY 5/31/2000, IF APPLICATION RATE EQUALS 80% OF CONSUMPTIVE-IRRIGATION REQUIREMENTS.

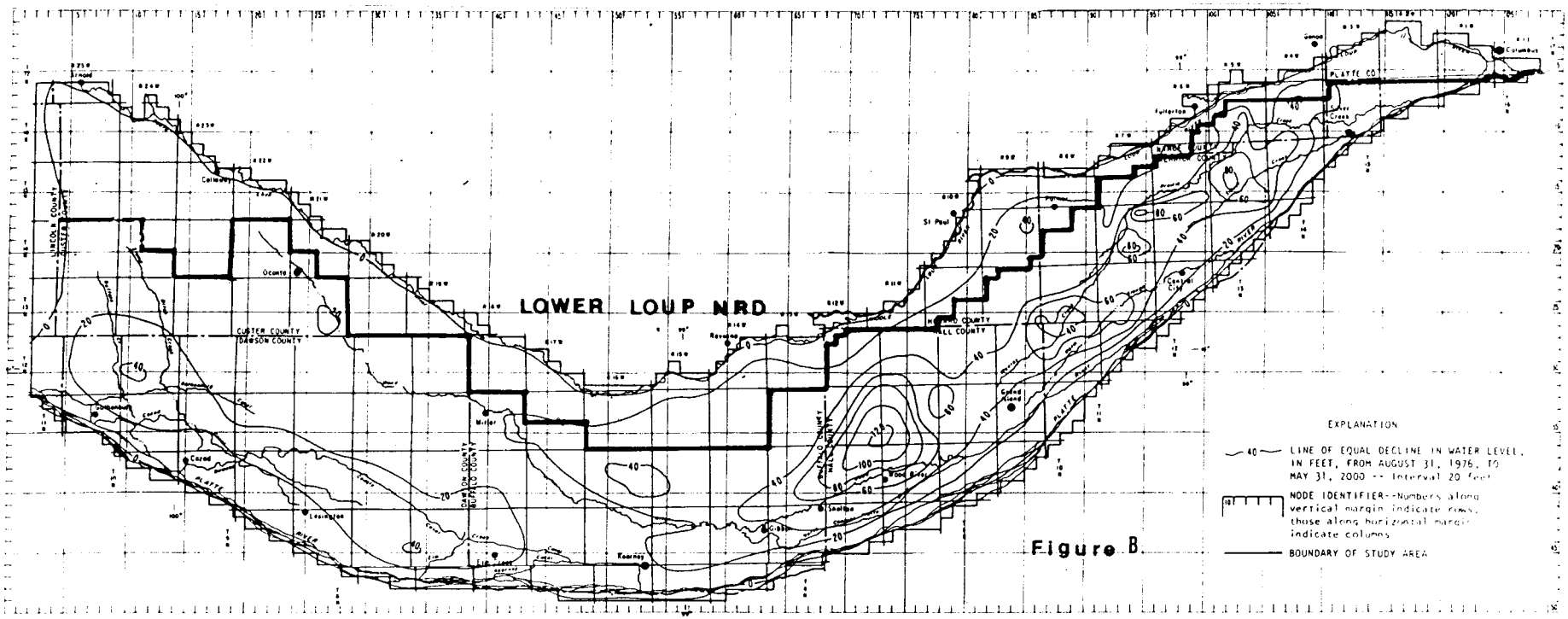


FIG. B - PROJECTED DECLINES BY 5/31/2000, IF APPLICATION RATE EXCEEDS CONSUMPTIVE-IRRIGATION REQUIREMENTS -- 13.75 INCHES IN BUFFALO COUNTY AND EASTWARD AND 16.0 INCHES

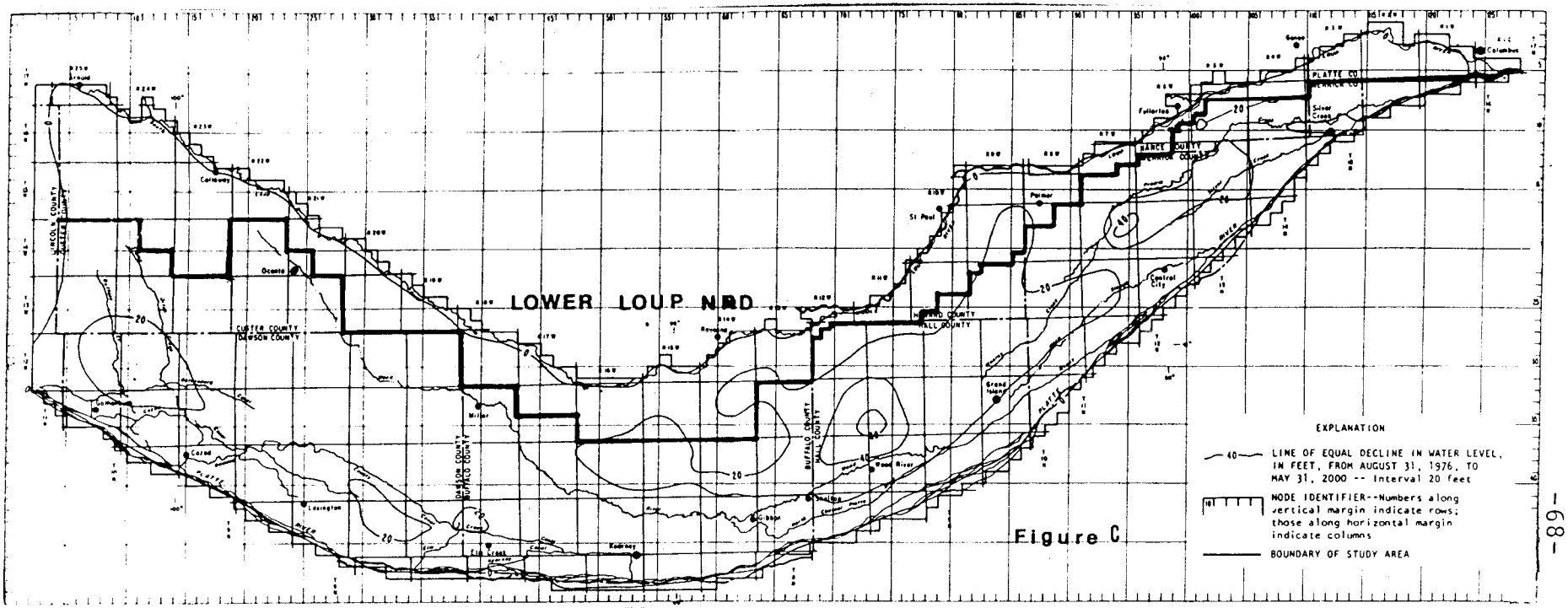


FIG. C - PROJECTED DECLINES BY 5/31/2000, IF APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

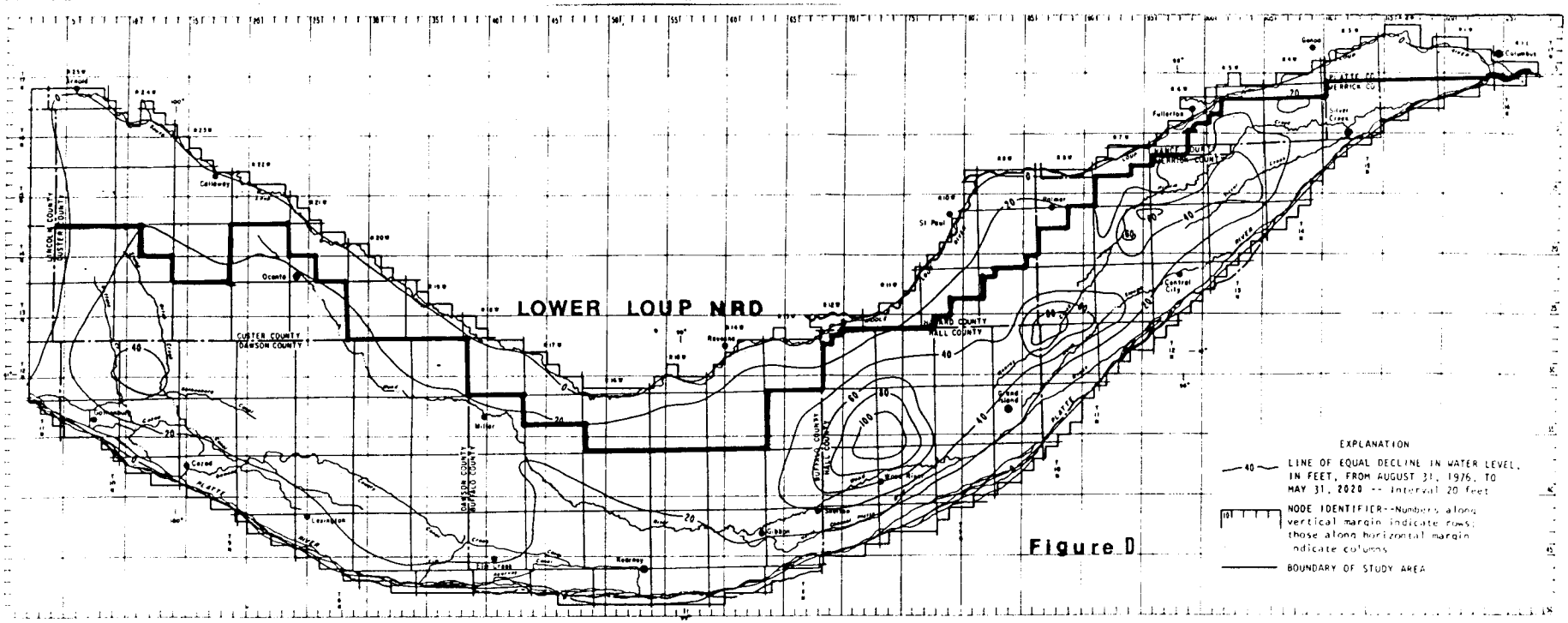


FIG. D - PROJECTED DECLINES BY 5/31/2000, IF APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

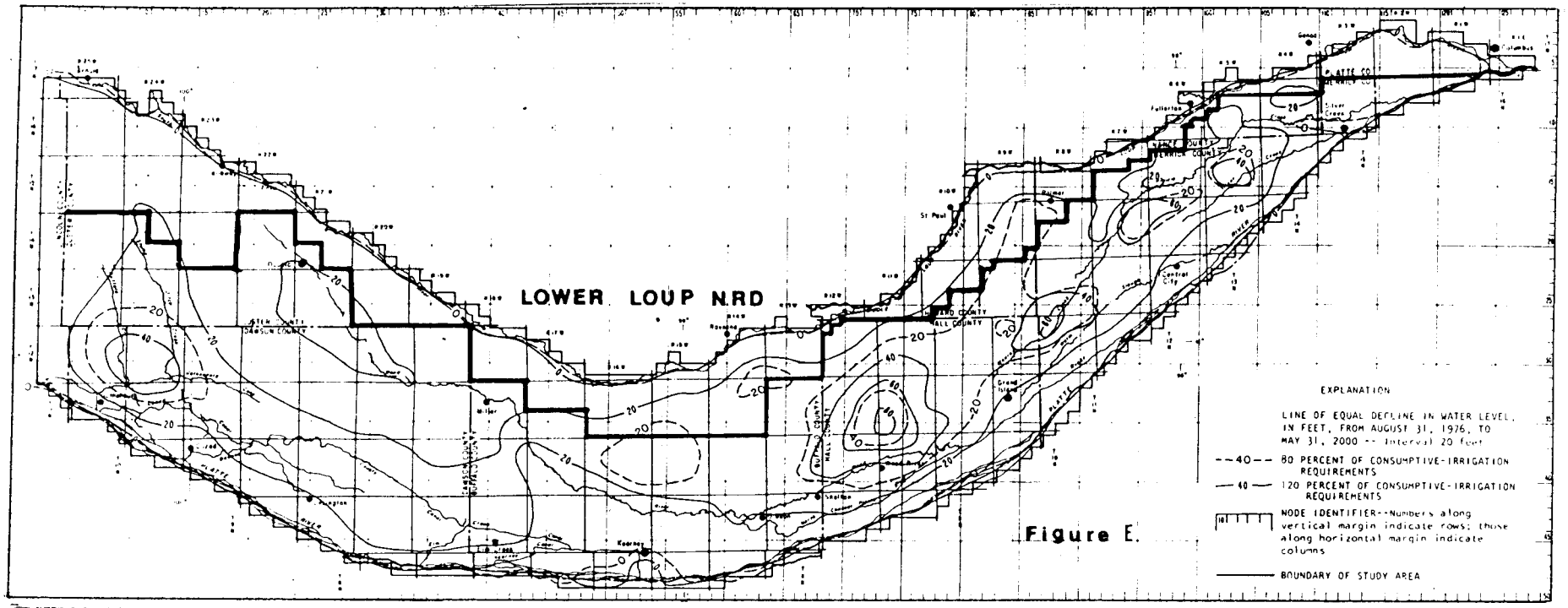


FIG. E - PROJECTED DECLINES BY 5/31/2000, IF RATE OF DEVELOPMENT IS 2% AND APPLICATION RATE IS EITHER 80 OR 120% OF CONSUMPTIVE-IRRIGATION REQUIREMENTS.

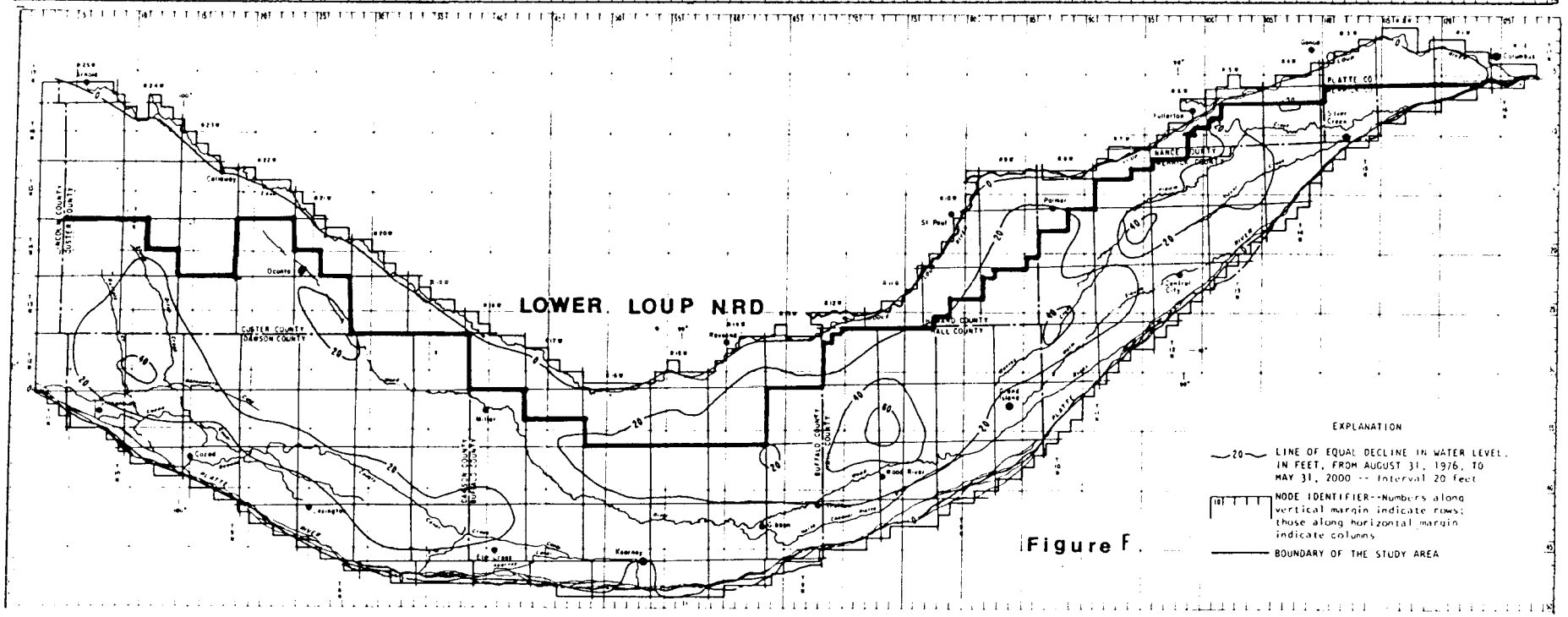


FIG. F - PROJECTED DECLINES BY 5/31/2000, IF RATE OF DEVELOPMENT IS 2% AND APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

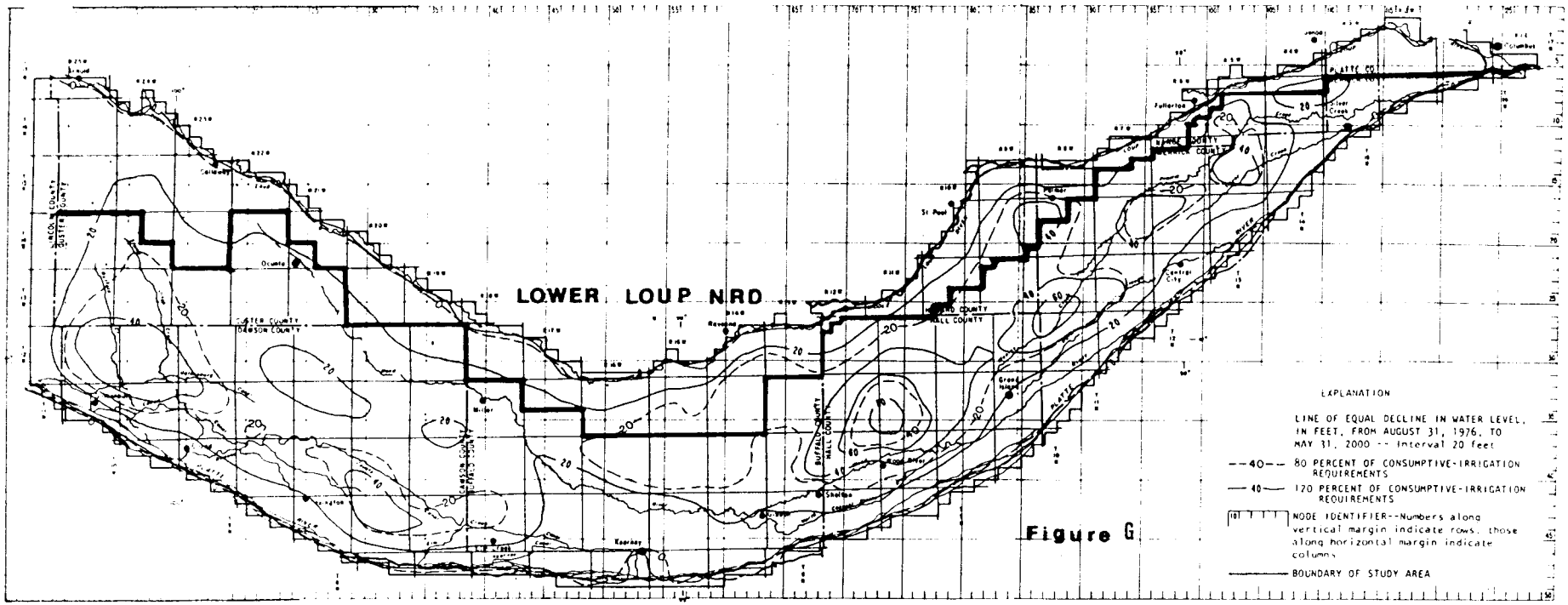


Figure G

FIG. G - PROJECTED DECLINES BY 5/31/2000, IF RATE OF DEVELOPMENT IS 5% AND APPLICATION RATE IS EITHER 80 OR 120% OF CONSUMPTIVE-IRRIGATION REQUIREMENTS.

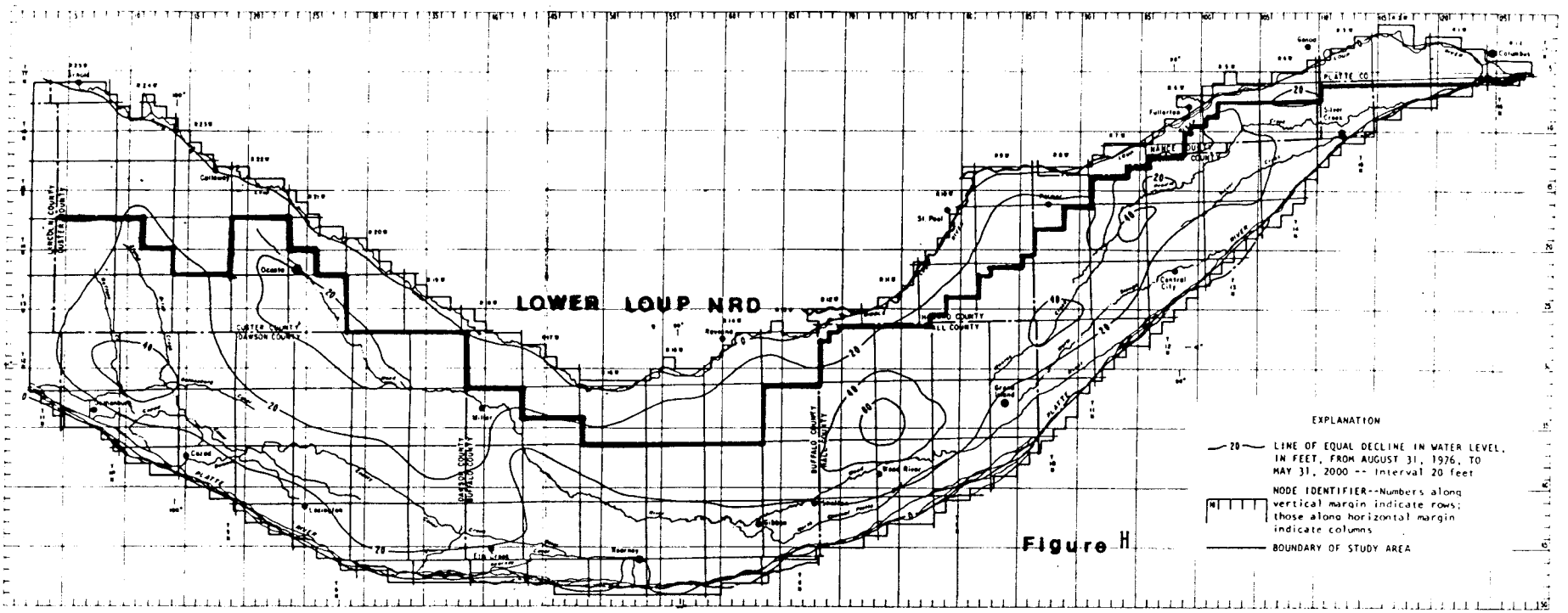


Figure H

FIG. H - PROJECTED DECLINES BY 5/31/2000, IF RATE OF DEVELOPMENT IS 5% AND APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

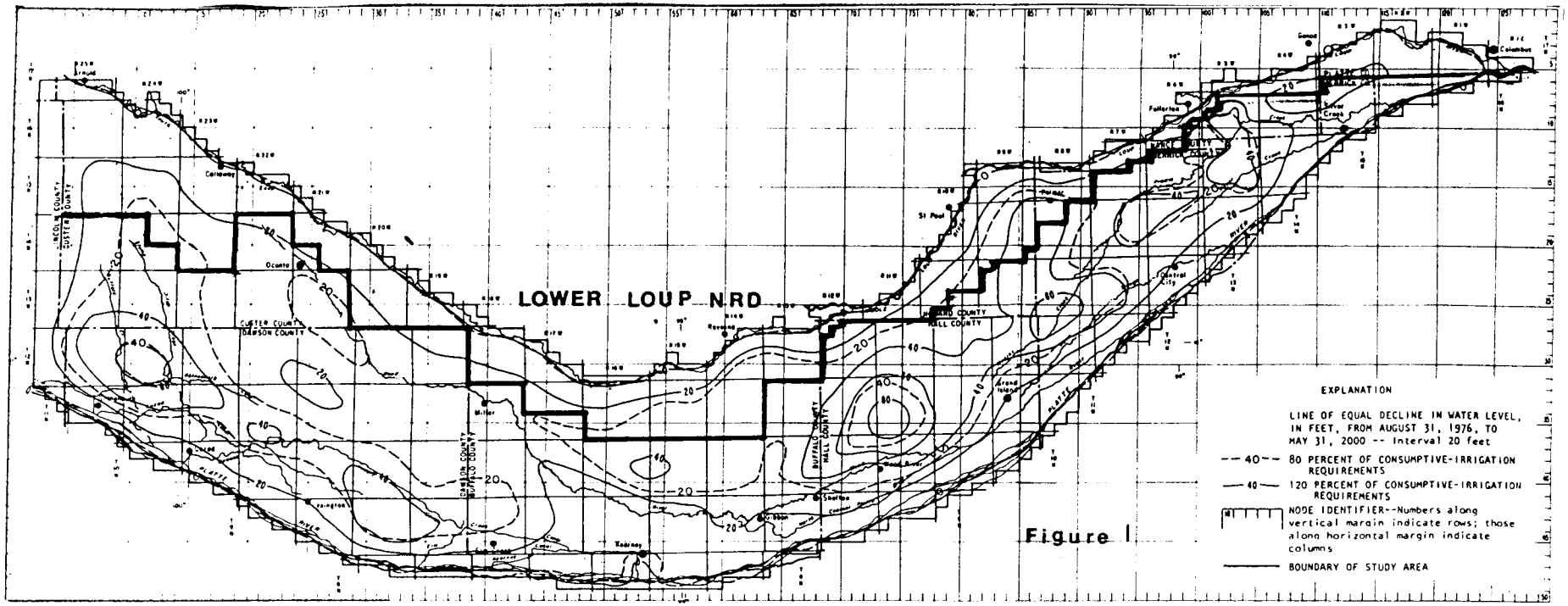


FIG. I - PROJECTED DECLINES BY 5/31/2000, IF RATE OF DEVELOPMENT IS 8% AND APPLICATION RATE IS EITHER 80 OR 120% OF CONSUMPTIVE-IRRIGATION REQUIREMENTS.

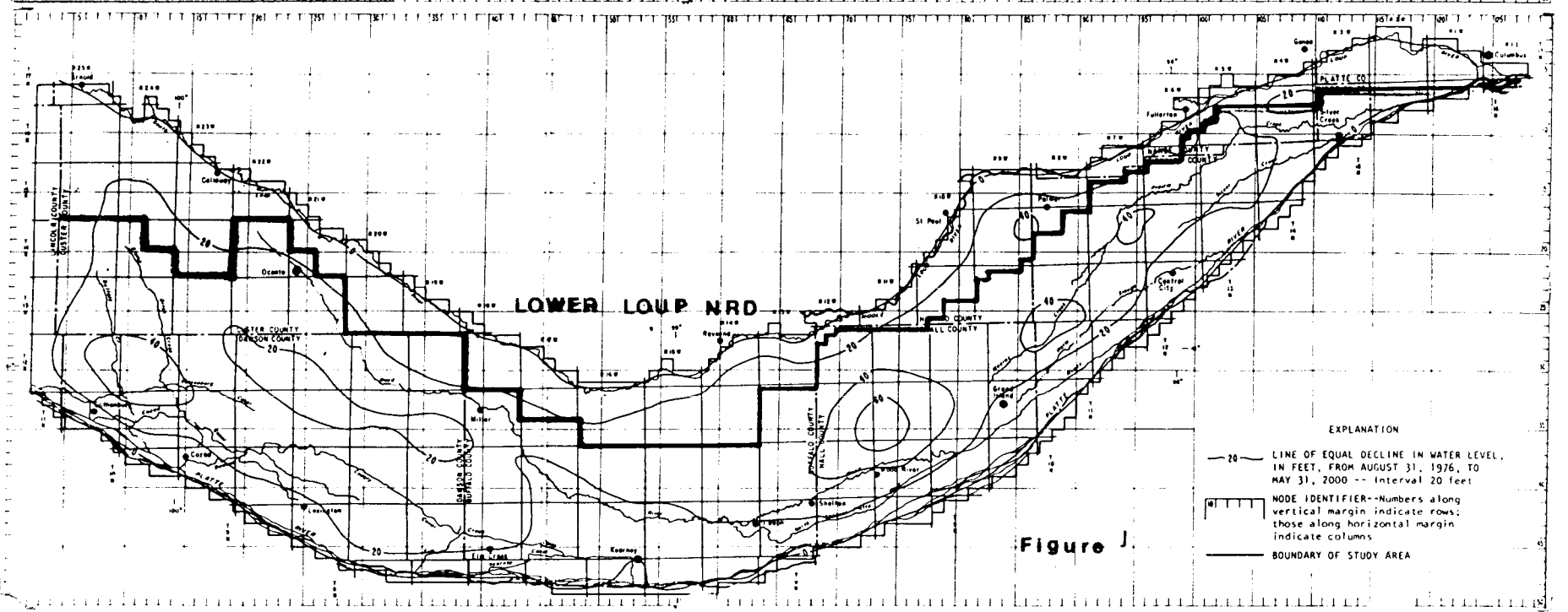


FIG. J - PROJECTED DECLINES BY 5/31,2000, IF RATE OF DEVELOPMENT IS 8% AND APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

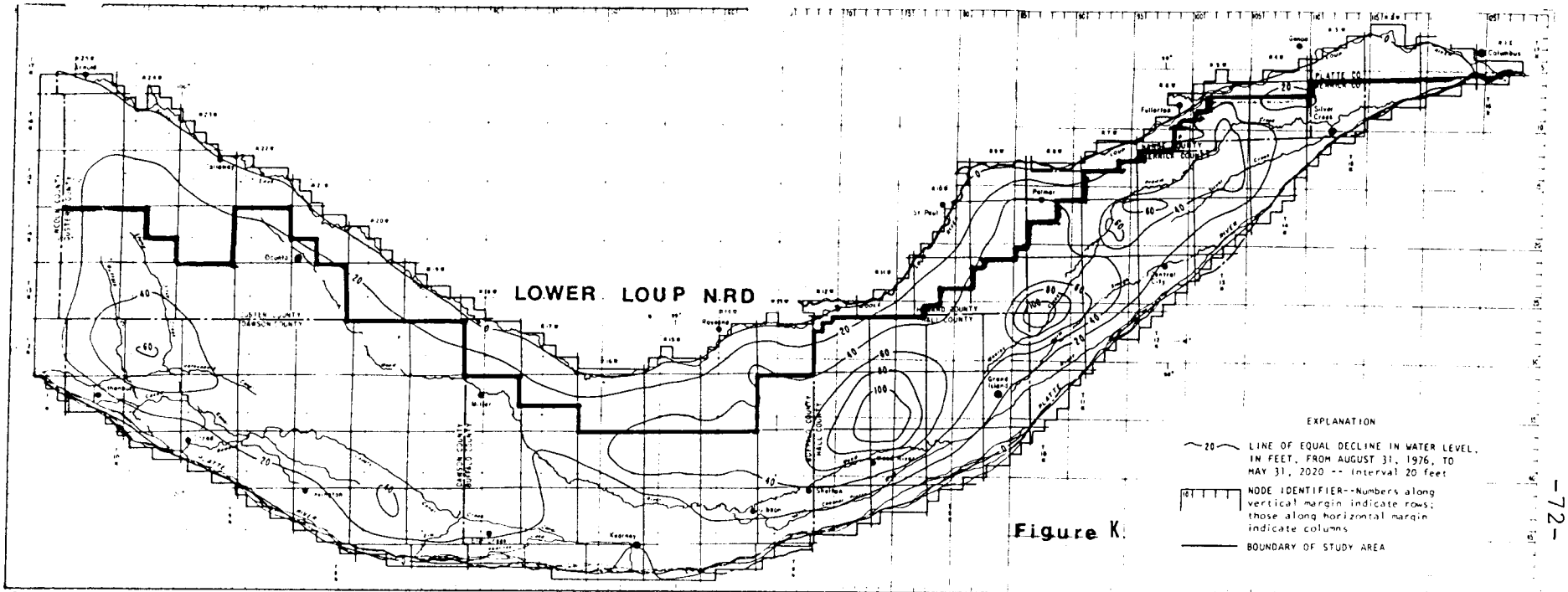


FIG. K - PROJECTED DECLINES BY 5/31/2020, IF RATE OF DEVELOPMENT IS 2% AND APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

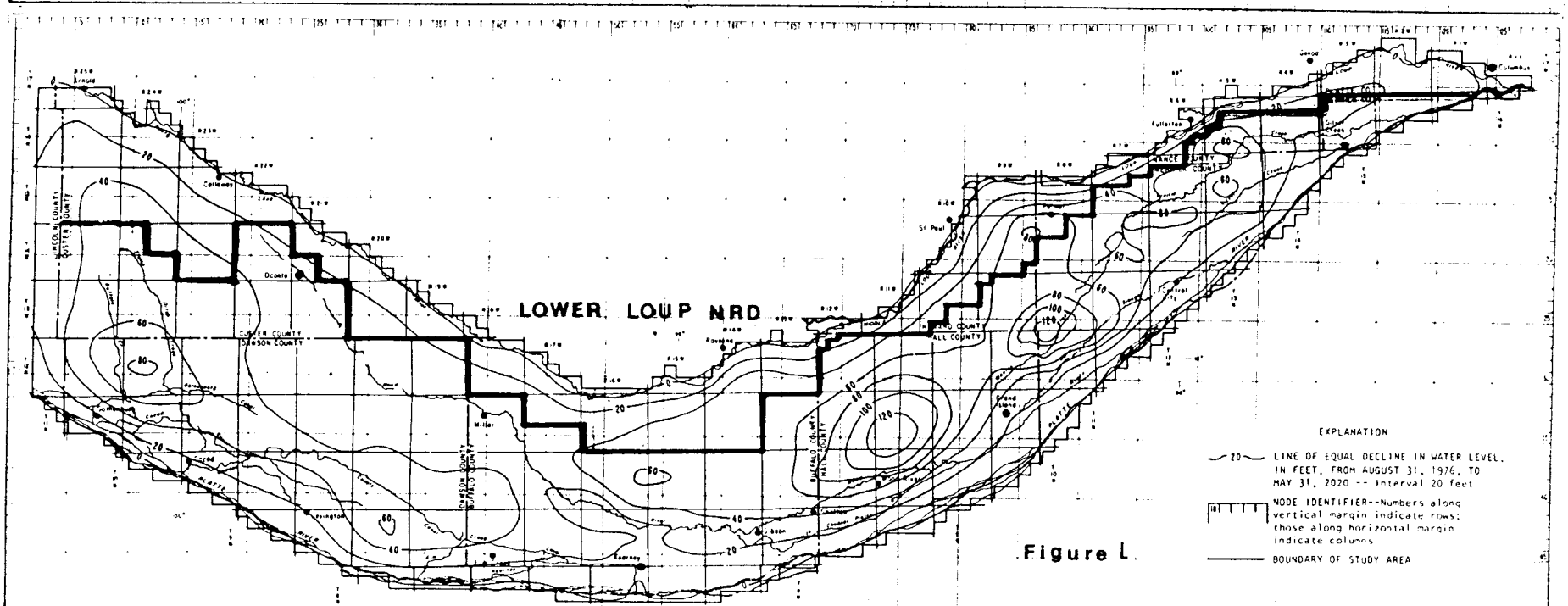


FIG. L - PROJECTED DECLINES BY 5/31/2020, IF RATE OF DEVELOPMENT IS 8% AND APPLICATION RATE EQUALS CONSUMPTIVE-IRRIGATION REQUIREMENTS.

WATER QUALITY

GROUNDWATER QUALITY

AGENCY REPORTS

MONITORING PROGRAM

TRANSECT WATER QUALITY

BEAVER CREEK SURFACE WATER QUALITY

SPECIAL PROJECTS

SURFACE WATER QUALITY

GROUNDWATER QUALITY

As a prerequisite to discussion of the water quality within the District, several facts should be noted. Degradation of the quality of water can come from sources other than agriculture. While our District sampling program is geared to those pollutants where agriculture operations are suspect, pollution does come from other sources, such as septic tank systems, municipal waste treatment plants, solid waste disposal sites, industrial waste disposal, surface runoff from urban areas, and particulates from smokestacks.

The greatest threat for pollution of groundwater in the Lower Loup Natural Resources District does look at agricultural operations as a source. Presently, the possible contamination from nitrates has the spotlight. Nitrate pollution problems can originate from improperly treated sewage, septic tanks, and livestock feeding operations, as well as the most widely publicized source, nitrogen fertilizer.

Chemicals in one form or another, and to varying degrees, are present in all ground water. The breakdown of organic material and leaching from rocks does contribute to their presence in both ground and surface waters.

In order to assess where we are going, we need to be aware of what conditions were before we started. This plan will use two sources of data for water quality evaluations.

The general pre-development condition of ground water will be established by using data from Resource Atlas No. 3/1978, (RA3) by Engberg-USGS and Spalding-CSD.

Implementation of the District's water quality goal and objectives will be through the use of site specific data from groundwater quality sampling by the Lower Loup Natural Resources District, 1977-85.

General pre-development conditions and standards will be evaluated for 14 parameters within two underground water areas. Area 1 (A1) is described as the Sandhills region. Area 8 (A8) is described as the East-Central Dissected Plains Regions. These areas encompass the Lower Loup NRD.

Dissolved Solids - U.S. Public Health Service (PHS) recommended standard is 500 mg/l. RA3 reports 0-200 mg/l in A1 and 200-500 mg/l in A8.

Hardness as $CaCO_3$ - No U.S. PHS recommended standard. RA3 reports a range of 0-180 mg/l for A1 and A8.

Sodium plus Potassium - No U.S. PHS recommended standard. RA3 reports 20-50 mg/l over both A1 and A8.

Alkalinity - No U.S. PHS recommended standard. RA3 reports 0-100 mg/l in A1 and 101-300 mg/l in A8.

Sulfate - U.S. PHS recommended standard is 250 mg/l. RA3 reports 0-10 mg/l in A1 and 11-100 mg/l in A8.

Chloride - U.S. PHS recommended standard is 250 mg/l. RA3 reports 0-10 mg/l in A1 and A8.

Fluoride - EPA recommended standard is 1.7 mg/l. RA3 reports 0-0.5 mg/l throughout A1 and A8.

Silica - No U.S. PHS-EPA recommended standard. RA3 reports greater than 50 mg/l in all of A1 and most of A8.

Boron - No U.S. PHS-EPA recommended standard. RA3 reports 0-300 ug/l in A1 and A8.

Iron - U.S. PHS recommended standard is 300 mg/l. RA3 reports 0-100 ug/l in both A1 and A8.

Manganese - U.S. PHS recommended standard is 50 ug/l. RA3 reports 0-50 ug/l in A1 and 51-400 ug/l in some of A8.

Selenium - EPA recommended standard is 10 ug/l. RA3 reports less than 10 ug/l for both A1 and A8.

Phosphorus - No recommended standard. RA3 reports greater than 16 ug/l in all of A1 and most of A8.

Nitrate as N - U.S. PHS recommended standard is 10 mg/l. RA3 reports concentrations in excess of 10 mg/l in Holt County and areas in the Central Platte river valley from Kearney to Columbus. No specific data was given for A1 and A8. RA3 did say, however, that:

> "Concentrations of nitrate in groundwater vary widely with respect to season, depth to water, location of wells or springs, type of soil, kinds of sediment in the unsaturated zone, and available sources of nitrate. Because of this variability, it is impossible to portray zones of nitrate in the groundwater of Nebraska. From all indications, concentrations of nitrate in groundwater are increasing in all areas of Nebraska as groundwater supplies are developed and as agricultural productivity is increased through improved farming practices."

Data on chemical content of groundwater in RA3 covers those chemicals that occur naturally in rocks and soils, except for their comments concerning nitrates which they report as follows:

> "Nitrate is the highest oxidation state of nitrogen and is the most stable form of nitrogen occurring in groundwater. Other forms of nitrogen that commonly occur in groundwater include nitrite, ammonia, and organic nitrogen. These transitional forms may ultimately be oxidized to nitrate if oxygen and certain bacteria occur with them.

"Nitrate in groundwater is derived from a variety of sources. Natural processes such as bacterial activity and the growth of certain plants remove nitrogen from the air and fix it in soils. The various forms of fixed nitrogen then are oxidized to nitrate by other bacterial activity, and some of that nitrate reaches the groundwater. Additional sources of nitrate include barnyards and feedlots, septic systems, fertilizers, and waste from range animals and wild animals. Nitrate probably is not derived from rocks and minerals except in very small quantities. Buried soils and loess of Pleistocene Age, some occurring at depths of 50 feet (15 m) or more, also may be significant sources of nitrate in groundwater."

The material in RA3 then provides a source for benchmark data on the conditions as they exist as far as natural occurrences are concerned.

Man-made compounds found in fertilizer and pesticides are not common to groundwater, and their occurrence would be as a result of man's intrusion. Other more volatile compounds are generally the result of waste disposal or those activities related to manufacturing.

Agency Reports on Ground Water Quality

Loup River Basin Water Quality Management Plan/1975 by Nebraska Natural Resources Commission

"In general, the groundwater quality in the Basin, as indicated by the available information, is good. Presently, the potential for further groundwater utilization for some purposes does exist. In the future this potential will depend on good conservation and management to preserve the existing good groundwater quality."

Nebraska Water Quality Report/1978 by Nebraska Department of Environmental Control

"Chemical quality of groundwater sampled in the basin is good to excellent. Mineralization of the water ranges from about 100 to approximately 600 mg/l. Dissolved-solids content is smallest in the western end of the basin and generally increases to the east-southeast."

Policy Issue Study on Water Quality-March, 1980 by Nebraska Natural Resources Commission

"As water moves through the soil profile, it dissolves water soluble chemicals. These chemicals, including salts, nutrients, and pesticides, can be carried to the groundwater and can contaminate the groundwater supply so as to make it unfit for its intended uses. Of particular concern is the presence of nitrates in groundwater drinking supplies. Nitrates may endanger human and animal health."

Platte River Basin - Nebraska Level B Study - March, 1985, Water Quality Technical Report by Missouri River Basin Commission

"The entire Loup and the Upper Elkhorn Subbasins appear generally to have remained the same over a period of years. Water of good quality and in sufficient quantities is still available in these areas except for isolated instances where nitrate-nitrogen buildup has occurred in the groundwater. This nitrate-nitrogen buildup is from geologic sources, from human and mineral wastes and from added fertilizer. Natural mineralization may also be the reason for some nitrate-nitrogen buildup."

Appraisal of Data for Groundwater Quality in Nebraska Water Supply Paper 2245 by Richard A. Engberg-USGS

"Although many analyses already have been made of groundwater in Nebraska, most have been made for specific projects with limited areas and objectives. Consequently, a lack of data exists for other areas of the State and for certain geologic units. For example, because the Mesozoic and Paleozoic aquifers previously have been used only sparingly, little has been done to evaluate the quality and quantity of water in these units. Future water requirements may necessitate detailed evaluation of these units as possible sources of irrigation or industrial water supply or as possible places for disposal of liquid wastes.

"Little or no pesticide data for groundwater presently have been collected. Likewise, no bacteriological data, except for that collected routinely for health considerations of public supplies, exist. Virtually no information is available on radionuclides in the groundwater. Future studies need to address these data needs."

National Uranium Resource Evaluation Program

Information from this program was published on USGS Topographic Quadrangle maps (scale-1:250:000). These maps, along with the descriptive test, provide more detail over a wider area than previous publications reviewed. The source is from Spalding and others-Conservation & Survey Division and is 1979 data.

Data on the Lower Loup NRD Water Quality Sampling Program is contained in Table 12. Sample site locations and evaluations are found in Table 8 in the Ground Water Monitoring section.

Data on water quality for the 72 transect wells is found in Table 13. Site locations are found in Figure 22 in the Ground Water Monitoring Section.

In June of 1983, Spalding reported results of a rigidly controlled series of quality tests including Atrazine. These Atrazine tests were the first such tests for man-made compounds applied artificially to crop land. Test results are found in Table 14.

Data on surface water quality in Beaver Creek is found in Table 15. Sample locations are found in Figure 18 in the Surface Water section.

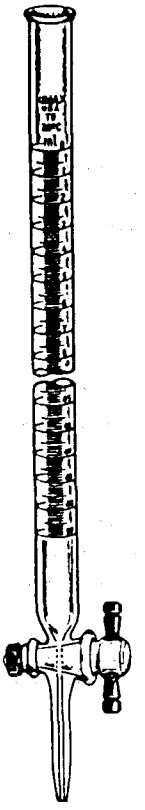
Data on water quality in a special pilot irrigation well sampling program is found in Table 16.

Surface Water Quality

Surface water quality monitoring has, for a number of years, been the responsibility of the Nebraska Department of Water Resources and the U.S. Geological Survey.

Except for those tests performed by the Lower Loup NRD on Beaver Creek, reported in Table 15, surface water quality concerns will be addressed by reference to information in "Water Resources Data for Nebraska", published by USGS, DWR, and others.

In general terms, surface water quality within the Lower Loup NRD mimicks groundwater quality. Resources managers can pinpoint potential groundwater quality problems by reviewing sampling records from surface water quality stations.

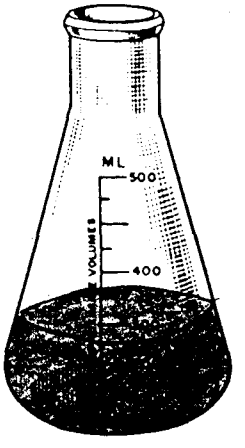


WATER QUALITY

MONITORING PROGRAM

1985

Table 12



LOWER LOUP NATURAL RESOURCES DISTRICT

NO. HIGHWAY 11, HADAR INDUSTRIAL PARK
P. O. BOX 210, ORD, NEBRASKA 68862-0210
PHONE (308) 728-3221

EXPLANATION OF RESULTS OF CHEMICAL WATER ANALYSIS

conducted by the

LOWER LOUP NATURAL RESOURCES DISTRICT

CONDUCTIVITY - Electrical Conductivity indicates the ability of water to conduct an electrical current. The conductance indicates the amount of dissolved solids or minerals present in the sample. The higher the conductance, the more dissolved solids present. The present Public Health Service (PHS) limit, or standard, is from 500-600 Micro mhos/cm.

pH - The pH of a solution refers to its hydrogen ion activity and is a measure of the acidity (below pH 7) or alkalinity (above pH 7) of water. Groundwater will generally be basic or above 7.0 because of the presence of carbonates and bicarbonates in the water. The present PHS standards range from 6.5-8.0.

NITRATE-NITROGEN (NO_3-N) - Nitrate-Nitrogen has probably generated the greatest concern and is the most serious contaminant we test for. It can derive from fertilizer or animal and human waste leaching into the water supply or can be found naturally in some waters. The present PHS standard is 10 milligrams per liter (mg/l) as Nitrate-Nitrogen (45.0 mg/l as Nitrate which should not be confused). Higher concentrations of NO_3-N can cause Methemoglobinemia (Blue Baby Syndrome) in human infants, especially those under 6 months of age. Higher nitrate concentrations can apparently be tolerated by all other ages, but Nitrate-Nitrogen of over 50 mg/l is very undesirable. Cattle and other livestock can be affected when subjected to high nitrate stover or pond water.

ALKALINITY ($CaCO_3$) - Bicarbonate gives an indication of the geology in the recharge area and aquifer. It is obtained from carbonaceous rock. The presence of bicarbonate in irrigation water is sometimes helpful when an irrigator has a high acid soil condition. There is no PHS standard for Alkalinity.

HARDNESS ($CaMg$) - Hardness is a measure of the soap-consuming capacity of water and is usually the result of high concentrations of Calcium (Ca) and Magnesium (Mg). Hard water can cause rings on bathtubs and sinks, chemical deposits in pipes, and poor laundry results. Hard water, however, is not considered to be detrimental to health. Hardness is reported in mg/l as calcium carbonate. To convert to grains per gallon, divide the mg/l value by 17.1. A survey of hardness of Nebraska water supplies showed:

Less than 100 mg/l	4%	Soft water
100 - 200 mg/l	16%	Reasonably soft water
200 - 300 mg/l	40%	Average hardness
300 - 400 mg/l	23%	Hard water
Over 400 mg/l	17%	Extremely hard water

CHLORIDE (CL) - Chloride is found chiefly as sodium chloride in old sea beds and some rock. Some waters containing chloride may have a detectable salty taste if in the sodium chloride state. A high chloride content harms metallic pipes and structures, as well as agricultural plants. The present PHS standard is 250 mg/l.

SULFATES (SO_4) - Sulfates are a result of decomposition of another form of sulfur with water to form sulfates. Sulfate content in excess of 300-500 mg/l may give a bitter taste to water and have a laxative effect to persons not adapted to the water. A rotten egg odor is sometimes present. Generally, no harmful effects are caused by sulfates. The PHS limit is 250 mg/l.

IRON (Fe) - Iron is abundant and widespread in rocks and soils and is more of a nuisance than a health hazard. Iron in water can cause staining of laundry and porcelain, and can cause a bittersweet astringent taste in water detectable by some persons at levels above 0.5 or 1.0 mg/l. The PHS standard is 1.0 mg/l. The taste threshold is estimated to be 0.3 mg/l.

Water samples are collected by District staff and tests are performed following procedures outlined in "Standard Methods For the Examination of Water and Wastewater, 14th Edition, 1975". Analysis is performed in-house by District personnel.

Test results are collated annually and made available to interested parties. Individual test results are mailed to all participants in the domestic well sampling program. Each new sampling is added to the data collected from previous years so the landowner will have a chronological listing of his water quality results.

If a water test is found to exceed the recommended limit as determined by the Public Health Service, a separate letter is mailed with the results to notify the owner of this fact. Notification includes noting which test(s) exceeded the Public Health Service standard, what health hazards may exist, possible conditions to be alert for, and any other available information considered pertinent.

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LANGEMEIER, ROLAND	JUN 78	175	7.1	1.0	85	80	5.0	7.0	0.00
LEGAL: 22-22-8	NOV 78	175	7.1	0.8	81	90	2.5	7.0	0.04
DOMESTIC	NOV 79	175	7.2	1.3	83	78	2.0	4.0	0.01
	DEC 80	178	7.2	0.7	80	70	5.0	7.0	0.03
B-1	DEC 81	NO SAMPLE TAKEN!							
	OCT 82	180	7.2	0.9	90	90	11.5	6.0	0.02
	OCT 83	190	7.4	0.8	88	100	4.5	18.0	0.10
	OCT 84	WATER WAS TURNED OFF							
WAGNER, JUDD >	OCT 85	182	7.6	0.8	84	80	4.0	7.0	0.02
ACKERMAN, BEN	JUN 78	390	7.2	1.2	210	210	5.0	0.0	0.30
LEGAL: 16-22-7	NOV 78	390	7.1	1.1	201	190	2.5	5.0	0.13
DOMESTIC	NOV 79	360	7.3	1.7	212	191	2.0	5.0	0.14
	DEC 80	360	7.1	0.9	185	165	7.0	3.0	0.24
B-2	DEC 81	360	7.1	1.1	180	170	15.0	4.0	0.35
	OCT 82	390	7.3	1.2	202	181	15.0	2.0	0.08
	OCT 83	430	7.3	1.2	225	220	4.0	5.0	0.08
	OCT 84	420	7.4	1.1	223	218	6.5	4.0	0.53
	OCT 85	400	7.9	1.0	231	247	5.0	1.0	0.06
DAWSON, DONALD	JUN 78	340	7.2	1.5	200	160	5.0	3.0	0.00
LEGAL: 21-21-8	NOV 78	350	7.4	1.5	189	175	2.5	0.5	0.04
DOMESTIC	NOV 79	350	7.6	2.1	191	182	2.0	1.0	0.06
	DEC 80	340	7.6	1.2	170	165	7.0	1.0	0.07
B-3	DEC 81	370	7.7	2.0	200	195	2.5	2.0	0.16
	OCT 82	350	7.6	1.3	171	161	13.0	1.0	0.05
	OCT 83	370	7.7	1.6	184	171	6.5	2.0	0.06
	OCT 84	340	7.6	1.5	184	170	5.5	0.0	0.03
	OCT 85	350	7.5	1.5	185	177	4.0	0.0	0.04
FREY, JIM	JUN 78	325	7.1	0.0	170	170	10.0	5.0	0.20
LEGAL: 22-21-7	NOV 78	310	7.6	0.4	170	147	2.5	1.0	0.40
DOMESTIC	NOV 79	WATER WAS SHUT OFF							
B-4	DEC 80	WATER WAS SHUT OFF							
KAHLANDT, ROBERT-	DEC 81	640	7.0	17.8	225	300	32.0	7.0	0.07
NEW WELL	OCT 82	700	7.3	21.0	223	330	33.0	9.0	0.05
KAHLANDT, DELMAR	OCT 83	1410	7.3	64.0	356	640	67.5	4.0	0.03
NEW WELL -	OCT 84	345	7.6	0.4	190	167	7.5	1.0	0.02
	OCT 85	345	7.8	0.4	171	156	4.0	0.0	0.03
HAMLING, ALVIN	JUN 78	510	7.0	1.0	290	270	5.0	10.0	0.00
LEGAL: 22-21-6	NOV 78	520	7.1	1.2	279	273	5.0	11.5	0.03
DOMESTIC	NOV 79	520	7.1	1.7	295	295	4.0	8.0	0.02
	DEC 80	510	7.1	1.0	255	250	5.0	11.0	0.03
B-5	DEC 81	525	7.2	1.2	265	265	15.0	7.0	0.03
	OCT 82	505	7.3	1.2	268	269	9.5	7.0	0.01
	OCT 83	540	7.2	1.1	277	271	9.5	7.0	0.03
	OCT 84	530	7.3	1.2	280	268	6.0	7.0	0.02
	OCT 85	530	8.0	1.2	281	272	6.0	11.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
WELTRUSKI, RONALD	JUN 78	375	7.1	1.5	210	180	5.0	5.0	0.00
LEGAL: 21-20-8	NOV 78	390	7.0	1.4	190	185	5.0	6.0	0.03
DOMESTIC	NOV 79	380	7.1	1.7	209	198	2.0	6.0	0.03
	DEC 80	360	7.1	1.0	190	185	5.0	5.0	0.03
B-6	DEC 81	400	7.0	1.7	200	175	25.0	3.0	0.04
	OCT 82	400	7.3	1.7	208	188	9.5	4.0	0.02
	OCT 83	370	7.2	1.3	198	174	5.5	2.0	0.04
	OCT 84	390	7.4	1.3	191	178	6.5	2.0	0.02
	OCT 85	395	7.3	1.5	210	198	6.0	0.0	0.03
FRITZEN, LEROY	JUN 78	375	7.2	0.7	310	200	10.0	5.0	0.00
LEGAL: 22-20-7	NOV 78	380	7.5	0.8	188	185	2.5	3.5	0.02
DOMESTIC	NOV 79	380	7.2	0.9	198	180	2.0	5.0	0.02
	DEC 80	360	7.1	0.8	190	175	6.0	1.0	0.02
B-7	DEC 81	350	7.2	1.0	190	180	10.5	4.0	0.02
	OCT 82	380	7.4	0.9	199	180	14.0	2.0	0.02
	OCT 83	355	7.4	0.8	197	191	5.0	1.0	0.02
	OCT 84	380	7.6	0.8	193	190	5.0	2.0	0.03
	OCT 85	370	7.5	0.9	199	174	5.0	0.0	0.01
WOLF BROS. &	JUN 78	600	7.0	0.0	310	290	5.0	45.0	0.00
REICH, INC.	NOV 78	610	7.0	0.4	238	295	2.5	47.0	0.07
LEGAL: 14-20-6	NOV 79	610	7.1	0.8	326	323	3.0	27.0	0.03
DOMESTIC	DEC 80	525	7.0	0.4	270	265	6.0	15.0	0.12
	DEC 81	550	7.0	0.6	290	250	15.0	13.0	0.19
B-8	OCT 82	550	7.2	0.7	282	250	12.0	14.0	0.12
	OCT 83	520	7.3	0.5	283	247	6.0	7.0	0.19
	OCT 84	555	7.5	0.4	283	261	6.5	12.0	0.03
	OCT 85	610	7.8	0.5	328	311	11.0	14.0	0.09
NELSON, RICHARD	JUN 78	675	7.1	17.0	280	200	10.0	20.0	0.00
LEGAL: 20-20-5	NOV 78	700	6.9	17.4	296	354	5.0	22.5	0.04
DOMESTIC	NOV 79	750	7.1	13.8	335	225	3.0		0.03
	DEC 80	750	7.0	13.2	310	365	5.0	20.0	0.04
B-9	DEC 81	770	6.9	17.0	320	360	13.5	13.0	0.03
	OCT 82	750	7.1	13.8	316	368	22.0	14.0	0.02
	OCT 83	770	7.2	13.2	320	298	6.5	12.0	0.03
	OCT 84	770	7.2	14.0	327	378	7.5	13.0	0.02
	OCT 85	745	7.9	12.9	325	357	5.5	18.0	0.01
DRESCH, LAVERN	JUN 78	600	7.0	0.5	330	310	10.0	18.0	0.35
LEGAL: 16-19-8	NOV 78	610	6.9	0.7	314	342	5.0	20.0	0.03
DOMESTIC	NOV 79	630	7.0	0.8	337	234	5.0	16.0	0.03
	DEC 80	600	7.1	0.7	320	290	6.0	19.0	0.03
B-10	DEC 81	620	7.0	0.9	325	290	14.5	13.0	0.03
	OCT 82	630	7.2	0.9	317	311	33.0	16.0	0.03
	OCT 83	640	7.1	0.7	331	278	5.0	14.0	0.10
	OCT 84	640	7.6	0.8	312	250	7.0	14.0	0.04
	OCT 85	650	7.4	0.8	330	470	9.0	21.0	0.27

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
KARMANN, WILFRED	JUN 78	450	7.5	3.1	230	230	5.0	5.0	0.50
LEGAL: 21-19-7	NOV 78	445	7.2	3.2	235	233	2.5	6.2	0.10
DOMESTIC	NOV 79	440	7.4	2.8	206	223	3.0	4.0	0.04
	DEC 80	425	7.2	2.3	200	220	5.0	4.0	0.06
B-11	DEC 81	450	7.2	3.1	220	230	10.0	7.0	0.07
	OCT 82	450	7.4	2.9	220	224	12.5	3.0	0.07
	OCT 83	480	7.4	3.0	214	171	4.4	5.0	0.07
	OCT 84	490	7.5	3.2	237	209	7.5	4.0	0.07
	OCT 85	480	7.5	3.4	252	233	5.5	5.0	0.06
SCHRIVER, WILLIAM	JUN 78	410	7.4	2.0	220	210	5.0	2.0	0.30
LEGAL: 18-19-6	NOV 78	410	7.2	2.6	230	232	5.0	6.0	0.27
DOMESTIC	NOV 79	430	7.3	3.2	231	231	3.0	6.0	0.36
	DEC 80	420	7.1	1.6	205	205	5.0	0.0	0.06
B-12	DEC 81	410	7.0	2.5	220	210	10.0	6.0	0.03
	OCT 82	420	7.2	2.0	222	211	31.0	3.0	0.02
	OCT 83	420	7.2	2.4	220	220	5.5	3.0	0.02
	OCT 84	460	7.2	3.2	231	240	6.0	5.0	0.02
	OCT 85	490	7.4	4.3	239	251	9.5	3.0	0.02
ERWIN, ROBERT	JUN 78	450	7.3	1.0	350	240	10.0	5.0	0.00
LEGAL: 15-19-6	NOV 78	450	7.0	1.8	206	256	5.0	5.0	0.12
DOMESTIC	NOV 79	450	7.1	2.3	240	235	3.0	6.0	0.16
	DEC 80	450	7.1	1.6	250	185	5.0	1.0	0.20
B-13	DEC 81	440	7.4	1.0	230	205	15.0	27.0	9.20
	OCT 82	450	7.1	1.7	232	223	10.0	5.0	0.12
	OCT 83	470	7.5	0.6	242	237	4.5	6.0	0.36
	OCT 84	490	7.6	1.2	241	211	5.5	7.0	0.05
	OCT 85	460	7.8	0.7	243	219	5.0	6.0	0.78
ZUROVSKI, LEO	JUN 78	475	7.1	0.1	260	240	5.0	7.0	0.00
LEGAL: 21-19-5	NOV 78	500	6.9	0.8	274	272	5.0	6.0	0.03
DOMESTIC	NOV 79	530	7.0	1.1	311	290	3.0	4.0	0.02
	DEC 80	540	7.0	1.5	280	255	6.0	4.0	0.03
B-14	DEC 81	540	6.9	0.9	285	250	12.5	8.0	0.03
	OCT 82	580	7.1	0.7	297	277	16.0	7.0	0.02
	OCT 83	550	7.1	0.7	300	285	5.0	5.0	0.02
	OCT 84	560	7.2	0.8	292	263	9.0	4.0	0.03
	OCT 85	580	7.3	0.7	313	285	8.5	2.0	0.03
PONT, DUANE									
LEGAL: 27-19-5									
DOMESTIC									
	OCT 80	500	7.1	1.3	240	245	7.0	19.0	0.03
B-15	NOV 81	660	6.8	0.7	325	330	15.0	16.0	0.07
	OCT 82	725	7.0	4.0	293	333	32.5	25.0	0.03
	OCT 83	1080	7.1	9.7	338	560	72.0	117.0	0.03
	OCT 84	790	7.1	2.3	334	367	32.0	42.0	0.03
	OCT 85								

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DRAWL, FRANK	JUN 78	500	7.5	1.0	300	290	5.0	10.0	0.00
LEGAL: 22-18-8	NOV 78	540	7.4	1.4	290	288	5.0	10.0	0.14
DOMESTIC	NOV 79	530	7.4	1.4	287	274	5.0	7.0	0.09
	DEC 80	520	7.2	1.2	265	255	6.0	10.0	0.17
B-16	DEC 81	510	7.1	1.6	280	255	11.0	7.0	0.23
	OCT 82	530	7.3	1.3	256	255	28.5	7.0	0.34
	OCT 83	555	7.3	1.4	261	235	5.0	5.0	0.12
	OCT 84	540	7.4	1.3	278	182	8.0	5.0	0.13
	OCT 85	525	7.9	1.4	278	244	6.0	9.0	0.18
MAHONEY, JIM	JUN 78	600	7.3	0.5	350	330	10.0	8.0	0.00
LEGAL: 22-18-7	NOV 78	620	7.0	0.6	345	323	5.0	10.0	0.02
DOMESTIC	NOV 79	640	7.1	0.9	368	336	8.0	8.0	0.03
	DEC 80	620	7.1	0.5	330	300	7.0	12.0	0.04
B-17	DEC 81	680	7.0	0.7	365	330	15.0	9.0	0.03
	OCT 82	690	7.2	0.6	372	336	28.0	9.0	0.02
	OCT 83	690	7.2	0.5	380	370	8.0	9.0	0.02
	OCT 84	725	7.6	0.4	391	358	6.5	13.0	0.02
	OCT 85	720	7.6	0.6	378	303	9.5	21.0	0.03
CARDER, NEIL	JUN 78	410	7.1	0.8	220	210	5.0	6.0	0.00
LEGAL: 33-19-6	NOV 78	430	7.0	1.2	215	217	5.0	6.0	0.04
DOMESTIC	NOV 79	440	7.1	1.3	220	228	3.0	5.0	0.04
	DEC 80	400	7.1	1.2	215	200	5.0	7.0	0.04
B-18	DEC 81	400	7.1	1.4	230	215	13.5	5.0	0.03
	OCT 82	410	7.2	1.2	230	219	15.4	4.0	0.01
	OCT 83	400	7.2	1.1	221	191	2.5	4.0	0.02
	OCT 84	440	7.5	1.1	220	188	8.0	3.0	0.02
	OCT 85	440	7.5	1.4	224	202	6.5	8.0	0.02
BREMER, DARWIN	JUN 78	775	7.3	8.0	380	340	5.0	30.0	0.15
LEGAL: 15-18-6	NOV 78	790	7.0	9.5	380	340	5.0	36.0	0.12
DOMESTIC	NOV 79	820	7.0	8.0	405	177	6.0	25.0	0.04
	DEC 80	800	7.0	8.7	270	295	7.0	29.0	0.03
B-19	DEC 81	810	7.0	12.0	365	320	18.5	24.0	0.03
	OCT 82	810	7.1	10.8	358	330	12.5	27.0	0.02
	OCT 83	800	7.2	10.6	367	249	4.5	18.0	0.02
	OCT 84	710	7.6	9.1	319	211	9.5	16.0	0.03
	OCT 85	775	7.6	12.6	319	303	8.0	24.0	0.03
WILSON, WAYNE	JUN 78	475	7.1	1.0	250	260	10.0	8.0	0.00
LEGAL: 21-18-5	NOV 78	480	7.0	1.5	260	260	2.5	7.0	0.04
DOMESTIC	NOV 79	460	7.0	1.8	251	244	4.0	6.0	0.02
	DEC 80	450	7.0	1.2	250	245	5.0	5.0	0.02
B-20	DEC 81	480	7.0	1.5	250	230	15.0	4.0	0.04
	OCT 82	475	7.2	1.3	231	218	16.0	2.0	0.02
STEVENS, EARL -	OCT 83	450	7.1	1.2	240	234	3.5	2.0	0.01
NEW WELL	OCT 84	455	7.3	1.2	235	192	7.0	3.0	0.02
LEGAL: 20-18-5	OCT 85	455	7.4	1.5	236	230	5.0	1.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BUFFALO CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
NICHOLS, WAYNE	MAR 78	500	7.2	1.0	300	300	10.0	8.0	0.00
LEGAL: 16-12-18	DEC 78	575	7.1	2.8	337	357	5.0	12.0	0.04
DOMESTIC	DEC 79	620	7.1	3.2	310		7.0	9.0	0.04
	DEC 80	600	7.1	2.2	210	250	11.0	12.0	0.04
BU-1	DEC 81	610	7.1	2.7	320	295	18.0	7.0	0.04
	JAN 83	700	7.5	3.4	370	288	14.0	9.0	0.02
	NOV 83	640	7.3	2.7	313	276	5.0	11.0	0.04
	OCT 84	690	7.2	2.9	352	302	8.5	7.0	0.03
	NOV 85	750	7.1	2.8	362	328	7.0	15.0	0.04
TRIMBLE, WAYNE	MAR 78	600	7.2	0.1	300	360	20.0	95.0	0.10
LEGAL: 15-12-17	DEC 78	540	7.1	0.7	247	292	7.5	34.0	0.05
DOMESTIC	DEC 79	550	7.1	1.5	260		7.0	22.0	0.07
	DEC 80	540	7.4	0.8	260	260	12.0	25.0	0.04
BU-2	DEC 81	510	7.0	1.0	260	250	17.0	18.0	0.07
	JAN 83	555	7.3	1.5	250	271	25.5	18.0	0.09
	NOV 83	550	7.3	0.9	264	272	9.0	19.0	0.06
	OCT 84	640	7.3	1.0	283	300	13.0	33.0	0.16
	NOV 85	610	7.2	1.0	289	300	9.0	40.0	0.10
HEHNER, FRED	MAR 78	625	7.3	0.0	320	340	10.0	12.0	0.30
LEGAL: 23-12-16	DEC 78	640	7.2	0.3	361	353	5.0	13.0	0.38
DOMESTIC	DEC 79	655	7.1	1.4	240		5.0	19.0	0.03
	DEC 80	675	7.0	0.4	365	330	14.0	14.0	0.19
BU-3	DEC 81	650	7.0	0.7	650	320	16.5	12.0	1.34
	JAN 83	670	7.4	1.3	349	280	12.0	11.0	0.65
	NOV 83	650	7.2	0.4	346	242	5.5	12.0	0.53
	OCT 84	670	7.4	0.8	342	320	8.5	13.0	0.90
	NOV 85	690	7.2	0.7	350	334	8.0	16.0	0.29
KEILIG, JERALD	MAR 78	975	7.2	10.5	360	520	50.0	23.0	0.00
LEGAL: 15-12-15	DEC 78	1645	7.0	57.5	440	749	67.5	40.0	0.31
DOMESTIC	DEC 79	1350	7.0	38.2	412		50.0	29.0	
BU-4	DEC 80								
	DEC 81	1060	7.1	25.0	365	380	50.5	24.0	0.07
URWELLER, GORDON>	JAN 83	620	7.3	1.3	309	283	12.5	14.0	0.02
NEW WELL	NOV 83	590	6.9	1.0	289	261	7.0	23.0	0.02
	OCT 84	610	7.4	0.9	293	292	9.0	19.0	0.02
	NOV 85	610	7.2	1.0	279	290	3.0	33.0	0.02
MUSIL, FRED	MAR 78	275	7.3	0.0	220	200	5.0	0.0	0.10
LEGAL: 22-12-14	DEC 78	300	7.1	0.3	161	138	2.5	2.0	0.12
DOMESTIC	DEC 79	320	7.1	1.2	162		3.0	2.0	0.12
	DEC 80	360	7.1	0.4	180	150	12.0	3.0	0.25
BU-5	DEC 81	194	7.0	0.9	95	85	13.5	8.0	0.20
	JAN 83	290	7.5	1.0	158	149	11.5	1.0	0.07
RAVENNA VET >	NOV 83	590	7.2	0.6	230	269	5.5	12.0	0.87
CLINIC	OCT 84	595	7.3	0.7	290	270	9.5	10.0	0.45
	NOV 85	595	7.3	0.9	310	267	6.0	20.0	1.36

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BUFFALO CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
COX, LAVERNE	MAR 78	350	7.4	0.0	220	180	5.0	0.0	1.10
LEGAL: 22-12-13	DEC 78	350	7.2	0.9	200	182	2.5	9.0	2.00
DOMESTIC	DEC 79	360	7.3	2.0	195		3.0	11.0	4.30
	DEC 80	375	7.2	1.0	190	170	10.0	13.0	2.00
BU-6	DEC 81	350	7.3	1.0	190	160	15.0	11.0	3.60
	JAN 83	360	7.5	2.2	200	167	11.5	15.0	4.85
	NOV 83	350	7.4	1.3	197	169	6.5	12.0	2.95
	OCT 84	355	7.4	1.2	186	173	5.0	11.0	2.60
	NOV 85	370	7.4	1.2	184	183	5.5	11.0	2.80
BERGT, EUGENE	MAR 78	500	7.2	0.1	280	260	10.0	10.0	0.00
LEGAL: 10-11-17	DEC 78	560	7.1	1.5	294	298	5.0	25.0	0.03
DOMESTIC	DEC 79	580	7.1	2.0	276		5.0	16.0	0.03
	DEC 80	580	7.1	1.2	310	290	11.0	21.0	0.03
BU-7	DEC 81	550	7.0	1.7	305	290	15.0	15.0	0.03
	JAN 83	590	7.3	2.2	287	281	16.0	16.0	0.02
	NOV 83	600	7.2	1.5	286	262	6.0	19.0	0.03
	OCT 84	640	7.3	1.8	299	300	6.0	14.0	0.02
NEW WELL ->	NOV 85	545	7.4	1.5	267	273	5.5	14.0	0.02
LAMMERS, RUEBEN	MAR 78	500	7.2	1.0	280	280	10.0	17.0	0.00
LEGAL: 16-11-16	DEC 78	500	7.1	1.7	254	277	7.5	12.0	0.02
DOMESTIC	DEC 79	530	7.2	3.0	255		8.0	10.0	0.03
	DEC 80	510	7.1	1.9	260	270	12.0	12.0	0.03
BU-8	DEC 81	490	7.0	1.8	255	250	18.0	7.0	0.02
	JAN 83	510	7.4	2.0	242	242	11.5	9.0	0.02
	NOV 83	510	7.2	1.3	254	257	6.5	7.0	0.03
	OCT 84	540	7.3	1.4	245	241	9.5	6.0	0.02
	NOV 85	550	7.3	1.8	257	240	12.0	13.0	0.02
BOCK, RUPERT	MAR 78	400	7.7	0.0	260	260	10.0	7.0	0.00
LEGAL: 15-11-15	DEC 78	420	7.2	1.1	228	264	5.0	9.0	0.02
DOMESTIC	DEC 79	450	7.3	1.6	208		5.0	7.0	0.02
	DEC 80	450	7.2	1.1	230	220	11.0	11.0	0.03
BU-9	DEC 81	420	7.2	1.2	230	215	9.0	8.0	0.03
	JAN 83	450	7.5	1.5	229	222	22.5	9.0	0.02
	NOV 83	450	7.3	1.1	228	234	4.5	7.0	0.02
	OCT 84	470	7.4	1.1	230	232	6.5	4.0	0.02
	NOV 85	460	7.5	1.2	231	231	4.5	10.0	0.02
KEASCHALL, MARVIN	MAR 78	475	7.2	0.1	260	360	15.0	7.0	0.00
LEGAL: 16-11-14	DEC 78	500	7.2	0.6	270	277	10.0	9.0	0.03
DOMESTIC	DEC 79	500	7.3	1.3	250		10.0	8.0	0.03
	DEC 80	500	7.2	0.7	250	260	13.0	9.0	0.02
BU-10	DEC 81	500	7.1	0.8	260	225	23.5	5.0	0.03
	JAN 83	455	7.6	1.6	241	191	11.0	7.0	0.05
	NOV 83	510	7.3	0.8	255	240	13.5	7.0	0.02
	OCT 84	580	7.4	2.5	251	261	19.5	5.0	0.03
	NOV 85	645	7.3	4.7	269	281	24.0	13.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DOWNING, MARION	FEB 78	85	7.1	0.1	80	40	10.0	2.0	0.00
LEGAL: 15-20-25	JAN 79	110	7.1	0.9	55	61	2.5	0.0	0.05
DOMESTIC	DEC 79	101	7.0	1.4	52	65	2.0	0.0	0.02
	DEC 80	110	6.5	0.9	50	40	7.0	1.0	0.02
C-1	OCT 81	100	7.0	0.9	50	40	15.0	1.0	0.02
	OCT 82	105	7.2	1.0	32	53	15.5	0.0	0.02
	OCT 83	106	7.2	1.0	50	61	1.5	1.0	0.02
	OCT 84	105	7.2	1.2	49	63	6.0	2.0	0.04
	OCT 85	106	7.3	1.2	44	52	7.0	0.0	0.02
McGINN, MIKE	FEB 78	120	7.0	0.0	60	60	5.0	0.0	2.00
LEGAL: 9-21-24	JAN 79	150	7.0	0.4	80	65	2.5	0.0	0.07
DOMESTIC	DEC 79	135	7.0	1.2	65	55	3.0	1.0	0.12
	DEC 80	150	6.8	0.4	80	50	10.0	2.0	0.15
C-2	OCT 81	135	6.9	0.6	80	40	13.0	1.0	0.22
	OCT 82	134	7.2	0.6	63	48	10.5	1.0	0.05
	OCT 83	138	7.2	0.4	61	52	5.5	0.0	0.13
	OCT 84	136	7.3	0.5	72	54	6.0	1.0	0.12
	OCT 85	133	7.3	0.6	72	47	6.5	0.0	0.11
DAINTON, OWEN	MAR 78	145	7.3	0.0	80	40	5.0	2.0	0.00
LEGAL: 32-20-23	JAN 79	160	7.1	0.7	76	70	2.5	0.0	0.03
DOMESTIC	DEC 79	153	7.0	1.2	80	60	2.0	0.0	0.03
	DEC 80	156	6.9	0.6	80	70	7.0	1.0	0.03
C-3	OCT 81	154	7.0	0.7	85	60	15.0	0.0	0.03
	OCT 82	160	7.3	0.8	78	68	13.0	7.0	0.01
	OCT 83	169	7.4	0.9	90	98	7.0	0.0	0.01
	OCT 84	163	7.2	0.9	89	70	5.5	0.0	0.02
COOKSLEY, STUART	MAR 78	150	7.8	0.0	80	80	5.0	5.0	2.00
LEGAL: 22-20-23	JAN 79	165	7.7	0.8	56	71	2.5	6.0	0.12
DOMESTIC	DEC 79	192	6.7	1.4	100	-	2.0	6.0	0.03
	DEC 80	175	7.1	0.6	100	70	12.0	1.0	0.03
C-4	OCT 81	165	7.2	0.7	90	70	15.0	2.0	0.06
	OCT 82	175	7.5	0.6	82	80	10.0	2.0	0.04
	OCT 83	178	7.8	0.7	75	66	4.5	4.0	0.06
	OCT 84	157	7.8	0.6	89	60	5.5	1.0	0.04
	OCT 85	157	7.3	0.6	86	75	6.5	1.0	0.03
STITHEM, KENNETH	APR 78	250	7.2	0.0	140	220	5.0	3.0	0.15
LEGAL: 26-20-22	FEB 79	250	7.1	0.9	135	148	2.5	3.0	0.18
DOMESTIC	DEC 79	250	7.1	1.3	130	-	2.0	3.0	0.24
	DEC 80	300	7.0	0.6	140	115	10.0	3.0	0.03
C-5	OCT 81	250	7.0	0.9	130	115	12.0	1.0	0.15
	OCT 82	255	7.3	0.8	130	109	15.5	2.0	0.15
	OCT 83	260	7.3	0.9	131	118	2.5	4.0	0.20
	OCT 84	255	7.4	0.9	129	111	5.0	2.0	0.17
	OCT 85	260	7.3	0.8	135	120	7.5	1.0	0.27

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DAILY, MYRON	APR 78	300	7.3	0.0	160	170	5.0	4.0	0.15
LEGAL: 16-20-21	FEB 79	340	7.3	0.3	200	192	5.0	7.5	0.01
DOMESTIC	DEC 79	350	7.3	1.0	176	160	2.0	4.0	0.03
	DEC 80	350	7.2	0.4	180	150	10.0	5.0	0.03
C-6	OCT 81	330	7.2	0.6	170	170	12.0	3.0	0.10
	OCT 82	340	7.5	0.5	180	153	10.0	6.0	0.02
	OCT 83	240	7.4	1.5	150	136	5.0	5.0	0.02
	OCT 84	370	7.6	2.0	167	166	7.5	9.0	0.07
	OCT 85	330	7.5	0.3	172	166	4.5	5.0	0.09
HALL, CAMERON	MAR 78	115	7.8	0.1	100	60	5.0	2.0	0.00
LEGAL: 27-19-25	JAN 79	140	7.6	0.9	65	58	2.5	0.0	0.03
DOMESTIC	DEC 79	120	7.3	1.5	44	-	2.0	2.0	0.05
	DEC 80	120	7.3	0.8	65	50	7.0	1.0	0.04
C-7	OCT 81	115	7.3	1.1	60	50	15.0	0.0	0.04
	OCT 82	122	7.5	1.0	60	50	9.0	3.0	0.03
	OCT 83	165	7.7	0.9	67	90	5.5	0.0	0.05
	OCT 84	118	7.6	1.1	61	50	6.5	1.0	0.04
	OCT 85	121	7.6	1.0	61	54	4.5	0.0	0.02
LANBY, RON	MAR 78	105	7.0	0.0	80	40	5.0	2.0	0.00
LEGAL: 10-19-24	JAN 79								
DOMESTIC	DEC 79	99	6.7	1.3	48	62	3.0	2.0	0.02
	DEC 80	300	7.1	0.4	150	130	11.0	1.0	0.17
C-8	OCT 81	95	6.6	0.9	40	55	15.0	2.0	0.04
	OCT 82	135	7.1	0.9	56	84	12.5	3.0	0.02
GLEN, INC. ->	OCT 83	127	7.0	0.8	61	58	2.5	4.0	0.03
	OCT 84	105	7.0	0.8	44	45	5.0	1.0	0.02
HUNT, JIM	MAR 78	130	7.5	1.0	80	60	10.0	0.0	7.00
LEGAL: 20-19-23	JAN 79								
New Well ->	DEC 79	240	7.2	2.4	110	98	2.0	3.0	0.02
C-9	DEC 80	230	7.1	1.4	110	90	9.0	2.0	0.05
McGREW, MRS.BILL	OCT 81	225	7.0	1.6	100	85	18.0	1.0	0.12
	OCT 82	200	7.8	0.7	116	89	29.5	7.0	0.99
New Well ->	OCT 83	220	7.4	1.6	111	104	6.5	1.0	0.03
	OCT 84	225	7.4	1.7	101	98	6.5	1.0	0.03
	OCT 85	210	7.6	1.8	98	91	6.5	4.0	0.02
LINDLEY, LEONARD	MAR 78	300	7.3	0.0	160	140	5.0	3.0	0.00
LEGAL: 23-19-22	JAN 79	320	7.2	1.0	164	162	3.0	5.0	0.02
DOMESTIC	DEC 79	300	7.3	1.5	152	137	4.0	4.0	0.03
	DEC 80	300	7.0	0.9	150	130	10.0	1.0	0.03
C-10	OCT 81	300	7.1	1.7	150	135	12.0	7.0	0.03
	OCT 82	300	7.4	1.4	178	140	20.0	5.0	0.02
	NOV 83	290	7.5	1.0	150	146	5.5	3.0	0.02
	OCT 84	295	7.4	1.1	152	151	6.5	3.0	0.03
	OCT 85	325	7.7	1.6	147	135	6.0	3.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SPANEL, ED	APR 78	290	7.5	0.0	180	140	15.0	8.0	0.10
LEGAL 15-19-21	FEB 79	305	7.4	0.6	175	160	2.5	11.5	0.10
DOMESTIC	DEC 79	300	7.1	1.0	150	-	5.0	6.0	0.07
	DEC 80	300	7.0	0.4	160	130	7.0	11.0	0.08
C-11	OCT 81	300	7.1	0.7	155	130	13.0	9.0	0.09
	OCT 82	310	7.6	0.7	157	151	16.0	6.0	0.12
	NOV 83	300	7.8	0.6	158	137	4.5	8.0	0.09
	OCT 84	310	7.6	0.5	158	157	5.0	4.0	0.11
	OCT 85	320	7.6	0.5	161	194	5.0	8.0	0.10
McDOWELL, ROBERT	MAR 78	125	8.2	0.1	160	140	20.0	0.0	0.45
LEGAL: 21-18-25	JAN 79	305	7.8	2.1	175	152	10.0	1.0	0.06
DOMESTIC	DEC 79	300	7.4	2.5	150	147	2.0	1.0	0.02
	DEC 80	250	7.1	2.3	110	100	7.0	1.0	0.02
C-12	OCT 81	148	7.0	0.8	80	80	21.0	0.0	0.02
	OCT 82	270	7.5	1.7	130	128	17.5	3.0	0.22
	OCT 83	300	7.7	1.3	152	150	3.5	2.0	0.31
	OCT 84	220	7.6	1.3	123	112	6.0	1.0	0.20
	OCT 85	345	7.8	0.8	178	157	8.0	1.0	0.08
GEISER, TERRY	MAR 78	110	7.3	0.1	160	140	15.0	3.0	0.00
LEGAL: 16-18-24	JAN 79	155	7.6	1.2	93	89	5.0	4.0	0.82
DOMESTIC	DEC 79	425	7.3	1.7	185	164	5.0	2.0	0.04
	DEC 80	350	7.2	1.7	190	160	10.0	3.0	0.03
C-13	OCT 81	350	7.2	1.9	180	160	12.0	1.0	0.03
	OCT 82	360	7.5	1.8	185	170	10.0	2.0	0.02
	OCT 83	370	7.4	1.9	190	171	4.0	0.0	0.02
	OCT 84	360	7.4	2.0	199	179	5.0	1.0	0.03
	OCT 85	380	7.8	2.0	206	183	6.5	1.0	0.06
LEIBHART, KEITH	MAR 78	450	7.5	1.2	300	260	5.0	11.0	0.10
LEGAL: 15-18-23	JAN 79	575	7.2	4.0	301	267	2.5	14.0	1.95
New Well ->	DEC 79	300	7.4	1.7	139	-	4.0	1.0	0.02
DOMESTIC	DEC 80	350	7.3	1.0	175	160	7.0	1.0	0.02
	OCT 81	340	7.2	1.2	180	155	12.0	0.0	0.02
C-14	OCT 82	350	7.6	1.1	175	152	16.5	1.0	0.02
	OCT 83	350	7.6	1.1	181	166	4.0	3.0	0.03
	OCT 84	360	7.6	1.2	191	172	7.0	1.0	0.02
	OCT 85	360	7.7	1.3	190	168	6.5	0.0	0.02
LAMB, HOWARD	MAR 78	360	7.5	0.1	220	200	10.0	7.0	0.00
LEGAL: 10-18-22	JAN 79	445	7.2	1.8	214	190	7.5	9.0	0.02
DOMESTIC	DEC 79	450	7.1	2.4	225	192	7.0	6.0	0.02
	DEC 80	445	7.1	1.7	230	195	8.0	10.0	0.02
C-15	OCT 81	460	7.2	1.9	225	185	24.0	11.0	0.04
	OCT 82	440	7.4	1.9	230	187	32.5	6.0	0.01
	OCT 83	450	7.6	1.8	218	214	9.0	7.0	0.01
	OCT 84	450	7.6	2.2	224	189	10.5	5.0	0.04
	OCT 85	450	7.4	1.3	226	182	7.5	9.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LOMAX, MRS.LESLIE	MAR 78	325	7.7	0.1	280	150	10.0	4.0	0.00
LEGAL: 20-18-21	JAN 79	350	7.4	1.4	191	170	2.5	3.0	0.02
DOMESTIC	DEC 79	345	7.2	1.7	168	163	6.0	2.0	0.02
	DEC 80	310	7.2	1.2	180	160	7.0	4.0	0.03
C-16	OCT 81	350	7.4	1.4	190	160	15.0	2.0	0.03
	OCT 82	350	7.6	1.3	170	150	14.5	4.0	0.02
	OCT 83	360	7.7	1.2	190	177	5.0	6.0	0.02
	OCT 84	330	7.8	1.3	179	145	6.0	2.0	0.02
	OCT 85	340	7.6	1.5	172	160	6.5	5.0	0.01
WILSON, BERNARD	MAR 78	375	7.2	1.5	200	160	10.0	8.0	0.00
LEGAL: 16-17-24	JAN 79	450	7.2	3.7	233	210	7.5	9.0	0.04
DOMESTIC	DEC 79	480	7.3	4.0	195	184	7.0	7.0	0.03
	DEC 80	470	7.1	3.5	200	190	8.0	10.0	0.02
C-17	OCT 81	510	7.1	4.0	250	230	24.0	11.0	0.03
	OCT 82	500	7.2	4.7	228	215	32.5	8.0	0.02
	OCT 83	445	7.2	5.3	191	205	9.0	5.0	0.09
	OCT 84	395	7.3	4.8	178	200	10.5	5.0	0.24
	OCT 85	530	7.6	5.7	235	233	7.5	11.0	0.02
STEEL, CECIL	MAR 78	550	8.0	2.2	300	280	10.0	8.0	0.00
LEGAL: 21-17-24	JAN 79	645	7.7	7.5	318	350	2.5	7.0	0.20
DOMESTIC	DEC 79	780	7.6	5.7	375	280	6.0	9.0	0.15
	DEC 80	500	7.4	4.5	245	240	7.0	7.0	0.17
C-18	OCT 81	490	7.3	3.8	230	230	15.0	3.0	0.09
	OCT 82	560	7.8	5.7	235	262	14.5	6.0	0.11
	OCT 83	600	7.9	6.3	290	260	5.0	6.0	0.22
	OCT 84	650	7.8	4.4	329	318	6.0	4.0	0.10
	OCT 85	200	7.6	1.9	93	83	6.5	0.0	0.02
STERNER, MARVIN	MAR 78	350	7.7	1.2	200	200	10.0	6.0	0.00
LEGAL: 15-17-23	JAN 79	390	7.4	2.4	207	210	5.0	4.0	0.07
DOMESTIC	DEC 79	450	7.4	2.3	187	188	4.0	3.0	0.07
	DEC 80	390	7.4	1.8	190	180	5.0	2.0	0.12
C-19	OCT 81	380	7.4	2.0	195	190	15.0	2.0	0.15
	OCT 82	400	7.8	2.3	200	190	24.0	3.0	0.14
	OCT 83	400	7.2	2.2	202	184	7.0	5.0	0.07
	OCT 84	395	7.8	2.3	198	181	5.5	4.0	0.04
	OCT 85	400	7.5	2.3	206	200	4.5	1.0	0.05
BARTAK, FRANK JR.	MAR 78	350	7.3	1.8	220	200	20.0	8.0	0.00
LEGAL: 6-17-22	JAN 79	430	7.3	3.7	200	245	5.0	6.0	0.03
DOMESTIC	DEC 79	500	7.3	3.9	205	205	6.0	5.0	0.02
	DEC 80	410	7.2	3.2	175	205	7.0	8.0	0.02
C-20	OCT 81	410	7.2	3.3	205	200	15.0	8.0	0.03
	OCT 82	430	7.3	3.5	200	200	13.5	5.0	0.02
	OCT 83	430	7.3	3.9	207	219	5.5	7.0	0.01
	OCT 84	425	7.5	3.8	198	205	8.0	4.0	0.02
	OCT 85	440	7.5	3.6	300	205	5.0	8.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
ANDERSON, DON	MAR 78	325	7.2	1.5	180	160	15.0	9.0	0.00
LEGAL: 22-17-22	JAN 79	395	7.1	2.7	190	180	5.0	7.0	0.04
DOMESTIC	DEC 79	380	7.2	3.4	180	175	5.0	4.0	0.06
	DEC 80	360	7.0	2.5	180	145	7.0	8.0	0.02
C-21	OCT 81	380	7.1	2.8	185	170	18.0	9.0	0.04
	OCT 82	390	7.2	2.8	161	160	23.0	5.0	0.03
	OCT 83	400	7.2	3.3	190	168	5.0	7.0	0.03
	OCT 84	390	7.6	3.2	186	177	10.0	5.0	0.03
	OCT 85	400	7.4	3.4	182	177	7.5	7.0	0.03
HAUMONT, ORVAL	APR 78	875	7.3	11.0	360	350	35.0	17.0	0.00
LEGAL: 8-17-21	JAN 79	460	7.3	11.0	305	341	17.5	14.0	0.04
DOMESTIC	DEC 79	560	7.3	4.5	230	222	8.0	5.0	0.02
	OCT 80	495	7.1	3.7	240	240	10.0	8.0	0.03
C-22	OCT 81	880	7.1	13.5	335	280	48.0	17.0	0.05
	OCT 82	950	7.2	21.0	339	398	57.5	13.0	0.02
	OCT 83	560	7.4	7.4	248	245	15.5	5.0	0.02
	OCT 84	1010	7.4	23.0	346	361	45.0	14.0	0.04
	OCT 85	650	7.6	9.6	277	265	20.5	10.0	0.02
DIETZ, WALTER	MAY 79	440	7.2	2.0	217	233	4.0	7.0	0.02
LEGAL: 11-17-21	DEC 79	440	7.2	2.4	220	-	4.0	7.0	0.02
DOMESTIC	NOV 80	390	7.2	1.8	150	185	11.0	8.0	0.03
	OCT 81	480	7.2	1.3	240	210	13.0	11.0	0.03
C-23	OCT 82	530	7.3	1.4	275	265	24.0	11.0	0.02
	OCT 83	480	7.5	1.7	250	230	5.0	5.0	0.02
	OCT 84	460	7.5	1.7	237	225	7.0	6.0	0.02
	OCT 85	525	7.5	1.5	254	262	5.0	11.0	0.01
WHITNEY, JOHN	APR 78	375	7.5	1.0	220	170	5.0	4.0	0.00
LEGAL: 15-17-21	MAY 79	570	7.2	1.7	284	300	5.0	16.5	0.03
DOMESTIC	DEC 79	400	7.0	2.2	205	198	4.0	6.0	0.06
	NOV 80	575	7.1	1.3	290	290	7.0	24.0	0.03
C-24	OCT 81	590	7.2	1.6	230	255	12.0	22.0	0.03
	OCT 82	640	7.2	1.8	300	300	11.5	25.0	0.02
	OCT 83	650	7.4	2.0	315	274	5.0	18.0	0.02
	OCT 84	660	7.4	2.2	318	293	7.0	22.0	0.03
	OCT 85	680	7.6	2.2	330	305	9.0	35.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
RITCHIE, BERNARD	APR 78	475	7.1	9.0	240	250	5.0	17.0	0.00
LEGAL: 28-20-20	FEB 79	555	7.0	13.5	210	311	5.0	25.0	0.06
DOMESTIC	DEC 79	555	7.0	14.0	200	250	5.0	18.0	0.02
	DEC 80	510	7.1	8.2	200	250	12.0	23.0	0.04
C-25	OCT 81	500	7.0	8.2	190	240	15.0	20.0	0.03
	OCT 82	490	7.6	8.7	190	234	13.5	16.0	0.01
	OCT 83	450	7.4	8.5	179	191	5.0	12.0	0.01
	OCT 84	300	7.2	2.5	122	143	9.0	14.0	0.23
	SEP 85	330	7.3	3.2	130	146	5.0	21.0	0.07
OURADA, TERRY	APR 78	400	7.1	1.0	240	220	10.0	8.0	0.10
LEGAL: 16-20-19	FEB 79	325	7.0	1.4	165	190	2.5	11.0	0.02
DOMESTIC	DEC 79	325	7.1	1.8	155	146	5.0	8.0	0.03
	DEC 80	320	7.0	1.2	150	140	7.0	9.0	0.02
C-26	OCT 81	330	7.0	1.4	155	140	15.0	9.0	0.03
	OCT 82	330	7.5	1.3	146	35	15.5	6.0	0.02
	OCT 83	320	7.3	1.4	157	151	3.5	3.0	0.02
	OCT 84	320	7.3	1.3	167	136	5.0	3.0	0.02
	SEP 85	340	6.9	1.3	159	150	5.0	8.0	0.04
BUTLER, GLENN	APR 78	425	7.2	0.1	210	200	5.0	13.0	0.50
LEGAL: 22-20-18	FEB 79	445	7.3	1.7	242	225	5.0	17.0	2.00
DOMESTIC	DEC 79	450	7.2	0.6	120	218	4.0	9.0	0.37
	DEC 80	425	7.1	0.5	220	200	10.0	14.0	0.27
C-27	OCT 81	400	7.1	0.7	220	200	15.0	14.0	0.27
	OCT 82	450	7.7	0.7	215	195	17.5	11.0	0.40
	OCT 83	570	7.3	4.5	275	272	6.0	7.0	0.02
	OCT 84	495	7.5	0.4	233	191	6.5	10.0	0.48
	OCT 85	540	7.2	0.7	248	222	6.5	20.0	0.49
TINKHAM, RAY	MAR 78	550	7.4	7.0	250	270	10.0	9.0	0.05
LEGAL: 20-20-17	FEB 79	525	7.3	6.0	280	268	7.5	13.0	0.06
DOMESTIC	DEC 79	450	7.2	2.1	220	200	5.0	7.0	0.07
	DEC 80	615	7.6	8.6	275	320	12.0	13.0	0.09
C-28	OCT 81	470	7.1	2.7	220	210	13.0	10.0	0.03
	OCT 82	470	7.7	3.2	235	222	22.0	7.0	0.01
	NOV 83	410	7.3	1.6	224	222	5.5	4.0	0.02
	OCT 84	450	7.5	1.6	222	202	4.5	5.0	0.03
	SEP 85	450	7.3	1.3	230	222	7.0	8.0	0.05
SCHWEITZER, CLYDE	APR 78	350	7.3	1.0	180	170	5.0	6.0	0.00
LEGAL: 21-19-20	FEB 79	380	7.2	0.9	216	197	2.5	10.0	0.02
DOMESTIC	DEC 79	380	7.1	1.6	193	175	5.0	6.0	0.02
	DEC 80	360	6.9	0.7	140	110	12.0	2.0	0.28
C-29	OCT 81	370	7.0	0.9	190	160	15.0	11.0	0.03
	OCT 82	360	7.2	0.9	173	168	15.0	6.0	0.02
	OCT 83	355	7.4	0.9	170	158	4.5	4.0	0.02
	OCT 84	370	7.3	0.9	190	167	5.0	5.0	0.02
	OCT 85	390	7.4	1.0	190	165	7.0	9.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
GREEN CATTLE CO.	APR 78	500	7.3	0.8	260	250	5.0	8.0	0.00
LEGAL: 9-19-19	FEB 79	510	7.2	1.7	275	286	5.0	14.0	0.03
DOMESTIC	DEC 79	510	7.1	1.3	265	237	6.0	9.0	0.03
	DEC 80	500	7.2	1.3	260	235	10.0	11.0	0.03
C-30	OCT 81	500	7.3	1.5	255	230	21.0	12.0	0.02
	OCT 82	475	8.0	1.6	250	228	7.0	8.0	0.02
	OCT 83	510	7.4	1.7	259	242	7.5	6.0	0.02
	OCT 84	510	7.4	1.6	252	210	6.5	5.0	0.06
	OCT 85	640	7.4	1.8	245	219	5.5	11.0	0.02
KEEFE, MORRIS	APR 78	675	7.1	0.0	330	350	15.0	40.0	0.12
LEGAL: 23-19-18	FEB 79	650	7.1	0.9	340	301	10.0	4.0	0.07
DOMESTIC	DEC 79	690	7.1	0.7	320	200	13.0	33.0	0.08
	NOV 80	670	7.3	0.5	300	315	17.5	47.0	0.15
C-31	OCT 81	700	7.2	0.7	330	330	25.0	58.0	0.09
	OCT 82	660	7.6	0.7	260	350	26.0	41.0	0.13
	OCT 83	700	7.2	0.6	314	289	11.0	25.0	0.34
	OCT 84	710	7.3	0.6	330	310	15.5	27.0	0.18
	OCT 85	740	7.2	0.7	345	314	6.5	31.0	0.10
GRANGER, MARLON	MAR 78	450	7.2	0.1	240	230	10.0	6.0	0.60
LEGAL: 21-19-17	FEB 79	450	7.1	0.7	240	254	5.0	9.5	2.00
DOMESTIC	DEC 79	900	7.3	10.0	397	-	10.0	16.0	0.05
	DEC 80	980	7.2	9.5	470	425	20.0	24.0	0.11
C-32	OCT 81	670	7.2	4.7	325	325	15.0	7.0	0.03
	OCT 82	900	7.3	13.5	355	392	49.5	19.0	0.03
GRANGER, BILL-	NOV 83	810	7.3	9.2	347	346	2.5	19.0	0.04
	OCT 84	1080	7.5	8.1	480	421	33.5	34.0	0.03
	SEP 85	680	7.3	2.3	331	298	8.5	13.0	0.08
LARSON, IRMA	APR 78	440	7.3	0.0	240	210	25.0	8.0	0.12
LEGAL: 28-18-20	MAY 79	440	7.2	2.6	211	217	5.0	7.5	0.12
DOMESTIC	DEC 79	450	7.1	3.3	221	205	6.0	9.0	0.62
	DEC 80	340	7.2	2.0	210	200	7.0	10.0	0.09
C-33	OCT 81	400	7.2	2.2	195	170	12.0	8.0	0.08
	OCT 82	440	7.3	2.5	206	201	19.5	9.0	0.82
	OCT 83	430	7.4	2.2	209	197	7.0	5.0	0.24
	OCT 84	440	7.4	7.3	208	210	6.0	6.0	0.20
	OCT 85	445	7.5	2.4	209	209	7.0	9.0	0.17
KLEEB, EARL	APR 78	500	7.3	1.5	280	290	10.0	8.0	0.00
LEGAL: 9-18-19	FEB 79	510	7.2	2.9	257	293	5.0	11.5	0.02
DOMESTIC	DEC 79	550	7.2	3.5	242	-	5.0	10.0	0.02
	DEC 80	550	7.1	2.8	280	260	13.0	12.0	0.03
C-34	OCT 81	640	7.3	4.8	295	300	24.0	16.0	0.03
	OCT 82	650	8.0	4.4	305	314	18.0	15.0	0.02
	OCT 83	680	7.5	4.9	319	262	12.0	11.0	0.02
	OCT 84	700	7.6	5.4	329	290	13.5	12.0	0.02
	OCT 85	750	7.4	6.3	309	310	12.0	21.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HORKY, MELVIN	APR 78	500	7.6	3.0	240	270	10.0	12.0	0.10
LEGAL: 21-18-18	FEB 79	510	7.4	3.8	265	274	7.5	15.0	0.12
DOMESTIC	DEC 79	520	7.5	3.8	250	240	7.0	10.0	0.25
	DEC 80	510	7.3	3.0	250	240	10.0	12.0	0.42
C-35	OCT 81	500	7.4	3.0	240	245	22.0	12.0	0.06
	OCT 82	500	7.9	3.1	250	265	12.5	11.0	0.06
	OCT 83	540	7.6	3.2	256	229	6.5	7.0	0.12
	OCT 84	540	7.9	3.2	261	252	8.0	6.0	0.11
	OCT 85	550	7.6	3.4	240	248	9.0	13.0	0.14
DOWSE, RAYMOND	APR 78	750	7.5	0.0	390	190	10.0	25.0	0.00
LEGAL: 15-18-17	MAR 79	750	7.3	0.8	140	159	5.0	21.0	0.03
DOMESTIC	DEC 80	750	7.3	1.6	300	260	8.0	22.0	0.04
	OCT 81	750	7.3	1.2	385	260	12.0	23.0	0.03
C-36	OCT 82	790	7.2	2.8	402	252	14.5	17.0	0.03
	NOV 83	810	7.4	3.5	392	283	4.5	25.0	0.03
	OCT 84	745	7.6	2.0	369	259	2.5	17.0	0.02
	SEP 85	830	7.4	3.1	396	222	5.0	34.0	0.26
FRANCIS, LOUIS	APR 78	490	7.3	1.1	260	240	10.0	23.0	0.00
LEGAL: 21-17-20	MAY 79	450	7.2	2.1	216	223	4.0	16.0	0.02
DOMESTIC	DEC 79	445	7.1	2.8	200	200	6.0	16.0	0.03
	DEC 80	445	7.2	1.8	200	200	8.0	26.0	0.06
C-37	OCT 81	470	7.2	1.7	220	220	18.0	23.0	0.03
	OCT 82	500	7.6	1.9	230	230	27.0	22.0	0.03
	OCT 83	530	7.4	2.0	240	276	8.5	22.0	0.09
	OCT 84	540	7.3	2.2	243	254	9.0	22.0	0.02
	OCT 85	560	7.4	2.4	141	253	9.5	30.0	0.03
FARMER, JIM	APR 78	550	7.2	1.0	300	270	10.0	10.0	0.00
LEGAL: 16-17-19	FEB 79	530	7.2	2.6	293	270	7.5	13.0	0.03
DOMESTIC	DEC 79	620	7.4	3.4	280	290	14.0	14.0	0.02
	OCT 80	600	7.2	2.4	290	320	15.0	18.0	0.03
C-38	OCT 81	600	7.2	2.5	290	290	24.0	16.0	0.03
	OCT 82	670	7.2	4.3	244	312	31.5	15.0	0.02
	OCT 83	700	7.2	4.7	310	296	10.0	11.0	0.02
	OCT 84	800	7.5	7.8	329	338	30.0	17.0	0.03
	OCT 85	900	7.4	7.4	326	359	35.0	29.0	0.02
KLEEB, EDDIE	APR 78	525	7.0	0.8	260	260	10.0	25.0	0.00
LEGAL: 16-17-18	FEB 79	520	7.1	1.9	295	284	7.5	16.5	0.02
DOMESTIC	DEC 79	550	7.1	3.4	270	250	7.0	11.0	0.02
	OCT 80	540	7.1	2.8	265	280	7.0	12.0	0.03
C-39	OCT 81	525	7.3	2.2	255	280	18.0	13.0	0.03
	OCT 82	660	7.6	9.1	310	340	67.5	11.0	0.02
	OCT 83	740	7.2	7.8	330	364	10.0	8.0	0.02
	OCT 84	805	7.3	8.3	339	390	32.0	9.0	0.02
	OCT 85	600	7.2	3.0	261	295	9.5	14.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-NE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LEACH RANCH	APR 78	575	7.6	1.0	270	270	10.0	11.0	0.00
LEGAL: 16-17-17	MAY 79	570	7.1	2.4	277	262	7.0	11.0	0.03
DOMESTIC	OCT 80	540	7.4	0.5	310	240	5.0	1.0	0.03
	OCT 81	530	7.4	0.8	305	270	18.0	1.0	0.02
BOSE, RALPH	OCT 82	520	7.2	1.7	285	270	18.5	8.0	0.02
	NOV 83	570	7.3	1.7	278	283	5.0	10.0	0.02
C-40	OCT 84	560	7.2	1.9	271	279	8.0	7.0	0.03
	OCT 85	580	7.2	1.7	290	275	7.5	12.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DETERDING, E. L.	MAR 78	210	7.4	1.2	100	120	10.0	2.0	0.03
LEGAL: 21-16-25	MAY 79	200	7.4	1.8	105	105	2.5	3.0	0.02
DOMESTIC	DEC 79	250	7.1	1.2	210	95	2.0	1.0	0.03
	OCT 80	240	7.3	2.0	105	95	5.0	2.0	0.47
C-41	OCT 81	220	7.2	1.8	110	95	15.0	2.0	-
	OCT 82	230	7.5	1.8	105	99	25.5	2.0	0.02
	NOV 83	240	7.6	2.1	120	114	4.5	4.0	0.13
	OCT 84	245	7.5	2.2	104	114	5.5	2.0	0.31
	NOV 85	205	7.6	1.8	102	88	7.0	0.0	0.02
JOHNSTON, AUGUST	MAR 78	246	7.5	1.9	200	120	10.0	4.0	0.20
LEGAL: 22-16-24	MAY 79	260	7.4	2.5	130	146	3.0	7.0	0.07
DOMESTIC	DEC 79	325	7.6	2.7	120	145	4.0	4.0	0.03
	OCT 80	250	7.4	2.5	115	115	10.0	0.0	0.03
RAY KOLBO/	OCT 81	250	7.5	2.0	120	110	18.0	0.0	0.02
OPERATOR	OCT 82	250	7.7	2.3	105	108	6.5	4.0	0.11
C-42	NOV 83	260	7.7	2.8	124	159	4.0	5.0	0.06
	OCT 84	260	7.6	2.6	111	113	6.5	3.0	0.11
	NOV 85	325	7.6	3.6	144	143	8.5	8.0	0.04
G'SCHWIND, WILLIE	MAR 78	563	7.4	9.0	280	260	15.0	10.0	0.00
LEGAL: 21-16-23	MAY 79	450	7.3	6.2	212	247	6.0	9.0	0.03
DOMESTIC	DEC 79	475	7.4	3.1	210	291	6.0	4.0	0.29
	OCT 80	640	7.2	15.5	230	315	20.0	11.0	0.03
C-43	OCT 81	450	7.3	7.5	200	230	21.0	9.0	0.03
	OCT 82	650	7.6	11.6	226	273	38.5	7.0	0.02
	NOV 83	450	7.4	3.4	169	188	7.0	6.0	0.03
	OCT 84	445	7.4	3.9	211	190	9.5	3.0	0.01
	NOV 85	600	7.4	12.0	230	229	10.5	10.0	0.02
BROHMAN, HAROLD	MAR 78	308	7.6	1.9	180	180	10.0	8.0	0.02
LEGAL: 21-16-22	MAY 79	550	7.1	0.9	290	310	5.0	11.0	0.02
DOMESTIC	DEC 79	400	7.2	3.9	155	155	5.0	6.0	0.03
	OCT 80	320	7.5	3.1	140	155	8.0	7.0	0.02
C-44	OCT 81	330	7.6	3.5	150	150	19.0	8.0	0.02
	OCT 82	325	7.7	3.6	155	154	13.0	7.0	0.03
	NOV 83	350	7.5	3.7	156	179	5.0	8.0	0.03
	OCT 84	350	7.5	3.8	145	150	6.0	3.0	0.03
	NOV 85	350	7.8	3.5	151	153	10.5	8.0	0.03
JENKINS, LYNN	FEB 78	364	7.4	1.5	160	200	10.0	11.0	0.00
LEGAL: 17-16-21	APR 79	360	7.2	2.8	172	178	4.0	7.0	0.02
DOMESTIC	DEC 79	370	7.1	4.1	165	170	6.0	7.0	0.05
	OCT 80	350	7.2	2.2	160	170	7.0	9.0	0.02
C-45	OCT 81	350	7.2	2.3	160	160	15.0	9.0	0.03
	OCT 82	350	7.6	2.3	169	151	13.0	6.0	0.02
	NOV 83	350	7.5	2.4	163	199	4.5	7.0	0.02
	OCT 84	350	7.5	2.3	172	180	6.0	5.0	0.03
	NOV 85	360	7.5	2.5	162	183	8.5	9.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
KAPS, WAYNE	FEB 78	358	7.9	1.0	260	220	15.0	8.0	0.20
LEGAL: 26-16-21	APR 79	460	7.3	2.0	231	250	4.0	7.0	0.15
DOMESTIC	DEC 79	425	7.3	2.9	213	215	5.0	10.0	0.02
	OCT 80	375	7.5	2.0	180	180	7.0	1.0	0.02
C-46	OCT 81	360	7.1	2.2	180	175	12.0	9.0	0.12
	OCT 82	380	7.7	2.2	178	184	13.5	5.0	0.02
	OCT 83	390	7.7	2.4	178	178	5.0	5.0	0.03
	OCT 84	400	7.8	2.2	197	200	5.5	5.0	0.03
	NOV 85	400	7.6	2.5	188	191	6.0	10.0	0.02
BLOWERS, HERMAN	APR 78	229	7.4	1.5	200	100	10.0	2.0	0.02
LEGAL: 15-15-25	MAY 79	185	7.3	1.5	98	88	2.0	0.0	0.02
DOMESTIC	DEC 79	250	7.2	1.2	88	90	4.0	1.0	0.03
	NOV 80	195	7.2	1.2	95	75	5.0	1.0	0.03
C-47	OCT 81	200	7.2	1.7	100	100	12.0	1.0	0.03
CARLSON, LEE-	OCT 82	200	7.5	1.5	100	90	26.0	1.0	0.04
	NOV 83	200	7.5	1.7	109	109	4.5	2.0	0.02
	OCT 84	200	7.3	1.4	93	117	5.0	1.0	0.03
	NOV 85	200	7.4	1.4	107	102	5.5	0.0	0.02
HENRY, DON	MAR 78	186	7.4	1.1	180	180	10.0	0.0	0.00
LEGAL: 21-15-24	MAY 79	194	7.3	1.7	91	87	3.0	2.0	0.02
DOMESTIC	DEC 79	255	7.3	1.7	95	85	3.0	3.0	0.02
	OCT 80	90	7.3	1.5	90	85	4.0	0.0	0.03
C-48	OCT 81	430	7.3	1.6	95	80	13.0	2.0	0.03
	OCT 82	210	7.5	1.5	105	95	20.0	1.0	0.02
	NOV 83	230	7.5	1.7	110	134	3.5	4.0	0.03
	OCT 84	545	7.2	2.1	240	221	5.5	5.0	0.03
	NOV 85	540	7.4	2.3	264	250	7.5	11.0	0.02
SCHUSTER, NORMAN	MAR 78	381	7.5	0.5	240	200	20.0	7.0	0.00
LEGAL: 16-15-23	MAY 79	400	7.4	1.2	217	185	3.0	6.0	6.02
DOMESTIC	DEC 79	475	7.4	0.7	210	200	3.0	7.0	0.02
	OCT 80	400	7.3	0.7	190	175	5.0	7.0	0.03
C-49	OCT 81	400	7.3	0.8	210	190	12.0	5.0	0.03
	OCT 82	400	7.6	0.7	203	154	6.5	4.0	0.02
	NOV 83	420	7.4	0.8	225	214	5.0	7.0	0.02
	OCT 84	430	7.4	0.8	211	181	5.5	2.0	0.03
	NOV 85	420	7.5	0.8	221	192	9.5	2.0	0.02
SMITH, FOSTER	MAR 78	252	7.5	0.5	180	160	10.0	8.0	0.02
LEGAL: 16-15-22	MAY 79	250	7.4	1.3	130	125	3.0	6.0	0.02
DOMESTIC	DEC 79	325	7.2	1.6	120	115	2.5	6.0	0.03
	OCT 80	260	7.3	1.2	120	115	3.0	8.0	0.02
C-50	OCT 81	250	7.2	1.5	120	110	15.0	8.0	0.03
	OCT 82	250	7.6	1.3	122	105	13.5	6.0	0.02
SMITH, TOM	NOV 83	260	7.6	1.5	137	131	3.0	6.0	0.02
	OCT 84	255	7.6	1.5	121	116	4.5	2.0	0.04
	NOV 85	260	7.5	1.5	120	118	4.5	7.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SW

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
CARR, CLARENCE	FEB 78	493	7.4	1.1	260	260	15.0	12.0	0.00
LEGAL: 22-15-21	APR 79	530	7.2	2.5	261	266	7.5	13.0	0.02
DOMESTIC	DEC 79	540	7.3	2.9	260	260	8.0	9.0	0.04
	OCT 80	540	7.2	1.8	260	250	11.0	12.0	0.03
C-51	OCT 81	540	7.2	2.0	260	220	18.0	11.0	0.03
	OCT 82	550	8.0	2.2	267	295	17.5	8.0	0.02
	OCT 83	550	7.5	2.2	263	228	9.0	6.0	0.02
	OCT 84	550	7.6	2.2	251	266	10.0	6.0	0.03
	NOV 85	550	7.5	2.4	275	265	9.5	12.0	0.02
PHELPS, MARVIN	MAR 78	482	7.2	4.5	220	280	15.0	55.0	0.00
LEGAL: 22-14-23	MAY 79	500	7.1	4.5	219	255	5.5	55.0	0.03
DOMESTIC	DEC 79	600	7.1	3.7	210	254	7.5	43.0	0.02
	OCT 80	525	7.1	3.5	195	260	7.0	59.0	0.03
C-52	OCT 81	650	7.2	8.7	245	220	30.0	48.0	0.03
	OCT 82	1295	7.6	42.0	375	495	74.0	25.0	0.04
	NOV 83	930	7.3	22.0	278	468	32.5	33.0	0.02
	OCT 84	825	7.2	18.8	260	381	30.5	32.0	0.03
	NOV 85	1410	7.4	59.5	303	611	70.0	56.0	0.02
PRESSEY PARK	FEB 78	358	8.0	0.5	180	180	10.0	20.0	0.10
LEGAL: 10-14-21	APR 79	390	7.6	1.5	197	198	2.0	19.0	0.08
DOMESTIC	DEC 79	480	7.5	1.5	195	190	3.0	14.0	0.23
	DEC 80	400	7.3	0.7	190	175	5.0	7.0	0.03
C-53	OCT 81	390	7.6	1.6	190	170	12.0	18.0	0.17
	OCT 82	410	7.6	1.6	185	193	21.0	13.0	0.11
	OCT 83	400	7.8	1.8	192	186	5.5	11.0	0.17
	OCT 84	400	7.8	1.6	179	194	8.0	13.0	0.30
	NOV 85	400	7.8	1.8	192	191	5.5	22.0	0.33

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
TAYLOR, BURREL	FEB 78	400	7.8	3.2	220	220	10.0	2.0	0.00
LEGAL: 16-16-20	MAY 79	450	7.4	7.5	216	230	2.0	6.0	0.03
DOMESTIC	DEC 79	550	7.3	7.5	165	212	3.0	4.0	0.02
	OCT 80	460	7.4	6.2	220	220	7.0	1.0	0.03
C-54	OCT 81	440	7.8	3.3	215	185	15.0	5.0	1.30
	OCT 82	350	7.6	6.4	180	218	22.5	2.0	0.04
	NOV 83	500	7.5	7.7	230	238	5.0	6.0	0.02
	OCT 84	520	7.7	7.5	236	234	9.0	3.0	0.02
	NOV 85	525	7.4	5.1	231	248	5.5	8.0	0.03
LOY, CLYDE	FEB 78	430	7.3	1.0	220	220	10.0	15.0	0.00
LEGAL: 17-16-19	APR 79	455	7.2	2.2	245	252	2.5	25.0	0.03
DOMESTIC	DEC 79	545	7.3	2.0	574	232	4.0	18.0	0.02
	OCT 80	450	7.2	1.5	220	220	6.0	23.0	0.02
C-55	OCT 81	450	7.3	1.8	220	220	13.0	22.0	0.02
	OCT 82	460	7.4	1.7	220	222	10.5	12.0	0.10
	OCT 83	460	7.3	1.8	211	242	5.0	17.0	0.01
	OCT 84	460	7.4	1.8	228	225	5.0	15.0	0.02
	OCT 85	500	7.2	1.8	239	239	6.0	22.0	0.02
ROOT, ED	FEB 78	510	7.3	0.8	280	310	40.0	14.0	0.02
LEGAL: 7-16-18	APR 79	600	7.2	2.2	330	259	7.5	16.0	0.45
DOMESTIC	DEC 79	670	7.2	2.0	300	230	9.0	13.0	0.58
	OCT 80	580	7.2	1.7	300	260	11.0	18.0	1.60
C-56	OCT 81	660	7.2	1.7	300	280	18.0	13.0	0.10
	OCT 82	600	7.3	1.7	300	290	22.0	12.0	0.34
	OCT 83	600	7.2	1.8	303	251	13.5	11.0	0.58
	OCT 84	610	7.6	1.7	313	239	7.5	8.0	0.42
STRUNKEL,DENNIS	->OCT 95	570	7.2	1.5	280	280	6.0	15.0	0.23
FERGUSON, ED	FEB 78	510	7.1	0.8	300	280	10.0	15.0	0.00
LEGAL: 16-16-18	APR 79	545	7.1	1.6	287	310	6.0	17.0	0.02
DOMESTIC	DEC 79	610	7.1	1.7	261	275	5.0	13.0	0.02
	OCT 80	530	7.2	1.5	95	250	6.0	16.0	1.20
C-57	OCT 81	550	7.4	1.5	285	300	15.0	14.0	0.04
	OCT 82	550	7.2	1.5	280	273	14.0	12.0	0.45
	OCT 83	550	7.2	1.5	281	284	23.5	8.0	0.02
	OCT 84	550	7.3	1.6	290	280	7.5	8.0	0.19
	OCT 85	580	7.1	1.7	270	249	4.5	15.0	0.02
BABUREK, WILLIAM	FEB 78	500	7.2	0.9	300	260	10.0	10.0	0.00
LEGAL: 22-16-17	APR 79	550	7.1	1.2	276	302	5.0	12.0	0.03
DOMESTIC	DEC 79	605	7.1	1.5	255	270	7.5	9.0	0.03
	OCT 80	520	7.1	1.2	280	230	7.0	12.0	0.03
C-58	OCT 81	540	7.2	1.7	270	280	16.0	11.0	0.03
	OCT 82	540	7.2	1.6	268	260	20.0	7.0	0.01
	NOV 83	550	7.3	1.6	280	310	6.0	9.0	0.02
	OCT 84	605	7.2	2.2	285	285	12.5	5.0	0.02
	OCT 85	630	7.3	1.7	281	266	8.5	13.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HUFFAKER,LEONA	FEB 78	550	7.6	1.9	280	280	15.0	10.0	0.02
LEGAL: 15-15-20	MAY 79	575	7.2	3.6	310	326	4.0	9.0	0.03
DOMESTIC	DEC 79	650	7.2	3.1	273	286	7.0	9.0	0.02
	OCT 80	560	7.2	2.8	270	275	8.0	11.0	0.04
C-59	OCT 81	560	7.2	2.8	290	240	18.0	11.0	0.03
	OCT 82	590	7.3	3.1	292	269	22.5	7.0	0.02
	NOV 83	590	7.2	3.2	273	307	5.5	10.0	0.02
	OCT 84	600	7.4	3.0	301	290	9.0	7.0	0.03
	NOV 85	595	7.5	2.7	281	290	9.0	13.0	0.01
HOBLYN, ROBERT	FEB 78	475	7.4	1.1	240	220	15.0	14.0	0.00
LEGAL: 15-15-19	APR 79	500	7.1	2.7	242	284	6.0	13.0	0.02
DOMESTIC	DEC 79	560	7.2	2.5	260	264	6.0	9.0	0.03
	OCT 80	500	7.2	2.2	220	230	6.0	13.0	0.04
C-60	OCT 81	480	7.1	1.9	240	240	13.0	12.0	0.02
	OCT 82	500	7.3	2.4	260	240	24.5	11.0	0.03
	NOV 83	530	7.2	2.6	245	265	6.5	11.0	0.04
	OCT 84	500	7.2	2.4	239	237	6.5	7.0	0.02
	OCT 85	545	7.4	2.3	231	241	7.0	12.0	0.02
HOBLYN, JIM	FEB 78	520	7.2	2.5	250	270	10.0	9.0	0.02
LEGAL: 21-15-18	APR 79	550	7.2	4.5	298	283	5.0	11.5	0.02
DOMESTIC	DEC 79	625	7.2	4.0	252	260	7.0	9.0	0.03
	OCT 80	550	7.2	4.0	240	270	7.0	12.0	0.03
C-61	OCT 81	520	7.6	3.6	250	260	18.0	13.0	0.08
AMSBERRY, GARY	>OCT 82	575	7.6	3.6	275	286	20.0	12.0	0.02
	OCT 83	520	7.4	4.3	245	255	8.0	10.0	0.01
	OCT 84	550	7.3	4.2	256	266	9.0	7.0	0.03
	NOV 85	550	7.5	4.0	247	273	10.0	13.0	0.02
WALKER, KEITH	FEB 78	450	7.8	1.2	220	220	10.0	14.0	0.20
LEGAL: 22-15-17	APR 79	480	7.4	2.6	246	266	3.0	15.0	0.08
DOMESTIC	DEC 79	560	7.5	3.2	238	220	4.0	12.0	0.36
	OCT 80	480	7.4	2.5	225	240	7.0	14.0	0.40
C-62	OCT 81	495	7.3	2.7	170	250	12.0	13.0	0.03
	OCT 82	500	7.4	2.8	240	230	10.5	12.0	0.10
	OCT 83	490	7.5	2.8	247	242	5.0	12.0	0.14
	OCT 84	510	7.6	3.2	245	255	5.0	8.0	0.07
	OCT 85	540	7.6	3.3	241	254	5.5	15.0	0.08
MYERS, MORRIS	FEB 78	500	7.5	0.2	260	260	10.0	9.0	0.00
LEGAL: 21-14-20	MAY 79	550	7.1	0.9	290	310	5.0	11.0	0.02
DOMESTIC	DEC 79	620	7.2	0.7	285	285	6.0	10.0	0.04
	OCT 80	550	7.2	0.6	260	255	6.0	15.0	0.04
C-63	OCT 81	525	7.2	0.9	280	285	21.0	12.0	0.02
	OCT 82	530	7.6	0.9	265	266	17.5	9.0	0.02
	NOV 83	560	7.2	0.9	270	272	5.0	10.0	0.03
	OCT 84	555	7.4	0.8	284	266	6.5	8.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DAY, DENNIS	FEB 78	550	7.8	2.9	280	260	15.0	12.0	0.00
LEGAL: 23-14-19	APR 79	650	7.2	6.2	297	224	7.0	16.0	0.02
DOMESTIC	DEC 79	690	7.2	5.0	294	270	7.0	11.0	0.03
	OCT 80	620	7.3	3.8	310	295	8.0	13.0	0.03
C-64	OCT 81	600	7.3	4.8	290	290	15.0	16.0	0.03
	OCT 82	560	7.3	4.7	264	283	14.0	7.0	0.04
	NOV 83	680	7.2	7.1	295	306	6.5	12.0	0.02
	OCT 84	625	7.3	7.2	315	322	10.0	9.0	0.02
BRISTOL, RICH ->	NOV 85	720	7.4	7.7	313	360	11.0	20.0	0.01
DOBESH, MRS. AMIL	APR 78	510	7.2	0.9	260	240	10.0	5.0	0.20
LEGAL: 16-14-18	FEB 79	505	7.3	1.5	289	270	5.0	7.0	0.32
DOMESTIC	DEC 79	600	7.2	1.6	260	225	6.0	4.0	0.21
	DEC 80	520	7.2	1.3	270	255	7.0	-	0.42
C-65	OCT 81	500	7.3	1.4	280	210	15.0	3.0	0.27
	OCT 82	500	7.4	1.6	255	242	12.0	4.0	0.25
	OCT 83	520	7.6	1.6	281	194	9.0	7.0	0.85
	OCT 84	530	7.3	1.8	276	268	9.5	7.0	0.87
	NOV 85	550	7.6	1.8	277	247	7.5	5.0	0.44
HISER, FRED	FEB 78	500	7.4	1.0	260	240	15.0	6.0	0.01
LEGAL: 27-14-17	APR 79	500	7.2	1.2	288	265	7.5	7.0	0.03
DOMESTIC	DEC 79	575	7.2	1.8	136	245	7.5	5.0	0.02
	OCT 80	510	7.3	1.6	255	240	7.0	9.0	0.03
C-66	OCT 81	490	7.1	1.7	255	250	18.0	3.0	0.03
	OCT 82	525	7.8	2.0	258	336	25.0	3.0	0.02
	OCT 83	510	7.3	2.0	264	257	5.0	8.0	0.03
	OCT 84	540	7.2	2.2	241	242	5.0	7.0	0.02
HICKMAN, FORREST	FEB 78	475	7.5	1.0	240	240	10.0	15.0	0.11
LEGAL: 23-13-20	MAY 79	500	7.2	1.6	276	271	4.0	14.0	0.04
DOMESTIC	DEC 79	560	7.1	1.3	232	340	6.0	13.0	0.09
	OCT 80	500	7.2	0.9	240	40	6.0	17.0	0.25
C-67	OCT 81	500	7.2	1.8	245	240	12.0	14.0	0.04
	OCT 82	500	7.6	2.0	231	239	19.0	12.0	0.04
	NOV 83	520	7.5	1.8	238	242	4.5	11.0	0.04
	OCT 84	520	7.5	1.8	251	234	10.0	10.0	0.03
	NOV 85	500	7.6	1.8	247	240	5.5	19.0	0.02
CHERRY, CARL	FEB 78	775	7.2	1.8	280	320	15.0	15.5	0.20
LEGAL: 16-13-19	APR 79	920	7.0	3.5	330	535	7.5	225.0	0.04
DOMESTIC	DEC 79	1020	7.1	3.2	298	280	8.0	190.0	0.04
	OCT 80	1100	7.1	2.9	340	574	10.0	337.0	0.05
C-68	OCT 81	1130	7.0	2.9	340	470	21.0	325.0	0.07
	OCT 82	1260	7.4	3.7	351	608	23.5	160.0	0.03
POPP, PHILLIP	NOV 83	1260	7.0	4.1	371	615	10.5	375.0	0.06
	OCT 84	1210	7.3	3.7	344	535	13.5	200.0	0.03
	NOV 85	1080	7.5	2.7	349	513	12.5	220.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.-SE

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
JOHNSON, LARRY	FEB 78	550	7.1	0.8	280	310	15.0	10.0	0.02
LEGAL: 10-13-18	APR 79	600	7.1	1.7	333	320	7.5	12.0	0.03
DOMESTIC	DEC 79	650	7.2	1.7	263	280	10.0	9.0	0.02
	OCT 80	550	7.1	1.4	270	250	10.0	12.0	0.04
C-69	OCT 81	560	7.3	1.6	280	260	16.0	12.0	0.03
	OCT 82	600	7.6	2.4	310	301	22.5	8.0	0.02
	OCT 83	600	7.3	2.2	320	290	6.5	11.0	0.02
	OCT 84	640	7.5	2.0	243	264	11.0	5.0	0.02
	NOV 85	600	7.5	1.6	312	310	8.5	12.0	0.01
KING, DICK	FEB 78	750	7.2	6.8	330	380	25.0	10.0	0.02
LEGAL: 17-13-17	APR 79	780	7.1	12.5	90	304	20.0	16.0	0.03
DOMESTIC	DEC 79	750	7.2	6.3	292	235	15.0	10.0	0.03
	OCT 80	700	7.2	8.7	285	350	16.0	13.0	0.03
C-70	OCT 81	550	7.1	4.3	265	275	21.0	10.0	0.02
	OCT 82	520	7.4	1.8	248	242	27.0	7.0	0.02
	OCT 83	510	7.4	1.9	255	267	8.5	8.0	0.02
	OCT 84	505	7.3	2.3	250	242	11.5	4.0	0.03
KING, RANDY ->	NOV 85	555	7.3	3.7	271	286	11.0	11.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GARFIELD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
JOHNSON, GLEN	OCT 77	220	7.1	0.5	120	90	5.0	1.0	0.06
LEGAL: 14-24-16	OCT 78	240	6.9	0.5	115	99	5.0	0.5	0.03
LIVESTOCK	NOV 79	230	6.9	12.3	119	98	5.0	3.0	0.07
	FEB 80	240	6.9	0.7	125	90	7.0		0.05
G-1	NOV 80	240	6.8	0.9	115	90	9.0	6.0	0.13
	OCT 81	350	7.0	1.4	185	170	18.0	3.0	0.06
	NOV 82	230	7.1	0.8	22	110	30.0	1.0	0.11
	OCT 84	250	7.1	1.2	115	110	11.5	3.0	0.23
	SEP 85	245	7.1	1.0	103	93	6.5	0.0	0.02
BALLAGH, JIM	OCT 77	100	7.0	0.2	60	60	5.0	1.0	0.10
LEGAL: 19-24-14	OCT 78	110	7.0	0.5	57	41	2.5	1.0	0.03
FLOW	NOV 79	109	7.0	1.1	45	50	3.0	0.0	0.02
	FEB 80	112	7.0	0.6	20	35	6.0		0.02
G-2	OCT 80	110	6.9	0.7	60	40	5.0	1.0	0.03
	OCT 81	110	6.9	0.8	65	50	12.0	0.0	0.03
	NOV 82	110	7.1	0.7	51	30	26.5	0.0	0.01
	OCT 84	114	7.1	0.7	59	52	5.5	1.0	0.03
	NOV 85	117	7.0	0.9	61	60	5.0	2.0	0.02
CHAFFIN RANCH	OCT 78	123	6.9	0.5	70	53	2.5	0.0	0.03
LEGAL: 22-24-12	NOV 79	126	6.9	1.3	60	57	2.0	2.0	0.02
FLOW	FEB 80	127	6.9	1.3	60	40	5.0		0.03
	OCT 80	130	6.9	0.7	70	50	5.0	0.0	0.02
G-3	OCT 81	130	6.9	0.9	70	60	15.0	0.0	0.02
	NOV 82	132	7.0	0.7	68	49	8.5	0.0	0.02
	OCT 83	133	7.1	0.7	66	68	3.5	1.0	0.02
	OCT 84	130	7.1	0.7	69	53	4.5	0.0	0.02
	NOV 85	135	6.9	0.9	63	62	5.0	0.0	0.01
WESTOVER, PEARL	OCT 77	120	7.1	0.5	80	60	5.0	1.0	0.30
LEGAL: 10-22-13	OCT 78	117	7.0	0.6	72	49	2.5	0.5	0.03
DOMESTIC	OCT 79	140	7.1	1.3	75	60	2.0	3.0	0.06
	FEB 80	136	7.1	1.3	65	55	5.0	--	0.02
G-4	OCT 80	131	7.0	0.7	60	55	3.0	0.0	0.02
	OCT 81	128	7.0	0.9	70	50	12.0	0.0	0.03
	OCT 83	131	7.2	0.7	68	60	4.0	0.0	0.02
	OCT 84	131	7.1	0.8	67	68	5.5	1.0	0.04
	NOV 85	132	7.1	1.0	62	67	4.0	1.0	0.02
CLEARWATER RANCH	OCT 77	150	7.5	0.1	80	70	5.0	1.0	0.10
(DAVE FRICKEL)	OCT 78	150	7.5	0.4	88	76	5.0	1.0	0.02
LEGAL: 22-24-14	NOV 79	160	7.6	1.1	88	74	2.0	4.0	0.03
	FEB 80	156	7.6	0.6	75	35	6.0		0.02
	OCT 80	160	7.6	0.5	80	70	3.0	1.0	0.03
OLSEN, WARREN	OCT 81	162	7.6	0.6	85	70	12.0	1.0	0.03
	NOV 82	160	7.6	0.6	86	70	19.5	1.0	0.02
G-5	OCT 84	175	7.8	0.4	90	64	5.5	1.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GARFIELD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
MARES, ROY	OCT 77	187	7.2	0.1	110	100	5.0	1.0	1.40
LEGAL: 33-21-16	OCT 78	192	7.3	0.5	105	90	5.0	2.5	0.25
DOMESTIC	NOV 79	210	7.3	1.0	105	88	4.0	2.0	0.22
	OCT 80	190	7.3	0.5	90	85	7.0	2.0	0.33
G-6	OCT 81	230	7.2	1.8	105	100	12.0	1.0	0.12
	DEC 82	210	7.2	0.9	101	108	10.5	1.0	0.13
	NOV 83	200	7.4	0.7	113	100	4.0	1.0	0.24
	OCT 84	320	7.6	6.9	116	131	16.5	6.0	0.13
	NOV 85	250	7.3	2.3	113	109	10.5	5.0	0.29
HUGHES, MELVIN	OCT 77	185	7.3	2.2	50	40	5.0	2.0	0.50
LEGAL: 26-22-15	OCT 78	188	7.4	1.9	90	80	5.0	2.0	0.04
DOMESTIC	NOV 79	133	7.0	1.5	70	60	3.0	0.0	0.02
	OCT 80	135	6.9	0.9	70	55	5.0	0.0	0.03
G-7	OCT 81	135	7.0	1.2	70	55	22.0	0.0	0.03
	NOV 82	140	7.2	1.1	167	60	26.5	0.0	0.02
	OCT 83	141	7.1	1.2	68	61	3.0	1.0	0.03
	OCT 84	139	7.2	1.1	65	65	5.0	0.0	0.03
	NOV 85	150	6.9	1.7	70	68	5.5	1.0	0.02
WHITE, DARREL	OCT 77	120	7.0	2.5	50	50	5.0	4.0	0.50
LEGAL: 33-22-14	OCT 78	130	6.9	2.3	35	55	2.5	4.0	0.06
DOMESTIC	OCT 79	134	7.1	3.5	43	46	2.0	6.0	0.04
	OCT 80	100	7.1	3.2	40	55	6.0	6.0	0.08
G-8	OCT 81	127	7.0	3.2	40	40	11.0	6.0	0.08
	NOV 82	132	7.1	3.0	49	52	29.0	3.0	0.08
	OCT 83	132	7.2	3.3	30	55	4.0	3.0	0.07
	OCT 84	134	7.2	3.2	46	54	5.5	2.0	0.12
	NOV 85	130	6.9	3.3	48	61	3.5	6.0	0.02
DANCZAK BROTHERS	OCT 77	380	7.4	0.1	210	180	5.0	8.0	0.50
LEGAL: 17-21-16	OCT 78	380	7.2	0.5	195	185	5.0	9.5	0.03
DOMESTIC	NOV 79	380	7.2	1.0	205	192	3.0	7.0	0.03
	OCT 80	300	7.2	0.5	195	175	6.0	10.0	0.03
G-9	OCT 81	380	7.2	0.7	205	170	10.0	9.0	0.03
	DEC 82	380	7.4	0.6	199	181	16.5	6.0	0.02
	NOV 83	380	7.4	0.7	196	189	2.5	8.0	0.02
	OCT 84	400	7.3	0.6	196	188	4.0	6.0	0.04
	NOV 85	400	7.3	0.8	209	193	1.5	11.0	0.03
SCHNEIDER,STANLEY	OCT 77	240	7.6	0.2	120	110	5.0	1.0	0.30
LEGAL: 17-21-15	OCT 78	250	6.4	0.6	125	110	2.5	0.5	0.05
DOMESTIC	OCT 79	250	7.5	0.8	120	113	2.0	1.0	0.03
	OCT 80	225	7.6	0.8	115	110	5.0	0.0	0.33
G-10	OCT 81	250	7.4	0.9	130	80	9.0	1.0	0.03
	NOV 82	250	7.6	0.8	132	119	11.0	1.0	0.02
	OCT 83	250	7.6	0.8	137	117	6.0	0.0	0.03
	OCT 84	255	7.4	0.8	143	126	4.5	0.0	0.04
	NOV 85	280	7.4	1.1	153	138	6.0	2.0	0.04

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GARFIELD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
GUGGENMOS, RAY	OCT 77	280	7.3	0.5	200	160	5.0	2.0	0.10
LEGAL: 22-21-14	OCT 78	275	7.5	0.7	145	127	2.5	0.0	0.02
DOMESTIC	OCT 79	310	7.2	1.0	168	139	3.0	0.0	0.01
	OCT 80	250	7.2	0.7	160	140	6.0	0.0	0.02
G-11	OCT 81	300	7.1	1.0	10	120	10.0	1.0	0.03
	NOV 82	290	7.2	0.9	148	132	28.5	0.0	0.01
	OCT 83	280	7.5	0.9	149	141	2.5	1.0	0.02
	OCT 84	330	7.3	0.8	171	156	6.5	1.0	0.02
	NOV 85	390	7.3	1.5	202	184	3.5	2.0	0.04
BODYFIELD, VIC	OCT 77	150	7.1	2.2	60	70	5.0	4.0	0.20
LEGAL: 11-21-13	OCT 78	155	7.0	2.1	62	62	2.5	3.5	0.02
DOMESTIC	OCT 79	158	7.1	2.7	17	52	3.0	4.0	0.01
	OCT 80	157	6.9	2.7	60	60	5.0	6.0	0.03
G-12	OCT 81	155	7.1	3.0	60	40	12.0	6.0	0.03
	NOV 82	159	7.2	3.2	59	45	10.5	2.0	0.01
	OCT 83	167	7.2	3.5	67	73	1.5	3.0	0.01
	OCT 84	166	7.2	3.4	61	80	6.0	2.0	0.02
	NOV 85	172	7.1	4.0	63	90	3.5	8.0	0.02
GARRISON, L.J.	OCT 77	400	7.0	4.0	170	150	10.0	8.0	0.40
LEGAL: 25-21-16	OCT 78	450	7.1	2.8	170	175	12.5	6.0	0.05
DOMESTIC	NOV 79	840	7.3	13.5	232	398	60.0	40.0	0.22
	FEB 80	650	7.2	11.0	75	287	22.0		0.03
G-13	NOV 80	500	7.0	7.0	145	260	22.0	17.0	0.02
	DEC 81	550	7.0	5.4	170	215	15.5	11.0	0.05
	JAN 83	550	7.0	11.0	220	243	30.5	10.0	0.03
	DEC 84	330	7.1	2.9	131	138	10.0	8.0	0.03
	DEC 85	390	7.0	3.1	157	169	7.0	13.0	0.03
COLEMAN, LAVERN	OCT 77	480	7.0	6.2	240	250	5.0	13.0	0.30
LEGAL: 30-21-15	OCT 78	460	7.8	4.6	218	330	10.0	15.0	0.04
DOMESTIC	NOV 79	520	7.0	9.0	216	222	8.0	40.0	0.03
	NOV 80	500	7.0	5.0	220	240	8.0	11.0	0.03
G-14	DEC 81	540	7.0	5.7	250	250	19.5	11.0	0.03
	FEB 84	800	7.3	22.0	269	368	36.0	14.0	0.03
	DEC 84	970	7.1	29.0	264	390	40.0	30.0	0.03
	DEC 85	790	7.1	17.8	269	328	22.0	25.0	0.04

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
JOHNSON, ROGER	NOV 77	320	7.6	1.2	180	150	2.0	3.0	0.01
LEGAL: 22-20-12	NOV 78	330	7.3	2.3	149	151	2.5	3.0	0.03
DOMESTIC	NOV 79	320	7.3	2.7	140	145	1.0	2.0	0.03
	OCT 80	290	7.3	2.0	160	160	10.0	2.0	0.02
GR-1	DEC 81	320	7.3	2.5	165	145	19.0	1.0	0.02
	NOV 82	165	7.3	2.1	160	146	19.5	0.0	0.01
	OCT 83	330	7.4	2.4	164	165	4.5	0.0	0.01
	DEC 84	345	7.4	2.6	171	163	7.5	0.0	0.01
	DEC 85	360	7.6	2.7	174	173	4.5	1.0	0.03
RENNER, RICK	NOV 77	300	7.4	0.1	160	140	0.0	1.0	0.02
LEGAL: 4-20-11	NOV 78	310	7.2	0.6	169	148	2.5	3.5	0.04
DOMESTIC	NOV 79	310	7.2	1.0	170	150	1.0	1.0	0.03
	OCT 80	280	7.2	1.7	165	145	5.0	2.0	0.02
GR-2	DEC 81	320	7.1	0.7	170	150	14.5	2.0	0.02
	NOV 82	325	7.2	0.7	166	145	25.5	1.0	0.02
	OCT 83	320	7.1	0.7	171	164	4.0	2.0	0.02
	DEC 84	320	7.7	1.0	139	137	10.0	1.0	0.02
	DEC 85	345	7.6	0.9	159	163	5.0	2.0	0.04
ZWIENER, RICHARD	NOV 77	320	7.6	0.0	200	150	0.0	2.5	0.02
LEGAL: 15-20-10	NOV 78	310	7.5	0.4	163	155	2.5	3.5	0.08
DOMESTIC	NOV 79	310	7.4	1.0	170	150	2.0	3.0	0.02
	OCT 80	280	7.5	0.8	155	150	7.0	3.0	0.03
GR-3	DEC 81	310	7.4	0.7	165	150	25.0	5.0	0.04
	NOV 82	300	7.6	0.4	168	151	17.0	2.0	0.02
	OCT 83	320	7.4	0.4	166	167	7.0	5.0	0.02
	DEC 84	330	7.8	0.6	170	152	6.0	1.0	0.02
	DEC 85	340	7.7	0.5	165	167	6.0	1.0	0.06
SCHMEITS, JULIA	NOV 77	500	7.2	1.6	190	210	0.0	5.0	0.40
LEGAL: 27-20-9	NOV 78	555	7.2	2.3	276	260	5.0	8.0	0.11
DOMESTIC	NOV 79	550	7.1	3.2	310	280	2.0	7.0	0.17
	OCT 80	480	7.2	3.2	270	250	5.0	6.0	0.60
GR-4	DEC 81	550	7.1	3.0	285	270	25.5	5.0	0.07
	NOV 82	500	7.4	0.9	264	241	24.5	16.0	3.90
	OCT 83	575	7.2	3.3	281	286	5.0	6.0	0.03
	DEC 84	600	7.4	3.7	299	287	4.0	6.0	0.53
	DEC 85	545	7.6	3.5	296	246	8.0	9.0	0.02
MORROW, GENE	NOV 77	380	7.6	2.8	200	160	5.0	1.0	0.03
LEGAL: 21-14-12	NOV 78	460	7.4	4.0	214	235	2.5	6.5	0.02
DOMESTIC	NOV 79	460	7.2	4.3	232	246	3.0	6.0	0.02
	OCT 80	400	7.2	3.4	200	205	5.0	3.0	0.04
GR-5	DEC 81	400	7.3	3.4	205	180	19.0	2.0	0.02
	NOV 82	430	7.1	3.9	198	193	24.0	3.0	0.03
	OCT 83	490	7.3	4.3	239	235	2.5	6.0	0.02
	DEC 84	510	7.2	4.7	226	241	6.5	4.0	0.02
	DEC 85	530	7.3	5.3	229	245	6.5	10.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DONOVAN, BERNARD	NOV 77	500	7.6	0.7	290	240	2.0	6.0	0.02
LEGAL: 20-19-11	NOV 78	520	7.3	1.6	273	352	5.0	7.5	0.09
DOMESTIC	NOV 79	540	7.3	2.2	277	222	3.0	8.0	0.05
	OCT 80	500	7.0	2.0	285	255	5.0	5.0	0.03
GR-6	DEC 81	540	7.0	2.0	285	230	19.0	6.0	0.02
	NOV 82	530	7.1	1.8	281	253	29.5	6.0	0.01
	OCT 83	550	7.1	2.0	281	271	5.0	5.0	0.02
	DEC 84	560	7.1	2.2	286	264	6.5	4.0	0.01
	DEC 85	570	7.3	2.5	263	250	7.0	12.0	0.02
RYAN, JIM	NOV 77	500	7.0	0.1	300	300	5.0	2.0	0.05
LEGAL: 32-19-10	NOV 78	540	7.1	0.3	300	298	2.5	2.0	0.03
DOMESTIC	NOV 79	540	7.0	1.2	302	271	1.0	2.0	0.10
	OCT 80	450	7.1	0.7	280	235	7.0	1.0	0.03
GR-7	DEC 81	540	7.0	0.6	295	275	17.0	3.0	0.08
	NOV 82	540	7.0	0.6	285	270	14.5	0.0	0.02
	OCT 83	550	7.0	0.4	297	287	3.5	1.0	0.13
	DEC 84	555	7.2	0.6	310	300	6.5	2.0	0.03
	DEC 85	555	7.6	0.6	304	296	5.5	1.0	0.03
PRITCHARD, THOMAS	NOV 77	450	7.1	0.5	220	220	0.0	8.0	0.11
LEGAL: 12-19-10	NOV 78	460	7.1	0.7	247	220	5.0	4.9	0.11
DOMESTIC	NOV 79	510	7.0	1.5	270	250	2.0	6.0	0.03
	OCT 80	460	7.1	1.2	260	260	5.0	6.0	0.03
GR-8	DEC 81	510	7.2	1.1	270	240	15.0	4.0	0.02
	NOV 82	510	7.2	0.8	276	241	8.5	4.0	0.02
	OCT 83	540	7.1	1.0	262	253	5.5	6.0	0.01
	DEC 84	545	7.2	1.0	269	236	7.5	3.0	0.01
	DEC 85	540	7.2	1.3	272	256	6.5	2.0	0.03
JACOBI, JOHN	NOV 77	500	7.4	0.5	280	280	5.0	3.0	0.06
LEGAL: 16-19-9	NOV 78	550	7.4	1.1	296	284	2.0	9.0	0.11
DOMESTIC	NOV 79	550	7.1	2.0	295	260	2.0	9.0	0.68
	OCT 80	500	7.1	1.7	280	265	5.0	6.0	0.11
GR-9	DEC 81	550	7.0	1.4	305	210	20.0	7.0	0.43
	NOV 82	550	7.2	1.4	302	272	9.5	12.0	1.20
	OCT 83	550	7.2	1.4	291	241	6.0	6.0	0.25
	DEC 84	570	7.4	1.7	294	279	6.5	9.0	1.19
	DEC 85	570	7.6	1.7	301	269	5.5	11.0	0.09
HERMSMEYER, DUANE	NOV 77	620	7.4	0.0	310	310	5.0	40.0	0.02
LEGAL: 21-18-12	NOV 78	620	7.6	0.5	291	299	5.0	60.0	0.16
DOMESTIC	NOV 79	605	7.5	1.1	290	270	4.0	44.0	0.15
	OCT 80	550	7.4	0.9	292	315	5.0	47.0	0.07
GR-10	DEC 81	680	7.0	0.7	330	325	15.5	43.0	0.09
	NOV 82	660	7.1	0.5	339	343	9.5	41.0	0.02
	OCT 83	720	7.2	0.4	342	288	5.0	49.0	0.02
	DEC 84	720	7.2	0.8	339	340	9.5	37.0	0.02
	DEC 85	710	7.5	0.7	332	353	5.5	68.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HAPP, JOE SR.	NOV 77	550	7.1	1.4	290	270	5.0	3.0	0.01
LEGAL: 16-18-11	NOV 78	570	7.1	2.6	286	295	5.0	12.8	0.70
DOMESTIC	NOV 79	580	7.0	3.5	303	199	3.0	11.0	0.03
	NOV 80	500	7.0	2.7	290	275	5.0	7.0	0.03
GR-11	DEC 81	575	7.0	2.8	290	270	14.5	9.0	0.03
	NOV 82	480	7.0	2.7	289	278	10.5	8.0	0.01
	OCT 83	600	7.1	2.8	294	272	5.5	8.0	0.02
	DEC 84	610	7.2	3.1	281	274	4.0	6.0	0.01
	DEC 85	610	7.3	2.8	296	280	4.5	15.0	0.02
DUGAN, CATHERINE	NOV 77	700	7.1	0.1	320	380	0.0	120.0	0.08
DUGAN, BRAD	NOV 78	780	7.5	0.5	347	425	5.0	100.0	0.15
LEGAL: 27-18-10	NOV 79	770	7.0	0.4	367	346	3.0	100.0	0.11
DOMESTIC	OCT 80	700	7.0	0.7	375	400	5.0	100.0	0.13
	DEC 81	790	7.0	0.7	360	325	14.5	110.0	0.07
GR-12	NOV 82	840	7.1	0.5	347	314	15.5	105.0	0.07
	OCT 83	590	7.1	0.4	358	338	7.0	73.0	0.12
	DEC 84	840	7.1	0.6	370	371	5.5	86.0	0.04
RYAN, KENNETH >	DEC 85	695	6.9	0.9	359		5.5	17.0	0.03
ANDERSON, DON	NOV 77	600	7.1	2.0	260	300	10.0	26.0	0.10
LEGAL: 20-18-9	NOV 78	605	7.6	4.8	285	186	10.0	39.9	2.00
STOCKWELL	NOV 79	600	7.2	4.0	293	238	9.0	34.0	2.00
	OCT 80	550	7.2	4.0	280	270	5.0	24.0	2.00
GR-13	DEC 81	600	7.2	3.7	295	295	18.5	23.0	0.96
	NOV 82	640	7.3	3.5	288	230	41.5	25.0	2.70
	OCT 83	630	7.3	3.5	298	241	14.0	23.0	1.06
	DEC 84	660	7.4	3.4	316	317	11.5	21.0	0.07
	DEC 85	650	7.6	3.5	295	265	11.0	31.0	0.10
WAGNER, MARK	NOV 77	600	7.6	0.7	320	310	5.0	23.0	0.03
LEGAL: 14-17-12	NOV 78	620	7.2	1.4	342	301	5.0	31.9	0.05
DOMESTIC	OCT 79	650	7.0	1.8	317	304	5.0	29.0	0.05
	OCT 80	NO SAMPLE COLLECTED							
GOLDFISH, WM. ->	DEC 81	770	7.1	6.4	335	300	21.0	48.0	0.03
NEW LOCATION	NOV 82	810	7.2	8.9	315	355	30.0	52.0	0.02
	OCT 83	760	7.3	5.8	331	351	11.0	60.0	0.02
GR-14	DEC 84	780	7.3	6.8	323	342	5.0	45.0	0.02
	DEC 85	840	7.6	7.9	336	377	10.5	74.0	0.02
GOLDFISH, HAROLD	NOV 77	550	7.2	0.7	280	270	7.0	3.0	0.01
LEGAL: 16-17-11	NOV 78	550	7.3	1.4	328	280	5.0	12.6	0.03
DOMESTIC	OCT 79	550	7.1	1.4	293	292	6.0	11.0	0.02
	OCT 80	500	7.1	1.7	280	280	6.0	7.0	0.03
GR-15	DEC 81	550	7.1	1.5	290	230	20.0	8.0	0.03
	NOV 82	550	7.1	1.5	298	284	8.0	8.0	0.01
	OCT 83	560	7.2	1.7	289	250	7.0	8.0	0.01
	DEC 84	720	7.2	8.6	313	339	12.5	11.0	0.02
	DEC 85	650	7.5	4.8	304	327	8.0	14.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
PEETZ, DICK	NOV 77	550	7.5	0.8	320	330	3.0	5.0	0.60
LEGAL: 16-17-10	NOV 78	590	7.5	1.1	285	310	7.5	25.5	0.12
DOMESTIC	OCT 79	600	7.2	1.1	290	300	4.0	26.0	0.07
	OCT 80	540	7.3	1.6	280	310	6.0	24.0	0.15
GR-16	DEC 81	600	7.2	1.5	300	200	18.0	18.0	0.07
	NOV 82	610	7.3	1.2	298	285	15.5	17.0	0.08
	OCT 83	625	7.2	1.1	298	230	8.0	19.0	0.10
	DEC 84	640	7.6	1.4	295	309	5.5	16.0	0.06
	DEC 85	630	7.6	1.7	300	316	9.0	27.0	0.08
ROTHER, FRED	NOV 77	550	7.4	0.5	200	280	5.0	2.0	0.60
LEGAL: 28-17-9	NOV 78	UNABLE TO COLLECT SAMPLE							
DOMESTIC	OCT 79	580	7.3	0.9	316	231	4.0	5.0	0.25
	OCT 80	500	7.3	1.0	220	250	5.0	2.0	0.20
GR-17	DEC 81	590	7.3	1.3	305	270	13.0	6.0	0.28
	NOV 82	600	7.3	1.0	327	259	26.5	5.0	0.35
	OCT 83	600	7.3	1.0	309	253	7.5	8.0	0.30
	DEC 84	610	7.5	1.0	305	256	6.5	3.0	0.16
	DEC 85	610	7.5	1.4	319	277	5.0	5.0	0.30

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR HOWARD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
MORAVEC, FRANKIE	MAY 78	525	7.4	0.1	280	250	10.0	2.0	0.00
LEGAL: 15-16-12	DEC 78	460	7.4	0.1	265	206	2.5	2.5	0.06
DOMESTIC	NOV 79	500	7.2	1.6	270	257	3.0	2.0	0.02
	DEC 80	500	7.1	0.8	270	250	12.0	2.0	0.02
H-1	DEC 81	500	7.2	1.2	265	240	15.5	5.0	0.03
	JAN 83	520	7.3	1.7	258	260	22.0	3.0	0.02
	DEC 83	530	7.2	0.9	272	276	6.5	2.0	0.02
	DEC 84	520	7.2	1.2	100	247	3.0	2.0	0.02
	DEC 85	540	7.4	1.3	261	255	6.5	2.0	0.02
WELLS, LESTER	MAY 78	550	6.9	2.0	270	300	10.0	6.0	0.00
LEGAL: 21-16-11	DEC 78	540	7.1	2.4	289	285	7.5	7.5	0.03
DOMESTIC	NOV 79	540	7.2	2.7	270	270	5.0	6.0	0.03
	DEC 80	550	7.1	1.5	240	270	11.0	5.0	0.02
H-2	DEC 81	540	7.0	1.8	294	270	17.5	6.0	0.02
	JAN 83	550	7.4	3.1	272	308	23.0	5.0	0.02
	DEC 83	555	7.3	2.5	284	270	5.5	8.0	0.02
	DEC 84	550	7.2	2.6	256	268	5.5	3.0	0.03
	DEC 85	560	7.3	2.6	276	268	7.5	4.0	0.02
THOMSEN, LYLE	MAY 78	525	7.5	5.7	340	290	5.0	0.0	0.10
LEGAL: 22-16-10	DEC 78	540	7.5	1.6	302	295	5.0	1.0	0.11
DOMESTIC	NOV 79	550	7.5	2.2	300	201	2.0	2.0	0.15
	DEC 80	550	7.4	1.5	290	260	15.0	3.0	0.30
H-3	DEC 81	550	7.4	2.0	305	265	14.0	3.0	0.14
	JAN 83	570	7.8	2.3	309	279	9.0	2.0	0.19
	DEC 83	570	8.0	2.0	315	229	6.0	6.0	0.50
	DEC 84	560	7.7	2.1	299	258	7.0	4.0	0.36
	DEC 85	560	7.8	2.0	283	271	5.0	1.0	0.08
HART, ART	MAY 78	450	7.2	3.5	240	220	5.0	12.0	0.00
LEGAL: 15-16-9	DEC 78	450	7.1	0.8	243	236	2.5	12.0	0.02
DOMESTIC	NOV 79	450	7.2	1.5	243	233	2.0	8.0	0.02
	DEC 80	450	7.2	0.8	230	225	13.0	11.0	0.03
H-4	DEC 81	440	7.2	1.0	230	220	12.0	7.0	0.03
	JAN 83	460	7.4	1.5	230	225	9.0	10.0	0.02
	DEC 83	460	7.3	1.0	231	240	4.5	9.0	0.02
	DEC 84	480	7.2	1.2	238	235	4.5	7.0	0.01
	DEC 85	480	7.3	1.1	240	248	5.0	13.0	0.01
RATHMAN, GERALD	MAY 78	500	7.0	0.2	270	260	5.0	0.0	0.00
LEGAL: 22-15-12	DEC 78	490	7.1	0.4	265	228	7.5	2.0	0.03
DOMECTIC	NOV 79	500	7.1	0.7	261	268	5.0	0.0	0.02
	DEC 80	510	7.1	0.5	270	250	13.0	1.0	0.02
H-5	DEC 81	450	7.2	1.2	230	220	17.0	8.0	0.03
	JAN 83	440	7.3	1.6	207	207	16.5	13.0	0.04
	DEC 83	450	7.2	1.0	206	229	9.0	9.0	0.02
	DEC 84	540	7.3	0.8	279	256	5.5	4.0	0.02
	DEC 85	420	7.6	1.4	187	196	9.0	14.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR HOWARD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
EWERS, DANIEL	MAY 78	525	7.1	1.0	280	270	5.0	8.0	0.10
LEGAL: 15-15-11	DEC 78	530	7.2	1.0	258	279	5.0	6.5	0.03
DOMESTIC	NOV 79	540	7.4	1.6	188	250	5.0	2.0	0.06
	DEC 80	550	7.1	1.0	290	280	14.0	2.0	0.02
H-6	DEC 81	540	7.1	1.6	280	285	15.5	3.0	0.02
	JAN 83	560	7.3	1.8	285	269	15.0	3.0	0.02
	DEC 83	570	7.2	1.6	289	275	5.0	3.0	0.03
	DEC 84	560	7.2	1.6	275	286	7.0	4.0	0.04
	DEC 85	590	7.2	1.8	292	279	10.0	3.0	0.03
RASMUSSEN, HAROLD	MAY 78	550	7.0	2.0	310	310	10.0	8.0	0.20
LEGAL: 15-15-10	DEC 78	530	6.9	1.8	286	277	7.5	8.0	0.11
DOMESTIC	NOV 79	560	7.2	2.4	205	300	8.0	8.0	0.18
	DEC 80	550	7.1	1.5	285	285	15.0	8.0	0.03
H-7	DEC 81	570	7.1	2.0	295	270	17.0	5.0	0.14
	JAN 83	590	7.3	2.5	290	282	10.0	6.0	0.30
	DEC 83	590	7.3	1.7	302	286	6.0	8.0	0.06
	DEC 84	580	7.2	1.9	290	310	5.5	4.0	0.16
	DEC 85	600	7.3	2.2	307	314	8.5	10.0	0.09
JURZENSKI, ROCKE	MAY 78	525	7.2	17.6	260	260	5.0	16.0	0.00
LEGAL: 9-15-9	DEC 78	520	7.2	3.8	271	264	7.5	16.0	0.02
DOMESTIC	NOV 79	500	7.2	4.0	240	234	5.0	13.0	0.02
	DEC 80	600	7.1	1.8	280	245	15.0	14.0	0.08
H-8	DEC 81	500	7.1	3.5	240	240	15.0	11.0	0.02
	JAN 83	550	7.3	5.4	250	276	26.5	16.0	0.01
	DEC 83	525	7.4	4.2	241	280	5.5	12.0	0.01
	DEC 84	530	7.2	5.0	233	275	10.5	10.0	0.04
	DEC 85	645	7.3	4.4	295	303	8.0	22.0	0.03
SMEDRA, GENE	MAY 78	550	7.2	2.2	270	270	5.0	8.0	0.10
LEGAL: 15-14-12	DEC 78	500	7.2	0.5	270	325	7.5	7.5	0.28
DOMESTIC	NOV 79	480	7.2	1.3	268	202	3.0	9.0	0.03
	DEC 80	480	7.2	0.5	260	240	12.0	11.0	0.02
	DEC 81	450	7.2	1.1	240	225	14.5	7.0	0.02
NELSON, KEN-->	JAN 83	480	7.4	1.4	237	234	25.5	10.0	0.02
	DEC 83	475	7.4	1.0	243	199	5.0	8.0	0.02
H-9	DEC 84	480	7.3	1.1	231	251	6.5	7.0	0.03
	DEC 85	495	7.4	1.3	232	229	4.5	13.0	0.02
DIGENNARO, GUY	MAY 78	600	7.1	1.0	280	260	15.0	10.0	0.00
LEGAL: 16-14-11	DEC 78	510	7.2	1.0	285	265	10.0	7.2	0.04
DOMESTIC	NOV 79	550	7.3	1.8	220	279	10.0	8.5	0.03
	DEC 80	560	7.1	0.5	300	280	18.0	13.0	0.02
	DEC 81	530	7.2	0.9	295	280	23.5	6.0	0.02
SHAUGHNESSY,	JAN 83	650	7.4	1.7	324	314	21.0	12.0	0.02
PAT	DEC 83	560	7.3	0.8	292	275	10.5	8.0	0.02
H-10 ->	DEC 84	725	7.3	1.8	228	294	22.5	12.0	0.03
	DEC 85	590	7.5	1.0	290	294	13.0	12.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR HOWARD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
STEPANEK, EDDIE	MAY 78	1100	7.0	4.0	390	410	90.0	99.0	0.00
LEGAL: 22-14-10	DEC 78	1400	7.0	10.0	479	615	130.0	140.0	0.04
DOMESTIC	NOV 79	1580	7.1	11.0	484	421	125.0	150.0	0.04
	DEC 80	1600	7.0	11.5	485	640	137.0	117.0	0.05
H-11	DEC 81	1500	7.1	11.0	390	470	108.0	120.0	0.03
	JAN 83	1360	7.3	13.8	388	479	106.0	147.0	0.03
	DEC 83	1650	7.1	14.8	429	621	124.0	180.0	0.04
	DEC 84	1840	7.1	14.2	471	700	159.5	200.0	0.05
	DEC 85	1830	7.8	14.0	489	721	148.0	200.0	0.05
SCARBOROUGH, HARRY	MAY 78	300	7.2	0.5	160	130	10.0	7.0	0.50
LEGAL: 16-14-9	DEC 78	290	7.2	0.4	148	140	5.0	8.5	0.95
DOMESTIC	NOV 79	300	7.3	1.2	139	139	2.0	8.0	0.90
	DEC 80	280	7.1	0.5	145	135	12.0	13.0	1.40
H-12	DEC 81	290	7.2	0.8	140	120	13.0	11.0	1.33
	JAN 83	290	7.4	1.1	141	142	20.5	12.0	1.60
	DEC 83	300	7.3	0.6	134	131	3.0	11.0	1.08
	DEC 84	300	7.3	1.0	134	150	5.5	12.0	2.10
	DEC 85	300	7.4	0.7	144	132	6.0	12.0	1.04
SORENSEN, ORVILLE	MAY 78	2000	7.1	57.2	620	830	100.0	80.0	1.10
LEGAL: 32-13-11	DEC 78	1880	7.1	36.0	691	919	80.0	82.0	-
DOMESTIC	NOV 79	1940	7.1	60.0	681	387	98.0	60.0	-
	DEC 80	2500	7.0	23.0	750	660	122.0	85.0	-
H-13	DEC 81	2400	7.0	84.5	750	1035	156.5	58.0	0.30
	JAN 83	2200	7.1	88.5	718	975	126.0	83.0	0.18
NEW WELL-->	DEC 83	620	7.2	0.9	303	267	4.0	17.0	0.03
	DEC 84	640	7.3	1.2	299	302	10.0	12.0	0.02
	DEC 85	640	7.4	1.1	303	270	6.0	23.0	0.04
NEISNER, FRED	MAY 78	530	7.2	1.0	290	270	15.0	21.0	0.00
LEGAL: 21-13-12	DEC 78	540	7.2	1.1	273	280	10.0	24.0	0.05
DOMESTIC	NOV 79	550	7.3	1.6	270	258	8.0	17.0	0.05
	DEC 80	550	7.1	1.0	270	275	17.0	20.0	0.03
H-14	DEC 81	520	7.1	1.3	270	260	25.0	16.0	0.03
	JAN 83	555	7.4	1.7	268	267	23.5	17.0	0.02
	DEC 83	550	7.4	1.2	257	287	9.5	18.0	0.03
	DEC 84	560	7.2	1.3	254	271	9.0	14.0	0.02
	DEC 85	605	7.3	2.8	257	274	25.0	17.0	0.03
NELSON, JIM	MAY 78	575	7.1	1.0	290	290	20.0	32.0	0.05
LEGAL: 19-13-11	DEC 78	600	7.1	0.9	232	317	13.0	31.0	0.03
DOMESTIC	NOV 79	600	7.1	1.6	285	225	20.0	22.0	0.02
	DEC 80	580	7.1	0.9	270	285	21.0	28.0	0.03
H-15	DEC 81	600	7.1	1.4	285	295	25.5	19.0	0.02
	JAN 83	630	7.4	1.7	292	312	25.0	23.0	0.02
	DEC 83	620	7.3	1.4	284	345	17.0	23.0	0.02
	DEC 84	630	7.2	1.8	275	299	17.0	16.0	0.02
	DEC 85	650	7.1	2.1	286	302	19.5	29.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR HOWARD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HEINZMAN, W.W.	MAY 78	530	7.5	0.1	290	280	15.0	9.0	0.00
LEGAL: 21-13-11	DEC 78	540	7.1	0.9	290	295	7.5	10.2	0.03
DOMESTIC	NOV 79	550	7.1	1.5	297	200	9.0	9.0	0.03
	DEC 80	580	7.1	0.9	290	305	20.0	11.0	0.03
H-16	DEC 81	520	7.2	1.3	270	270	20.5	5.0	0.02
	JAN 83	575	7.3	1.9	281	240	18.5	9.0	0.03
	DEC 83	600	7.2	1.3	294	280	15.0	7.0	0.02
	DEC 84	620	7.2	1.8	291	308	14.0	6.0	0.02
	DEC 85	590	7.6	1.7	271	296	16.0	12.0	0.01
SUTTON, HARRY	MAY 78	275	6.7	5.5	80	310	15.0	38.0	0.50
LEGAL: 9-13-10	DEC 78	142	6.6	0.3	45	65	5.0	18.0	0.07
DOMESTIC	NOV 79	138	6.6	1.1	52	57	3.0	16.0	0.09
	DEC 80	160	6.5	0.8	50	50	17.0	21.0	0.05
H-17	DEC 81	135	6.6	0.6	45	55	12.0	15.0	0.09
	JAN 83	148	6.7	0.6	45	100	10.0	19.0	0.07
	DEC 83	148	6.7	0.5	49	102	6.0	19.0	0.07
	DEC 84	150	6.7	0.8	53	70	5.5	13.0	0.05
	DEC 85	146	6.8	0.7	49	78	5.0	21.0	0.05
NEALON, DON	MAY 78	350	7.4	0.4	180	170	5.0	27.0	0.20
LEGAL: 22-13-9	DEC 78	350	7.4	0.4	167	170	5.0	25.0	0.32
DOMESTIC	NOV 79	350	7.4	1.0	167	171	4.0	19.0	0.19
	DEC 80	350	7.4	0.4	160	160	13.0	21.0	0.23
H-18	DEC 81	330	7.4	0.6	160	155	15.0	12.0	0.27
	JAN 83	350	7.6	1.0	156	180	11.5	18.0	0.14
	DEC 83	350	7.7	0.4	179	201	6.5	15.0	0.19
	DEC 84	440	7.6	0.9	181	191	5.5	24.0	0.30
	DEC 85	460	7.6	0.6	197	224	2.5	42.0	0.23

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR LOUP COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SLANGLE, FRANK	OCT 77	160	7.6	1.1	70	70	2.5	11.0	0.08
LEGAL: 26-24-19	OCT 78	94	7.3	0.9	55	40	5.0	3.0	0.10
LIVESTOCK WELL	NOV 79	106	7.4	1.2	54	40	2.0	3.0	0.11
	NOV 80	170	6.8	0.3	85	70	5.0	10.0	0.07
	OCT 81	100	7.2	1.0	50	40	18.0	1.0	0.03
PORCUPINE FEEDERS	DEC 85	168	7.5	1.8	80	72	6.5	1.0	0.02
L-1									
HOWARD, PUNCH	OCT 77	125	7.0	0.8	65	90	5.0	2.0	0.04
LEGAL: 3-24-8-18	OCT 78	120	6.9	0.9	20	55	12.5	9.0	0.03
DOMESTIC	NOV 79	140	6.8	3.8	57	60	3.0	3.0	0.03
	NOV 80	128	6.8	2.1	50	60	6.0	4.0	0.05
L-2	OCT 81	125	6.8	1.8	60	45	18.0	2.0	0.04
	DEC 82	142	7.0	2.7	15	51	14.5	3.0	0.04
	NOV 83	148	7.0	2.3	54	76	5.0	3.0	0.03
	OCT 84	126	7.2	1.7	64	61	5.5	0.1	0.03
	NOV 85	136	7.0	1.8	59	52	6.0	0.0	0.04
GRACIE CREEK	OCT 77	105	6.9	0.5	40	40	10.0	0.0	0.02
RANCH	OCT 78	90	6.8	0.7	45	50	5.0	0.5	0.02
PRICE, BOB	NOV 79	95	6.9	1.3	45	47	3.0	1.0	0.02
LEGAL: 32-24-17	NOV 80	96	6.8	0.7	50	30	7.0	0.0	0.03
DOMESTIC	OCT 81	92	6.8	0.8	40	40	15.0	0.0	0.03
	JAN 83	98	6.8	1.2	42	38	8.5	0.0	0.02
L-3	JAN 84	103	7.4	0.7	53	49	2.5	1.0	0.02
	OCT 84	100	7.0	1.0	43	40	5.0	0.0	0.03
	NOV 85	100	7.0	1.1	49	39	5.5	0.0	0.02
CONE, DON	OCT 77	135	7.3	0.7	80	70	8.0	1.0	0.03
LEGAL: 1-23-20	OCT 78	139	7.2	0.9	71	75	2.5	1.0	0.03
DOMESTIC	NOV 79	143	7.1	1.3	51	70	4.0	0.0	0.02
	NOV 80	145	7.1	1.2	70	60	7.0	0.0	0.02
L-4	OCT 81	140	7.2	1.5	70	60	12.0	0.0	0.03
	DEC 82	151	7.3	1.4	71	78	23.5	0.0	0.02
POLLARD, DOUG	NOV 83	147	7.2	1.5	70	80	1.5	1.0	0.02
ANDERSON, TIM	OCT 84	139	7.3	1.6	65	64	7.0	0.0	0.03
	NOV 85	145	7.3	1.6	66	61	5.0	0.0	0.01
HARDON, CHARLIE	DEC 85	95	6.5	2.4	31	48	5.0	9.0	0.06
LEGAL: 31-23-19									
DOMESTIC									
L-5									
MEEKS UPSTREAM	OCT 77	320	7.2	2.3	130	160	15.0	17.0	0.02
RANCH	OCT 78	320	7.0	1.9	130	148	7.5	20.1	0.03
LEGAL: 7-23-18	NOV 79	270	6.9	3.3	108	119	7.5	9.0	0.01
DOMESTIC	NOV 80	290	6.8	2.5	115	135	11.0	13.0	0.07
	OCT 81	280	6.9	4.6	100	120	18.0	12.0	0.02
L-6	JAN 83	280	6.9	5.4	116	131	18.5	11.0	0.03
	JAN 84	145	7.2	2.9	57	68	5.0	3.0	0.02
	OCT 84	150	7.0	3.2	55	68	5.5	1.0	0.02
	NOV 85	192	7.0	5.7	61	82	11.0	5.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR LOUP COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SCHRUP, BOB	DEC 85	245	7.2	9.7	60	92	17.5	1.0	0.03
LEGAL: 29-23-17									
DOMESTIC									
L-7									
CONE, EUGENE	OCT 77	260	7.5	0.3	140	110	5.0	1.0	0.05
LEGAL: 21-22-20	OCT 78	220	7.1	0.6	125	110	2.5	1.0	0.04
DOMESTIC	NOV 79	250	7.2	0.8	139	118	2.5	0.0	0.03
	NOV 80	250	7.3	0.8	85	95	7.0	0.0	0.03
L-8	OCT 81	250	7.2	0.9	120	105	12.0	0.0	0.12
	DEC 82	260	7.4	0.8	149	133	16.0	1.0	0.02
	NOV 83	255	7.3	0.9	126	123	4.5	1.0	0.03
	OCT 84	250	7.3	0.9	129	110	5.0	4.0	0.04
	NOV 85	210	7.2	1.0	117	97	5.0	0.0	0.03
DILLON, JOYCE	OCT 77	132	7.4	0.7	70	100	5.0	3.0	0.01
LEGAL: 28-22-19	OCT 78	138	7.1	0.7	75	65	3.5	3.0	0.03
DOMESTIC	NOV 79	145	7.1	1.2	67	70	2.5	0.0	0.02
	NOV 80	147	7.0	1.0	75	60	8.0	1.0	0.02
L-9	OCT 81	142	7.1	1.2	70	55	21.0		0.03
	DEC 82	150	7.2	1.2	69	63	9.0	2.0	0.04
	NOV 83	159	7.2	1.0	78	69	3.5	0.0	0.02
	OCT 84	160	7.3	1.2	71	77	6.0	1.0	0.04
	NOV 85	162	7.3	1.2	79	78	5.5	1.0	0.02
WORM, ROLLIN	DEC 85	115	7.0	1.6	49	55	5.0	1.0	0.03
LEGAL: 11-22-18									
DOMESTIC									
L-10									
PACKARD, FRED	OCT 77	310	7.4	0.6	180	180	5.0	6.0	0.01
LEGAL: 29-22-17	OCT 78	305	7.3	0.8	174	152	5.0	5.0	0.02
DOMESTIC	NOV 79	345	7.2	1.7	180	166	3.0	5.0	0.02
	NOV 80	300	7.2	1.0	155	155	5.0	7.0	0.03
L-11	OCT 81	325	7.1	1.5	165	140	12.0	7.0	0.03
	DEC 82	340	7.3	1.2	150	150	11.0	3.0	0.01
	NOV 83	340	7.2	1.3	164	151	2.0	5.0	0.02
	OCT 84	345	7.4	1.5	170	149	5.0	3.0	0.03
	NOV 85	350	7.4	1.6	162	166	6.0	8.0	0.02
ANDERSON, WAYNARD	OCT 77	128	7.6	0.6	60	60	5.0	2.0	0.05
LEGAL: 5-21-20	OCT 78	109	7.0	0.7	54	55	2.5	2.0	0.04
DOMESTIC	NOV 79	114	7.0	1.0	55	49	2.5	0.0	0.02
	NOV 80	115	7.0	0.7	60	50	7.0	0.0	0.03
L-12	OCT 81	115	7.0	1.0	55	45	12.0	0.0	0.06
	DEC 82	120	7.4	1.0	58	59	15.0	1.0	0.12
	NOV 83	119	7.6	1.0	59	65	4.0	0.0	0.06
HARMON FARMS	OCT 84	123	7.2	1.0	55	53	5.0	1.0	0.04
	NOV 85	122	7.2	1.2	57	48	6.0	1.0	0.06

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR LOUP COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SHELDON, WILSON	DEC 85	250	7.4	1.4	120	114	5.0	3.0	0.05
LEGAL: 22-21-20									
DOMESTIC									
L-13									
NAAB, GLENN	OCT 77	150	7.6	0.9	85	70	5.0	1.0	0.02
LEGAL: 29-21-19	OCT 78	146	7.4	1.0	85	95	2.5	0.0	0.04
DOMESTIC	NOV 79	158	7.2	1.6	79	75	3.0	0.0	0.01
	NOV 80	170	7.2	1.1	85	70	7.0	0.0	0.02
L-14	OCT 81	165	7.2	1.5	80	70	12.0	0.0	0.03
	DEC 82	172	7.4	1.4	82	84	8.5	0.0	0.01
	NOV 83	168	7.3	1.4	84	86	4.5	0.0	0.02
	OCT 84	166	7.4	1.4	82	72	4.5	0.0	0.02
	NOV 85	161	7.4	1.6	80	61	4.5	0.0	0.01
KOVARIK, ELDON	OCT 77	300	7.4	1.3	130	180	5.0	3.0	0.01
LEGAL: 20-21-18	OCT 78	375	7.2	1.2	199	180	2.5	1.0	0.03
DOMESTIC	NOV 79	370	7.2	2.1	201	186	3.0	0.0	0.02
	NOV 80	380	7.2	1.8	200	165	7.0	0.0	0.03
L-15	OCT 81	380	7.2	2.1	190	165	18.0	0.0	0.02
	DEC 82	400	7.4	1.9	102	186	24.5	1.0	0.01
	NOV 83	410	7.3	2.0	209	197	3.5	1.0	0.02
	OCT 84	400	7.4	1.9	197	180	5.0	1.0	0.03
	NOV 85	380	7.4	2.1	207	180	5.0	0.0	0.01
ZIEGLER, JIM	OCT 77	370	7.2	0.2	190	170	5.0	3.0	0.20
LEGAL: 28-21-17	OCT 78	350	7.1	0.5	196	170	2.5	3.0	0.04
DOMESTIC	NOV 79	350	7.1	0.6	198	181	3.0	2.0	0.02
	NOV 80	370	7.1	0.5	205	155	7.0	1.0	0.03
L-16	OCT 81	350	7.2	0.9	200	175	10.0	3.0	0.02
	DEC 82	360	7.3	0.8	194	169	17.5	2.0	0.02
	NOV 83	375	7.3	0.8	243	173	8.0	5.0	0.01
	OCT 84	390	7.2	0.7	192	178	5.5	2.0	0.03
	NOV 85	380	7.5	0.6	186	170	5.0	1.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
McINTYRE, TOM	MAY 78	500	7.1	1.0	290	240	10.0	12.0	0.00
LEGAL: 16-17-18	DEC 78	540	7.1	1.2	282	295	5.0	12.0	0.02
DOMESTIC	OCT 79	540	7.1	1.1	282	250	5.0	13.0	0.01
	NOV 80	510	7.0	1.5	280	270	7.0	12.0	0.03
N-1	DEC 81	500	7.1	1.7	280	275	16.0	7.0	0.01
	OCT 82	540	7.2	1.5	282	270	15.5	8.0	0.02
	OCT 83	550	7.5	1.5	265	290	5.0	6.0	0.02
	OCT 84	540	7.4	1.4	287	180	9.5	6.0	0.02
	OCT 85	530	7.3	1.6	255	275	6.5	11.0	0.02
IMUS, LARRY	MAY 78	560	7.2	0.1	320	300	15.0	7.0	0.00
LEGAL: 21-17-7	DEC 78	590	7.0	0.4	320	326	7.5	7.0	0.03
DOMESTIC	NOV 79	580	7.2	0.7	268	228	5.0	11.0	1.10
	NOV 80	600	7.1	0.9	330	320	10.0	14.0	0.04
	DEC 81	590	7.1	0.7	330	305	17.5	8.0	0.05
MALANDER, GALEN	OCT 82	605	7.3	0.8	310	305	20.0	18.0	4.80
N-2	OCT 83	650	7.4	1.1	345	280	8.0	11.0	0.04
	OCT 84	670	7.5	0.9	329	295	11.0	12.0	0.35
DODDS, HAROLD ->	OCT 85	550	7.2	1.1	291	280	3.5	10.0	0.02
BRUNA, FRANCIS	MAY 78	500	7.2	1.5	310	280	10.0	10.0	0.00
LEGAL: 22-17-6	DEC 78	520	7.1	1.7	283	290	5.0	12.0	0.02
DOMESTIC	NOV 79	530	7.1	1.8	312	267	6.0	8.0	0.01
	NOV 80	510	7.1	1.7	275	280	10.0	11.0	0.03
N-3	DEC 81	540	7.1	2.2	275	270	13.0	8.0	0.02
	OCT 82	530	7.2	1.8	266	242	17.5	9.0	0.03
NEW WELL	OCT 83	600	7.4	3.3	287	288	10.5	11.0	0.02
FRENZEN, MARLEN-	OCT 84	560	7.4	2.1	277	280	8.5	6.0	0.02
	OCT 85	630	7.3	3.4	271	319	14.5	21.0	0.04
SONDERUP, MILO	MAY 78	600	7.6	0.4	320	320	10.0	28.0	0.20
LEGAL: 24-17-6	DEC 78	610	7.1	2.0	310	374	5.0	26.0	0.60
DOMESTIC	NOV 79	610	7.1	2.3	288	218	6.0	18.0	0.37
	NOV 80	600	7.8	1.8	315	285	10.0	23.0	0.29
N-4	DEC 81	560	7.1	2.3	310	290	17.5	17.0	0.38
	OCT 82	610	7.6	2.0	284	271	13.0	17.0	0.13
	OCT 83	610	7.7	2.1	287	261	6.5	14.0	0.14
	OCT 84	645	7.2	2.1	313	290	6.0	16.0	0.32
	OCT 85	640	7.8	2.0	298	288	7.5	23.0	0.15
PLEBANEK, LEONARD	MAY 78	500	7.2	1.8	260	250	5.0	15.0	0.10
LEGAL: 16-17-5	DEC 78	500	7.2	1.6	258	260	5.0	15.0	0.23
DOMESTIC	NOV 79	500	7.2	1.6	260	255	4.0	11.0	0.07
	NOV 80	475	7.2	1.3	250	245	8.0	14.0	0.25
N-5	DEC 81	590	7.1	2.0	270	235	18.0	11.0	1.16
	OCT 82	500	7.3	1.6	239	245	14.0	12.0	0.14
	OCT 83	510	7.5	1.5	262	240	5.0	7.0	0.04
	OCT 84	510	7.5	1.5	248	225	7.5	9.0	0.27
	OCT 85	520	7.4	1.6	257	251	7.0	13.0	0.47

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
THOMAZIN, WILBER	MAY 78	490	7.0	0.8	260	250	5.0	13.0	0.00
LEGAL: 20-18-4	DEC 78	510	7.0	0.9	330	283	5.0	14.0	0.02
DOMESTIC	NOV 79	500	7.0	1.2	260	255	4.0	11.0	0.02
	NOV 80	500	7.0	0.9	250	235	7.0	13.0	0.02
N-6	DEC 81	490	7.0	1.2	255	250	12.0	8.0	0.03
	OCT 82	500	7.2	1.2	251	231	14.0	11.0	0.02
	OCT 83	510	7.3	1.0	272	263	5.5	7.0	0.02
	OCT 84	540	7.3	0.9	250	156	8.0	7.0	0.05
	OCT 85	505	7.1	1.0	263	254	6.5	13.0	0.02
UMBERGER, BERTHA	MAY 78	700	7.0	0.0	350	370	10.0	75.0	0.30
LEGAL: 29-17-4	DEC 78	700	7.0	0.6	350	418	7.5	72.0	1.00
DOMESTIC	NOV 79	650	7.1	0.6	337	210	7.0	25.0	0.72
	NOV 80	620	7.1	0.5	340	315	10.0	33.0	0.79
N-7	DEC 81	625	7.0	0.7	320	295	11.5	24.0	0.65
	OCT 82	840	7.2	0.5	378	299	16.0	61.0	0.64
	OCT 83	690	7.4	0.6	350	261	6.0	23.0	1.10
	OCT 84	660	7.3	0.5	341	224	5.5	20.0	0.15
	OCT 85	680	7.2	0.7	322	327	6.5	38.0	0.59
McGRAY, KEN	MAY 78	500	7.3	1.0	280	270	15.0	13.0	0.00
LEGAL: 17-16-8	DEC 78	505	7.2	1.3	284	300	5.0	13.0	0.03
DOMESTIC	NOV 79	510	7.2	1.6	260	245	5.0	10.0	0.03
	NOV 80	490	7.2	1.3	250	255	7.0	12.0	0.03
N-8	DEC 81	500	7.1	1.7	260	250	14.5	7.0	0.02
	OCT 82	510	7.3	1.3	261	255	14.0	9.0	0.03
	OCT 83	510	7.4	1.5	269	267	5.0	7.0	0.02
	OCT 84	645	7.4	4.0	303	316	7.0	15.0	0.03
	OCT 85	560	7.3	2.3	268	289	8.0	13.0	0.03
McINTYRE, GENE	MAY 78	725	7.1	8.0	300	390	20.0	70.0	0.10
LEGAL: 16-16-7	DEC 78	750	7.2	10.0	318	405	17.5	70.0	0.14
DOMESTIC	NOV 79	750	7.2	7.9	295	365	17.5	55.0	0.03
	NOV 80	750	7.2	7.5	300	360	20.0	67.0	0.05
N-9	DEC 81	760	7.0	8.3	220	330	25.0	51.0	0.03
	OCT 82	755	7.2	8.5	288	342	22.5	49.0	0.04
	OCT 83	760	7.5	8.1	306	342	20.0	40.0	0.02
	OCT 84	800	7.3	9.0	304	343	17.0	51.0	0.02
	OCT 85	760	7.2	8.6	401	362	20.0	69.0	0.04
TALLON, PAT	MAY 78	675	7.1	1.0	340	360	10.0	47.0	0.10
LEGAL: 16-16-6	DEC 78	595	7.4	1.3	334	325	5.0	17.0	0.06
DOMESTIC	NOV 79	700	7.1	2.0	358	365	6.0	32.0	0.04
	NOV 80	660	7.1	1.7	340	355	10.0	39.0	0.06
N-10	DEC 81	650	7.0	2.3	340	330	19.5	33.0	0.03
	OCT 82	560	7.3	1.7	302	385	18.0	12.0	0.27
	OCT 83	590	7.5	1.7	300	240	4.5	9.0	0.22
KONWINSKI, KEN	OCT 84	600	8.0	1.8	282	126	8.5	10.0	0.54
	OCT 85	610	7.4	1.9	302	304	9.0	17.0	0.10

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SONDERUP BROTHERS	MAY 78	890	7.0	2.8	370	410	5.0	180.0	0.00
LEGAL: 3-16-5	DEC 78	880	7.1	0.6	264	454	7.5	160.0	0.09
DOMESTIC	JAN 79	900	7.1	1.5	413			97.0	
		NO WATER WAS COLLECTED							
N-11	DEC 81	960	7.0	1.2	390	450	20.0	125.0	0.08
	OCT 82	1010	7.2	2.6	401	361	21.5	125.0	0.05
	OCT 83	1000	7.4	0.4	389	289	13.0	180.0	0.04
	OCT 84	1130	7.4	7.0	371	261	12.5	170.0	0.03
	OCT 85	955	7.4	0.6	417	381	11.5	145.0	0.05
TARNICK, RAY	MAY 78	575	7.0	1.5	170	260	20.0	95.0	0.50
LEGAL: 16-16-5	DEC 78	1245	6.9	8.6	246	725	16.0	110.0	0.50
DOMESTIC	NOV 79	1000	6.8	4.5	210	325	10.5	120.0	0.04
	NOV 80	1370	6.8	8.6	245	305	20.0	140.0	0.04
N-12A	DEC 81	590	6.9	1.6	210	230	35.5	59.0	0.04
	OCT 82	770	7.0	1.3	225	307	45.5	115.0	0.04
	OCT 83	1330	7.4	10.6	252	408	155.0	149.0	0.07
	OCT 84	1560	7.0	30.0	289	622	170.0	190.0	0.66
	OCT 85	1060	7.0	4.1	270	299	110.0	140.0	0.44
TARNICK, RAY	MAY 78	550	7.0	5.2	220	190	20.0	70.0	0.25
LEGAL: 16-16-5	DEC 78	590	7.0	3.7	207	243	17.5	88.0	0.04
STOCK	NOV 79	745	6.9	4.3	272	295	30.0	70.0	0.09
	NOV 80	690	7.0	3.3	255	255	25.0	74.0	0.11
N-12B	DEC 81	650	6.9	14.5	180	260	38.5	76.0	0.03
	OCT 82	1330	7.1	47.0	283	511	73.0	130.0	0.04
	OCT 83	1160	7.1	11.1	258	341	98.5	120.0	0.05
	OCT 84	1000	7.0	22.5	260	339	69.0	150.0	0.04
	OCT 85	800	7.3	2.3	290	308	32.0	104.0	0.05
SYSLO, HENRY	MAY 78	500	7.2	18.2	130	190	20.0	22.0	0.00
LEGAL: 17-16-4	DEC 78	525	7.2	22.0	142	325	15.0	22.0	0.02
DOMESTIC	NOV 79	620	7.2	22.0	145	270	23.0	24.0	0.02
	NOV 80	650	7.2	25.2	165	300	27.0	29.0	0.03
N-13	DEC 81	540	6.8	16.0	150	235	42.0	33.0	0.13
	OCT 82	630	7.3	29.0	143	270	33.0	21.0	0.03
	OCT 83	720	7.4	26.0	170	291	25.0	22.0	0.79
	OCT 84	890	7.4	51.0	172	339	45.0	28.0	0.03
TIBBETS, KEN	MAY 78	610	7.1	5.0	340	340	15.0	15.0	0.00
LEGAL: 9-15-8	DEC 78	650	7.0	5.3	335	350	5.0	14.0	0.03
DOMESTIC	NOV 79	650	7.1	3.9	350	335	7.0	11.0	0.02
	NOV 80	650	7.1	4.4	350	335	7.0	16.0	0.03
N-14	DEC 81	650	7.1	5.2	320	320	16.0	9.0	0.02
	OCT 82	660	7.1	5.0	328	272	15.5	11.0	0.04
	OCT 83	680	7.4	4.7	331	210	5.0	10.0	0.03
	OCT 84	700	7.4	4.8	345	309	9.0	11.0	0.02
	OCT 85	660	7.2	3.8	332	313	6.5	17.0	0.09

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SULLIVAN, DALE	MAY 78	300	7.6	0.0	180	150	5.0	3.0	0.00
LEGAL: 15-15-7	DEC 78	730	7.2	25.5	238	324	15.0	38.0	0.04
DOMESTIC	NOV 79	760	7.1	22.0	250	360	17.0	22.0	0.03
	NOV 80	680	7.1	17.8	235	310	49.0	32.0	0.04
N-15	DEC 81	560	7.1	12.8	200	240	19.0	17.0	0.03
	OCT 82	610	7.2	18.0	203	277	25.0	21.0	0.02
	OCT 83	730	7.5	24.0	203	304	15.0	19.0	0.05
	OCT 84	780	7.4	27.0	225	327	13.0	21.0	0.03
	OCT 85	760	7.2	26.0	122	317	15.0	34.0	0.04

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR PLATTE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
CLARK, TOM	JUN 78	475	7.2	0.8	240	240	10.0	8.0	0.00
LEGAL: 22-19-4	DEC 78	475	7.5	0.8	255	250	25.0	10.0	0.15
DOMESTIC	NOV 79	490	7.4	1.2	248	235	5.0	8.0	0.32
	NOV 80	475	7.2	0.7	260	245	7.0	9.0	0.11
P-1	DEC 81	480	7.2	1.5	230	220	18.0	6.0	0.09
	OCT 82	490	7.3	0.9	241	230	19.5	7.0	0.08
	OCT 83	490	7.3	1.3	248	276	6.5	6.0	0.30
	OCT 84	490	7.4	1.4	250	250	5.0	7.0	0.15
	OCT 85	490	7.5	2.1	237	233	6.0	11.0	0.82
NANSEL, LARRY	JUN 78	525	7.0	2.0	280	270	10.0	10.0	0.00
LEGAL: 10-18-3	DEC 78	550	7.0	2.3	286	299	7.5	14.0	0.03
DOMESTIC	NOV 79	550	7.0	2.3	365	262	7.0	7.0	0.01
	NOV 80	515	7.0	2.0	260	260	7.0	10.0	0.04
P-2	DEC 81	500	7.0	2.4	260	250	20.5	6.0	0.03
	OCT 82	540	7.2	2.3	263	271	14.5	6.0	0.02
	OCT 83	525	7.3	2.4	287	261	10.5	6.0	0.02
	OCT 84	540	7.3	2.4	269	210	5.0	4.0	0.02
	OCT 85	545	7.2	2.7	262	266	6.0	11.0	0.02
RAMAEKER, FRANK	JUN 78	550	7.6	0.0	290	280	10.0	30.0	0.43
LEGAL: 10-17-3	DEC 78	670	6.9	7.5	207	342	7.5	36.0	0.03
DOMESTIC	NOV 79	700	7.0	7.0	297	330	13.0	26.0	0.02
	NOV 80	710	7.0	7.2	305	340	12.0	29.0	0.03
	DEC 81	650	6.9	7.6	300	320	22.5	22.0	0.03
ELM, SAM	OCT 82	710	7.2	4.0	309	288	9.0	34.0	0.02
	OCT 83	695	7.2	4.6	296	269	6.0	25.0	0.02
P-3	OCT 84	660	7.3	3.4	301	310	8.0	28.0	0.02
	OCT 85	690	7.2	2.4	310	319	4.0	59.0	0.03
CHELOHA, FRANK	JUN 78	350	6.8	16.0	80	130	20.0	23.0	0.10
LEGAL: 22-17-2	DEC 78	330	6.9	16.0	58	127	12.5	23.0	0.07
DOMESTIC	NOV 79	450	6.9	12.8	153	158	35.0	21.0	0.09
	NOV 80	520	6.8	22.2	75	105	50.0	26.0	0.12
P-4	DEC 81	440	6.8	21.0	60	190	47.5	24.0	0.10
	OCT 82	650	7.0	31.0	58	258	59.5	31.0	0.19
	OCT 83	500	7.1	22.0	68	200	31.0	21.0	0.08
	OCT 84	420	7.2	24.0	70	171	15.5	17.0	0.17
	OCT 85	340	7.2	19.2	67	131	10.0	16.0	0.04
SCHROEDER, BILLY	JUN 78	610	7.3	0.0	300	300	10.0	75.0	0.91
LEGAL: 12-17-2	DEC 78	670	7.1	0.5	324	302	7.5	80.0	0.83
DOMESTIC	NOV 79	650	7.1	0.8	297	260	7.5	68.0	0.67
	NOV 80	650	7.1	0.5	310	320	11.0	88.0	0.85
P-5	DEC 81	700	7.1	0.6	320	310	30.5	75.0	0.71
	OCT 82	720	7.2	0.6	324	291	12.5	67.0	0.08
	OCT 83	750	7.2	0.4	327	291	9.5	65.0	0.31
	OCT 84	775	7.4	0.5	324	320	8.5	97.0	0.57
	OCT 85	730	7.2	0.5	346	355	8.5	100.0	0.24

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR PLATTE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
JARECKI, JOE	JUN 78	300	7.5	1.0	130	140	10.0	35.0	0.43
LEGAL: 21-17-1W	DEC 78	270	7.1	0.3	110	121	5.0	35.0	0.16
DOMESTIC	NOV 79	300	7.3	0.6	108	130	7.5	32.0	0.38
	NOV 80	290	7.3	0.6	110	115	11.0	37.0	0.12
P-6	DEC 81	370	7.2	0.8	110	170	28.0	60.0	0.17
	OCT 82	440	7.6	0.6	135	179	13.5	89.0	0.04
	OCT 83	450	7.6	1.1	131	178	13.0	67.0	0.03
	OCT 84	570	7.4	6.7	150	223	25.5	90.0	0.02
	OCT 85	500	7.6	1.8	143	178	21.5	96.0	0.03
LUCHSINGER,MARVIN	JUN 78	950	7.0	0.0	380	40	10.0	190.0	0.15
LEGAL: 9-17-1E	DEC 78	1950	7.0	2.2	402	806	337.0	240.0	4.25
DOMESTIC	NOV 79	2600	7.1	2.7	495	538	200.0	140.0	5.00
	NOV 80	2900	7.0	0.8	465	600	540.0	150.0	2.10
P-7	DEC 81	3000	6.9	0.9	500	640	22.0	145.0	3.60
	OCT 82	2900	7.2	0.7	469	460	26.0	155.0	2.40
	OCT 83	1490	7.2	0.6	376	319	94.5	190.0	1.94
	OCT 84	745	7.5	0.7	326	329	6.5	100.0	1.60
	OCT 85	720	7.3	0.6	318	313	6.0	93.0	1.16

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR ROCK COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
BARTA BROTHERS	OCT 77	100	7.2	0.4	50	30	2.5	0.1	0.08
LEGAL: 15-26-20	OCT 78	87	6.9	0.6	45	33	5.0	0.8	0.02
IRRIGATION	NOV 29	93	6.9	0.7	47	47	2.5	1.0	0.02
	NOV 80	94	6.9	0.5	50	30	6.0	2.0	0.04
R-1	OCT 81	90	6.9	0.7	55	50	18.0	1.0	0.04
	NOV 82	96	7.0	0.6	49	46	11.0	0.0	0.02
	DEC 83	100	7.1	0.6	53	60	2.5	0.0	0.02
	OCT 84	95	7.1	0.6	50	42	5.0	0.0	0.04
	SEP 85	94	7.1	0.7	49	38	4.5	1.0	0.03
CRAVEN, BERNARD	DEC 85	230	7.4	1.3	122	103	6.0	1.0	0.02
LEGAL: 22-26-19									
DOMESTIC									
R-2									
HIXON, C. J.	NOV 80	128	7.0	1.1	65	50	5.0	2.0	0.08
(ROSE CHURCH)	OCT 81	132	7.1	1.3	60	45	18.0	1.0	0.09
LEGAL: 28-26-18	JAN 83	130	7.1	1.8	70	49	22.5	1.0	0.13
DOMESTIC	DEC 83	136	7.5	1.3	66	42	2.5	2.0	0.65
	OCT 84	130	7.2	1.2	64	59	5.0	1.0	0.20
R-3	SEP 85	131	7.2	1.4	60	51	5.0	0.0	0.33
DEARMONT, JOHN	OCT 77	120	7.7	0.5	75	60	2.5	0.0	0.01
LEGAL: 13-26-20	OCT 78	130	7.4	0.7	75	60	12.5	0.0	0.02
DOMESTIC	NOV 79	145	7.5	1.0	77	73	2.5	1.0	0.02
	NOV 80	145	7.4	0.9	15	60	5.0	0.0	0.02
R-4	OCT 81	140	7.4	1.0	70	55	18.0	1.0	0.02
	NOV 82	154	7.6	0.9	77	60	31.5	1.0	0.02
	JAN 84	157	7.7	0.8	73	62	5.0	0.0	0.02
	OCT 84	150	7.6	1.0	78	70	5.0	0.0	0.02
	SEP 85	152	7.6	1.1	73	60	5.5	1.0	0.03
ALLEN, J. R.	OCT 77	108	7.0	0.8	50	30	2.5	0.0	0.01
LEGAL: 22-25-19	OCT 78	93	6.9	0.8	45	35	2.5	0.0	0.02
LIVESTOCK	NOV 79	134	7.1	0.7	26	51	3.0	0.0	0.01
	NOV 80	95	6.9	0.9	50	40	6.0	0.0	0.06
R-5	OCT 81	95	6.9	1.3	50	40	12.0	1.0	0.05
	NOV 82	87	6.9	0.6	40	26	13.5	2.0	0.06
	83	NO	SAMPLE	COLLECTED					
	OCT 84	102	7.1	1.3	46	41	6.0	1.0	0.40
	SEP 85	102	7.0	1.5	41	37	6.0	0.0	0.05
SNYDER, LEE	OCT 77	250	6.9	0.6	130	115	5.0	13.0	0.05
LEGAL: 22-25-18	OCT 78	135	6.8	0.7	100	60	25.0	0.5	0.07
DOMESTIC	NOV 79	250	6.7	1.1	122	118	5.0	7.0	0.10
	NOV 80	190	6.8	0.7	90	65	7.0	5.0	0.04
BURT, KEITH	OCT 81	93	6.8	0.8	90	80	12.0	1.0	0.04
R-6	NOV 82	280	7.0	0.9	126	70	26.0	6.0	0.16
	DEC 83	300	6.8	0.8	133	109	6.0	7.0	0.08
KNORR, DON	OCT 84	119	7.3	0.7	63	67	5.0	0.0	0.02
	SEP 85	162	6.9	0.9	72	59	6.5	1.0	0.08

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR ROCK COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
JORDON, ROYCE	DEC 85	104	7.0	1.2	54	47	6.0	1.0	0.03
LEGAL: 9-25-17									
DOMESTIC									
R-7									
GURNEY, G. W.	OCT 77	110	7.2	1.1	70	30	5.0	1.0	0.05
LEGAL: 27-25-17	OCT 78	103	6.9	1.3	40	32	5.0	1.0	0.30
LIVESTOCK	NOV 29	105	6.9	2.5	43	47	5.0	0.0	0.03
	NOV 80	WELL WAS TURNED OFF							
R-8	OCT 81	110	6.8	2.4	50	50	12.0	2.0	0.05
	NOV 82	111	7.2	2.2	55	45	12.5	7.0	1.61
	DEC 83	122	7.2	2.3	51	55	3.0	6.0	1.15
	OCT 84	106	7.4	2.5	38	50	6.0	43.0	7.25
	SEP 85	123	7.0	3.3	48	34	5.5	0.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR SHERMAN CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SCHULTZ, DON	APR 78	550	7.3	1.0	280	270	10.0	9.0	0.00
LEGAL: 16-16-16	DEC 78	610	7.1	0.9	279	322	7.5	10.5	0.03
DOMESTIC	NOV 79	560	7.2	1.2	282	230	7.5	7.0	0.02
	DEC 80	550	7.1	0.8	315	265	12.0	11.0	0.04
S-1	DEC 81	575	7.0	1.2	290	265	17.0	6.0	0.02
	JAN 83	590	7.3	1.2	281	273	22.0	8.0	0.02
	DEC 83	580	7.3	1.0	295	284	6.5	8.0	0.01
	NOV 84	590	7.4	1.2	296	274	9.0	5.0	0.02
	NOV 85	600	7.3	1.3	288	279	5.5	11.0	0.02
CARKOSKI, JEROME	APR 78	1000	7.2	3.5	470	550	25.0	10.0	0.05
LEGAL: 11-16-15	DEC 78	1100	7.3	23.5	499	563	23.0	14.0	0.17
DOMESTIC	NOV 79	1180	7.2	13.5	453	195	30.0	15.0	0.18
	DEC 80	1200	7.1	13.8	500	580	30.0	24.0	1.00
S-2	DEC 81	1140	7.1	19.5	505	395	31.5	18.0	0.40
	JAN 83	1060	7.4	16.9	429	521	41.0	21.0	0.09
	DEC 83	1040	7.2	14.6	469	418	18.5	23.0	0.19
	NOV 84	1325	7.2	26.0	431	530	38.0	21.0	0.16
	NOV 85	950	7.3	10.2	411	425	15.5	27.0	0.04
MROCZEK, RAY	APR 78	475	7.5	2.5	270	230	10.0	6.0	0.10
LEGAL: 15-16-14	DEC 78	475	7.3	2.8	239	247	5.0	7.0	0.12
DOMESTIC	NOV 79	460	7.3	3.1	235	225	6.0	4.0	0.04
	DEC 80	615	7.1	5.5	290	300	19.0	16.0	0.03
S-3	DEC 81	650	7.0	4.7	300	245	25.0	8.0	0.04
	JAN 83	600	7.3	5.3	201	330	25.0	9.0	0.02
	DEC 83	740	7.1	4.0	332	328	8.0	13.0	0.02
	NOV 84	560	7.2	5.7	259	281	9.5	8.0	0.02
	NOV 85	590	7.0	5.4	263	288	9.0	18.0	0.03
STANCZYK,	APR 78	475	7.5	0.8	270	240	10.0	5.0	0.00
THOMAS JR.	DEC 78	490	7.1	0.8	270	269	5.0	6.0	0.02
LEGAL: 27-16-13	NOV 79	490	7.2	1.1	240	184	5.0	4.0	0.03
DOMESTIC	DEC 80	510	7.2	0.8	275	240	13.0	2.0	0.04
	DEC 81	490	7.2	1.2	260	200	15.5	6.0	0.02
S-4	JAN 83	500	7.3	1.6	257	245	29.0	2.0	0.02
	DEC 83	520	7.2	1.0	266	271	7.5	6.0	0.03
	NOV 84	500	7.3	1.2	251	229	6.0	3.0	0.03
	NOV 85	520	7.3	1.3	260	244	6.5	2.0	0.02
MACIEJEWSKI,	APR 78	500	7.7	0.5	260	280	10.0	12.0	0.00
ROMAN	DEC 78	540	7.4	0.5	285	298	5.0	12.0	0.08
LEGAL: 21-15-16	NOV 79	520	7.6	0.6	285	250	7.5	8.0	0.06
DOMESTIC	DEC 80	490	7.4	0.3	260	245	14.0	12.0	0.05
	DEC 81	500	7.3	0.5	270	255	17.5	8.0	0.04
S-5	JAN 83	540	7.6	1.0	281	252	18.0	9.0	0.04
	DEC 83	540	7.6	0.4	268	260	8.0	8.0	0.04
	NOV 84	540	7.6	0.7	265	241	5.5	6.0	0.05
	NOV 85	555	7.6	0.7	264	254	9.5	14.0	0.06

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR SHERMAN CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
ELOE, MELVIN	APR 78	525	7.2	3.0	280	270	10.0	11.0	0.00
LEGAL: 15-15-15	DEC 78	545	7.2	1.7	277	299	5.0	11.0	0.01
DOMESTIC	NOV 79	560	7.2	3.0	283	223	8.0	9.0	0.03
	DEC 80	540	7.1	1.7	275	260	10.0	13.0	0.03
S-6	DEC 81	540	7.1	2.2	265	240	18.0	7.0	0.02
	JAN 83	620	7.5	5.1	297	291	25.5	9.0	0.01
	DEC 83	575	7.3	2.1	268	280	8.0	10.0	0.02
	NOV 84	640	7.3	5.4	371	286	11.0	6.0	0.03
	NOV 85	595	7.4	2.9	276	260	14.5	15.0	0.03
MOSTEK, MELVIN	APR 78	510	7.1	1.0	290	260	10.0	5.0	0.10
LEGAL: 22-15-14	DEC 78	570	7.2	1.2	325	334	7.5	8.0	0.03
DOMESTIC	NOV 79	510	7.2	1.4	255	250	5.0	5.0	0.03
	DEC 80	570	7.2	1.0	300	295	13.0	7.0	0.04
S-7	DEC 81	500	7.1	1.3	260	270	15.0	6.0	0.03
	JAN 83	510	1.3	1.5	262	247	19.0	4.0	0.01
	DEC 83	540	7.2	1.1	273	262	6.0	7.0	0.01
	NOV 84	530	7.3	1.3	261	258	8.5	4.0	0.03
	NOV 85	550	7.3	1.4	281	283	8.0	9.0	0.02
KASLON, LEO	APR 78	425	7.2	1.0	260	210	10.0	7.0	0.00
LEGAL: 16-15-13	DEC 78	440	7.2	1.0	211	233	2.5	9.0	0.02
DOMESTIC	NOV 79	325	7.2	1.1	230	223	2.0	6.0	0.03
	DEC 80	450	7.2	0.9	230	210	11.0	11.0	0.03
S-8	DEC 81	445	7.0	1.3	115	210	12.5	6.0	0.02
	JAN 83	440	7.4	1.5	223	214	14.0	5.0	0.01
	DEC 83	450	7.3	1.0	240	240	4.5	8.0	0.02
	NOV 84	450	7.3	1.4	231	223	5.0	7.0	0.62
	NOV 85	440	7.3	1.3	211	204	3.5	10.0	0.02
CORBIN, ART	APR 78	550	7.3	1.0	260	290	15.0	12.0	0.05
LEGAL: 16-14-16	DEC 78	580	7.1	1.1	305	335	12.5	14.0	0.03
DOMESTIC	NOV 79	560	7.2	1.0	270	202	12.0	10.0	0.04
	DEC 80	580	7.2	0.9	320	290	19.0	12.0	0.03
S-9	DEC 81	570	7.1	1.2	280	250	26.5	10.0	0.03
	JAN 83	600	7.4	1.2	295	297	31.0	12.0	0.02
	DEC 83	610	7.4	1.0	225	280	14.5	9.0	0.03
	NOV 84	595	7.5	1.1	196	260	14.0	8.0	0.29
	NOV 85	600	7.3	1.3	281	278	18.5	15.0	0.18
BECK, DELWIN	APR 78	490	7.1	1.5	230	280	5.0	24.0	0.00
LEGAL: 12-14-16	DEC 78	520	7.1	1.5	266	299	2.5	24.0	0.04
DOMESTIC	NOV 79	495	7.2	1.7	230	230	5.0	18.0	0.03
	DEC 80	500	7.1	1.5	240	250	10.0	22.0	0.04
S-10	DEC 81	500	7.0	1.7	240	250	16.5	16.0	0.02
	JAN 83	490	7.3	2.2	241	347	10.5	22.0	0.02
	DEC 83	510	7.1	1.6	243	251	6.0	18.0	0.02
	NOV 84	520	7.3	1.8	226	210	6.0	14.0	0.02
	NOV 85	540	7.4	1.9	243	241	7.5	5.3	0.10

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR SHERMAN CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
OSEKA, CLARENCE	APR 78	450	7.2	1.0	250	230	5.0	5.0	0.00
LEGAL: 21-14-15	DEC 78	460	7.2	0.9	249	282	7.5	4.0	0.01
DOMESTIC	NOV 79	450	7.3	1.1	337	236	8.0	3.0	0.02
	DEC 80	450	7.2	0.7	250	230	15.0	0.0	0.03
S-11	DEC 81	450	7.1	1.0	245	210	18.5	3.0	0.02
	JAN 83	490	7.4	1.3	233	125	14.5	5.0	0.02
	DEC 83	480	7.3	0.9	266	266	7.5	6.0	0.02
	NOV 84	510	7.4	1.0	243	249	17.5	4.0	0.03
	NOV 85	495	7.5	1.1	230	232	9.5	0.0	0.08
REED, WALTER	APR 78	600	7.4	0.2	280	220	10.0	47.0	0.07
LEGAL: 15-14-14	DEC 78	790	7.3	0.4	416	382	7.5	100.0	0.19
DOMESTIC	NOV 79	NO WATER RUNNING							
	DEC 80	900	7.3	0.4	420	370	15.0	120.0	0.25
S-12	DEC 81	890	7.2	0.6	420	270	21.0	80.0	0.39
	JAN 83	815	7.4	0.9	387	290	18.0	44.0	0.24
	DEC 83	750	7.3	0.4	362	250	9.0	41.0	0.19
	NOV 84	780	7.4	0.7	385	300	7.0	43.0	0.21
PLACEK, JOHN ->	NOV 85	500	7.4	0.8	249	240	6.0	3.0	0.44
GOC, CLARENCE	APR 78	450	6.8	1.0	240	240	10.0	0.0	0.05
LEGAL: 16-14-13	DEC 78	460	7.2	1.7	270	270	2.5	2.0	0.03
DOMESTIC	NOV 79	470	7.2	2.0	235	338	3.0	0.0	0.02
	DEC 80	475	7.2	1.6	260	245	12.0	4.0	0.03
S-13	DEC 81	470	7.1	2.2	250	245	11.5	6.0	0.04
	JAN 83	505	7.4	2.7	269	259	12.0	1.0	0.01
	DEC 83	500	7.2	2.1	260	250	3.5	3.0	0.03
	NOV 84	505	7.4	2.1	264	268	5.5	1.0	0.02
	NOV 85	570	7.2	2.1	256	250	5.0	0.0	0.01
SIEGEL, ED	APR 78	450	7.3	0.8	260	270	10.0	5.0	0.00
LEDGAL: 22-13-16	DEC 78	470	7.2	1.0	276	278	7.5	6.0	0.04
DOMESTIC	NOV 79	460	7.3	1.2	245	236	7.0	4.0	0.02
	DEC 80	475	7.2	0.9	270	240	12.0	2.0	0.03
S-14	DEC 81	460	7.2	1.2	260	230	16.0	6.0	0.03
	JAN 83	500	7.3	1.6	246	232	14.5	3.0	0.02
	DEC 83	495	7.4	1.0	252	245	6.5	6.0	0.03
	NOV 84	495	7.6	1.1	243	243	9.0	1.0	0.02
	NOV 85	500	7.3	1.2	258	247	8.0	3.0	0.02
PAVLIK, JIM	APR 78	510	7.3	2.0	280	270	15.0	8.0	0.30
LEGAL: 22-13-15	DEC 78	520	7.6	0.5	290	360	10.0	9.0	0.04
DOMESTIC	NOV 79	500	7.8	0.6	245	243	12.0	7.0	0.04
	DEC 80	500	7.4	0.3	265	260	18.0	10.0	0.04
S-15	DEC 81	500	7.4	0.9	260	170	23.0	7.0	0.19
	JAN 83	520	7.8	0.8	269	259	23.0	7.0	0.04
	DEC 83	525	7.5	0.4	281	251	15.0	8.0	0.03
	NOV 84	540	7.6	0.7	262	257	14.5	4.0	0.07
	NOV 85	550	7.6	0.6	269	253	13.0	11.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR SHERMAN CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LANDRIGAN, PAUL	APR 78	400	7.2	0.8	250	220	5.0	0.0	0.00
LEGAL: 10-14-13	DEC 78	450	7.6	0.9	231	261	5.0	5.0	0.12
DOMESTIC	NOV 79	430	7.8	1.0	234	223	6.0	3.0	0.06
	DEC 80	450	7.6	0.8	245	220	10.0	0.0	0.06
S-16	DEC 81	440	7.2	1.0	225	180	15.5	3.0	0.04
	JAN 83	450	7.6	1.2	239	221	9.5	2.0	0.02
	DEC 83	450	7.7	0.8	227	226	7.0	3.0	0.03
	NOV 84	450	7.6	1.1	228	219	7.0	5.0	0.05
	NOV 85	480	7.3	1.1	240	221	5.0	3.0	0.26
ZINNEL, BILL	APR 78	500	7.2	0.8	260	260	15.0	10.0	0.12
LEGAL: 22-13-14	DEC 78	500	7.2	1.0	267	349	5.0	10.0	0.00
DOMESTIC	NOV 79	500	7.2	1.0	225	230	7.0	7.0	0.03
	DEC 80	500	7.1	0.9	250	245	10.0	12.0	0.03
S-17	DEC 81	540	7.1	1.1	255	240	20.0	8.0	0.03
	JAN 83	450	7.4	2.0	237	236	15.0	3.0	0.02
	DEC 83	530	7.4	0.9	264	264	9.0	9.0	0.02
	NOV 84	530	7.5	1.0	263	268	10.0	6.0	0.02
	NOV 85	500	7.4	0.8	249	240	6.0	3.0	0.44
McDONALD, NORMAN	APR 78	475	7.1	1.5	250	250	10.0	9.0	0.00
LEGAL: 15-13-13	DEC 78	500	7.2	3.3	241	265	5.0	10.0	0.03
DOMESTIC	NOV 79	540	7.1	6.5	250	265	10.0	8.0	0.02
	DEC 80	480	7.2	2.4	260	240	8.0	12.0	0.03
S-18	DEC 81	480	7.0	1.4	245	210	15.5	6.0	0.02
	JAN 83	490	7.4	2.0	242	252	23.5	6.0	0.01
	DEC 83	500	7.3	2.6	252	234	5.5	9.0	0.02
	NOV 84	600	7.4	6.6	255	293	13.0	4.0	0.01
	NOV 85	560	7.3	4.8	249	275	8.0	13.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR VALLEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HULINSKY, EDWARD	MAR 78	510	7.6	2.1	280	260	10.0	2.0	0.05
LEGAL: 21-20-16	NOV 78	540	7.2	3.6	255	260	5.0	9.0	0.08
DOMESTIC	NOV 79	550	7.4	3.6	270	302	5.5	7.0	0.08
	DEC 80	550	7.4	3.3	275	280	10.0	28.0	0.03
V-1	DEC 81	540	7.4	3.9	260	260	16.0	8.0	0.23
	JAN 83	590	7.6	3.7	282	310	15.0	9.0	0.27
	DEC 83	600	7.4	3.7	292	291	5.0	8.0	0.06
	DEC 84	630	7.9	4.3	296	262	5.5	7.0	0.23
	DEC 85	600	8.0	3.7	296	290	8.0	10.0	0.03
DUBAS, FRED	MAR 78	500	7.1	0.9	260	240	5.0	10.0	0.00
LEGAL: 15-20-15	NOV 78	620	6.9	1.8	380	315	5.0	18.0	0.03
DOMESTIC	NOV 79	520	7.1	1.8	274	247	5.0	10.0	0.05
	DEC 80	550	7.0	2.0	280	270	10.0	17.0	0.04
V-2	DEC 81	500	7.1	2.1	260	220	16.5	10.0	0.03
	JAN 83	580	7.2	2.6	287	290	20.5	16.0	0.02
	DEC 83	545	7.4	2.3	250	259	6.0	12.0	0.02
	DEC 84	595	7.2	3.3	273	262	6.0	8.0	0.02
	DEC 85	600	7.2	3.6	272	261	9.0	16.0	0.03
MISKA, JOE	MAR 78	475	8.0	1.9	220	200	5.0	8.0	0.03
LEGAL: 22-10-14	NOV 78	475	7.3	3.4	220	233	5.0	9.0	0.05
DOMESTIC	NOV 79	490	7.6	3.8	240	232	6.0	7.0	0.04
	DEC 80	490	7.8	2.6	250	235	10.0	10.0	0.03
V-3	DEC 81	455	7.6	3.4	240	240	17.5	7.0	0.05
	JAN 82	520	7.6	3.2	242	258	16.0	11.0	0.04
	DEC 83	545	7.6	3.2	254	271	5.5	8.0	0.04
	DEC 84	550	7.5	3.7	267	244	5.5	6.0	0.03
	DEC 85	540	7.6	3.4	260	268	7.5	12.0	0.04
SEVENKER, MRS. ED	MAR 78	650	7.5	0.2	300	300	10.0	45.0	0.02
LEGAL: 16-20-13	NOV 78	675	7.4	0.8	210	390	5.0	53.0	0.05
DOMESTIC	NOV 79	680	8.0	0.8	331	172	4.0	34.0	0.08
	DEC 80	700	7.3	0.5	345	350	11.0	40.0	0.07
V-4	DEC 81	750	7.7	0.7	380	330	24.0	25.0	0.12
	JAN 83	113	7.8	0.7	411	377	22.0	33.0	0.18
	DEC 83	780	7.9	0.6	374	380	6.5	27.0	0.08
TIMMERMAN, DAN	DEC 84	210	7.5	1.0	109	96	5.0	1.0	0.02
NEW WELL ->	DEC 85	260	7.2	1.4	130	118	4.5	3.0	0.03
BRUHA, EDWARD O.	MAR 78	450	7.4	1.5	280	260	15.0	12.0	0.05
LEGAL: 15-19-16	NOV 78	450	7.4	1.8	238	240	5.0	10.0	0.12
DOMESTIC	NOV 79	460	7.6	2.7	240	231	6.0	8.0	0.13
	DEC 80	450	7.5	2.2	240	235	12.0	11.0	0.04
V-5	DEC 81	450	7.3	2.3	225	220	20.0	7.0	0.07
	JAN 83	460	7.8	2.3	228	231	14.0	9.0	0.06
	DEC 83	475	7.7	2.4	226	267	6.5	8.0	0.07
	DEC 84	500	7.6	2.7	231	236	7.5	7.0	0.09
	DEC 85	500	7.6	2.6	233	229	7.0	14.0	0.07

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR VALLEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
POKORNEY, ALBERT	MAR 78	650	7.5	0.5	340	340	20.0	20.0	0.02
LEGAL: 16-19-15	NOV 78	600	7.1	0.6	360	303	12.5	19.0	0.17
DOMESTIC	NOV 79	660	7.1	0.6	355	200	11.0	14.0	0.60
	DEC 80	655	7.1	0.4	340	310	15.0	17.0	0.10
V-6	DEC 81	625	7.6	0.7	330	260	27.0	13.0	0.12
	JAN 83	680	7.4	0.8	340	274	31.0	17.0	2.40
	DEC 83	695	7.6	0.6	351	218	8.5	14.0	0.10
	DEC 84	705	7.6	0.8	350	293	13.5	10.0	0.08
	DEC 85	710	7.6	0.8	341	323	10.0	20.0	0.08
LOWER LOUP NRD	NOV 79	650	7.2	3.5	183	293	7.0	120.0	0.03
ORD	DEC 80	650	7.0	1.4	335	310	8.0	70.0	0.05
DOMESTIC	DEC 81	640	7.1	2.6	280	295	21.5	80.0	0.02
	JAN 82	700	7.1	0.8	358	288	15.0	39.0	0.04
NEW WELL->	DEC 83	710	7.1	0.5	341	260	5.0	31.0	0.10
V-7	DEC 84	700	7.1	0.7	346	312	5.0	28.0	0.10
	DEC 85	720	7.2	0.6	228	301	5.0	48.0	0.07
MALY, FRANK	MAR 78	650	7.5	0.2	300	300	10.0	45.0	0.02
LEGAL: 10-19-13	NOV 78	675	7.4	0.8	210	390	5.0	53.0	0.05
DOMESTIC	NOV 79	680	8.0	0.8	331	172	4.0	34.0	0.08
	DEC 80	700	7.3	0.5	345	350	11.0	40.0	0.07
V-8	DEC 81	750	7.7	0.7	380	330	24.0	25.0	0.12
	JAN 83	113	7.8	0.7	411	377	22.0	33.0	0.18
	DEC 83	780	7.9	0.6	374	380	6.5	27.0	0.08
	DEC 84	600	7.9	0.7	420	367	5.5	25.0	0.13
	DEC 85	820	8.0	0.7	413	369	5.5	32.0	0.11
SHOEMAKER, DAVID	MAR 78	475	7.3	0.9	240	220	5.0	7.0	0.02
LEGAL: 26-19-13	NOV 78	480	7.2	1.7	234	229	5.0	6.9	0.03
DOMESTIC	NOV 79	495	7.3	1.7	259	208	5.0	7.0	0.03
	DEC 80	520	7.2	2.7	270	250	12.0	9.0	0.03
V-9	DEC 81	500	7.2	4.5	245	230	26.0	6.0	0.02
	JAN 83	510	7.3	3.5	236	227	31.5	7.0	0.02
	DEC 83	570	7.1	4.5	253	287	9.0	9.0	0.04
	DEC 84	580	7.4	5.0	277	267	11.5	6.0	0.02
	DEC 85	590	7.2	5.5	251	270	9.0	13.0	0.02
ZADINA, DALE	MAR 78	450	7.8	2.0	220	220	10.0	17.0	0.03
LEGAL: 2-18-16	NOV 78	450	7.6	2.4	220	212	7.5	15.5	0.18
DOMESTIC	NOV 79	510	7.2	2.0	257	208	4.0	11.0	0.26
	DEC 80	500	7.1	1.6	275	225	15.0	15.0	0.06
V-10	DEC 81	500	7.2	1.8	265	260	30.5	8.0	0.03
	JAN 83	540	7.2	1.7	273	242	17.5	15.0	0.02
	DEC 83	545	7.2	1.7	258	262	5.0	11.0	0.03
	DEC 84	550	7.3	2.1	261	236	4.0	7.0	0.01
	DEC 85	550	7.2	2.0	263	270	5.0	17.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR VALLEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
WAGNER, DON	MAR 78	590	7.6	0.8	280	270	10.0	38.0	0.00
LEGAL: 2-18-15	OCT 78	560	7.2	1.3	292	306	5.0	32.5	0.08
DOMESTIC	NOV 79	600	7.3	1.8	285	290	5.0	33.0	1.80
	DEC 80	575	7.2	0.4	300	285	15.0	35.0	0.16
V-11	DEC 81	580	7.5	1.7	305	280	17.5	23.0	0.05
	JAN 83	600	7.2	0.6	284	260	14.0	33.0	0.94
	DEC 83	600	8.0	1.2	295	287	3.0	26.0	0.04
	DEC 84	610	7.2	0.7	281	346	5.0	22.0	1.40
	DEC 85	605	7.7	1.5	292	319	9.5	34.0	0.05
ZANGGER, CHARLIE	MAR 78	350	7.2	0.8	180	140	10.0	9.0	0.00
LEGAL: 3-18-13	NOV 78	360	7.1	0.9	166	166	5.0	7.7	0.03
DOMESTIC	NOV 79	400	7.1	3.5	185	185	5.0	8.0	0.03
	DEC 80	350	7.2	0.7	180	160	10.0	7.0	0.03
V-12	DEC 81	350	7.2	1.5	185	170	19.0	7.0	0.03
	JAN 83	390	7.4	3.2	196	185	9.5	7.0	0.02
	DEC 83	350	7.4	3.0	172	180	5.0	7.0	0.04
	DEC 84	510	7.2	12.3	182	224	7.5	6.0	0.02
	DEC 85	560	7.4	9.9	237	263	6.0	16.0	0.03
ANDERSON, BERNARD	MAR 78	600	7.0	1.0	300	300	10.0	30.0	0.01
LEGAL: 27-18-16	OCT 78	590	7.0	1.6	310	313	5.0	27.0	0.06
DOMESTIC	NOV 79	630	7.1	2.1	318	287	5.0	223.0	0.03
	DEC 80	610	7.0	2.0	220	310	12.0	25.0	0.04
V-13	DEC 81	610	7.0	2.6	300	330	24.0	19.0	0.03
	JAN 83	650	7.1	3.3	303	316	13.0	26.0	0.02
	DEC 83	650	7.3	2.1	293	335	8.0	21.0	0.01
	DEC 84	670	7.2	2.5	308	309	9.0	17.0	0.01
	DEC 85	660	7.2	2.6	309	334	5.5	33.0	0.03
RICE, MIKE	MAR 78	1000	7.1	1.0	320	560	10.0	290.0	0.02
LEGAL: 15-18-15	OCT 78	1110	7.1	1.5	343	548	7.5	265.0	0.08
DOMESTIC	NOV 79	1040	7.0	1.5	324	205	6.0	215.0	0.07
	DEC 80	900	7.0	1.7	325	395	12.0	215.0	0.08
V-14	DEC 81	1050	7.0	1.7	350	525	23.5	285.0	0.07
	JAN 83	1070	7.1	1.9	340	485	21.5	405.0	0.04
	DEC 83	1110	7.1	1.8	351	561	8.5	385.0	0.03
	DEC 84	1500	7.1	2.7	360	662	23.0	600.0	0.03
	DEC 85	1620	7.2	3.0	364		31.5	695.0	0.04
GEWEKE, LLOYD	MAR 78	600	7.1	0.7	280	260	10.0	37.0	0.00
LEGAL: 22-18-14	NOV 78	590	7.1	1.7	300	300	5.0	46.0	0.03
DOMESTIC	NOV 79	600	7.1	1.7	288	275	6.0	23.0	0.03
	DEC 80	580	7.0	1.6	290	285	10.0	30.0	0.04
V-15	DEC 81	575	7.0	1.7	290	260	21.5	22.0	0.03
	JAN 83	620	7.2	1.5	298	291	14.0	28.0	0.01
	DEC 83	630	7.1	1.6	292	289	5.0	24.0	0.02
	DEC 84	630	7.2	1.8	301	297	7.5	26.0	0.02
	DEC 85	610	7.2	1.8	291	312	5.5	32.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR VALLEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
WHITE, LARRY									
LEGAL: 21-18-13	NOV 78	610	7.3	0.9	302	338	5.0	66.0	0.15
DOMESTIC	NOV 79	650	7.4	1.2	290	370	6.0	56.0	0.27
	DEC 80	650	7.0	0.6	310	310	12.0	57.0	0.15
V-16	DEC 81	625	7.1	0.9	310	320	5.0	45.0	0.12
	JAN 83	660	7.2	0.8	286	310	18.0	58.0	0.02
	DEC 83	680	7.0	0.8	299	337	5.0	43.0	0.04
	DEC 84	680	7.1	0.9	294	304	5.0	41.0	0.05
	DEC 85	725	7.2	1.4	293	305	9.5	61.0	0.04
MASTERS, ALLEN	MAR 78	425	7.3	0.2	240	200	10.0	8.0	0.01
LEGAL: 14-18-14	OCT 78	420	7.3	1.0	227	219	5.0	8.0	0.06
DOMESTIC	NOV 79	450	7.2	1.2	230	215	5.0	6.0	0.02
	DEC 80	450	7.2	0.9	235	200	10.0	11.0	0.04
V-17	DEC 81	450	7.2	1.2	140	210	23.5	7.0	0.02
	JAN 83	475	7.4	1.1	249	240	10.0	6.0	0.02
	DEC 83	480	7.3	1.0	231	229	5.5	7.0	0.02
	DEC 84	500	7.4	1.4	246	227	6.5	4.0	0.02
	DEC 85	470	7.2	1.4	246	263	6.5	9.0	0.01
LUTZ, ROBERT	MAR 78	525	7.8	0.3	240	260	15.0	26.0	0.02
LEGAL: 21-17-15	OCT 78	520	7.5	1.2	275	285	5.0	22.5	0.09
DOMESTIC	NOV 79	555	7.5	1.5	267	258	6.0	18.0	0.09
	DEC 80	550	7.4	1.3	285	260	15.0	22.0	0.10
V-18	DEC 81	550	7.7	1.7	270	295	24.0	16.0	0.14
	JAN 83	560	7.7	1.4	285	279	22.0	21.0	0.06
	DEC 83	570	7.9	1.4	262	322	10.0	19.0	0.06
	DEC 84	2000	7.1	12.7	380	INT.	25.0	900.0	0.01
	DEC 85	1850	7.1	12.9	357		24.0	750.0	0.07
EDWARDS, LEONARD	MAR 78	500	7.2	0.2	160	140	10.0	12.0	0.00
LEGAL: 16-17-15	OCT 78	500	7.2	1.0	271	266	7.2	12.5	0.04
DOMESTIC	NOV 79	525	7.3	1.2	253	135	7.5	8.0	0.02
	DEC 80	520	7.1	0.9	270	270	17.0	12.0	0.04
V-19	DEC 81	510	7.3	1.2	270	220	23.0	8.0	0.04
	JAN 83	510	7.3	1.1	272	259	22.0	11.0	0.02
	DEC 83	520	7.3	1.0	270	666	6.5	9.0	0.02
	DEC 84	545	7.2	1.5	250	295	5.5	7.0	0.01
	DEC 85	550	7.3	1.3	247	256	6.0	12.0	0.01
SCHUDEL, MAYNARD	MAR 78	550	7.4	0.3	280	260	15.0	12.0	0.02
LEGAL: 16-17-13	OCT 78	530	7.1	1.0	294	286	7.5	10.0	0.05
DOMESTIC	NOV 79	775	7.1	1.5	270	275	9.0	9.0	0.03
	DEC 80	570	7.1	1.2	295	220	15.0	17.0	0.04
V-20	DEC 81	550	7.0	1.5	275	255	19.0	7.0	0.03
	JAN 83	600	7.2	1.3	300	284	16.0	10.0	0.02
	DEC 83	600	7.1	1.4	291	202	8.5	11.0	0.03
	DEC 84	600	7.2	1.8	282	269	11.0	6.0	0.01
	DEC 85	605	7.2	2.0	301	292	11.5	15.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
WAGONHAMMER WEST	NOV 77	165	7.4	0.4	90	80	0.0	2.0	0.40
LEGAL: 21-23-12	NOV 78	157	7.3	0.6	85	72	2.5	0.5	0.03
STOCK	NOV 79	160	7.4	1.0	93	76	2.0	0.0	0.02
->	OCT 80	175	7.1	1.1	80	75	7.0	1.0	0.05
NEW LOC.-	DEC 81	180	7.1	1.8	90	90	12.5	1.0	0.03
RANCH HOUSE	NOV 82	176	7.2	1.5	91	70	20.0	2.0	0.17
DOMESTIC	OCT 83	184	7.2	1.8	90	92	5.0	0.0	0.03
W-1	OCT 84	178	7.2	1.8	89	88	5.0	2.0	0.07
BOS, DEAN	OCT 80	150	7.8	2.7	60	65	6.0	6.0	0.02
LEGAL: 12-23-12	DEC 81	140	7.1	1.2	65	50	20.0	3.0	0.03
DOMESTIC	JAN 83	145	7.3	1.0	69	84	8.0	0.0	0.02
	NOV 83	174	7.3	0.7	91	69	16.5	0.0	0.03
W-2	OCT 84	170	7.4	0.7	90	75	5.0	1.0	0.04
	DEC 85	169	7.3	1.0	7.9	78	5.0	2.0	0.02
PALMER, KEITH	NOV 77	170	7.4	0.4	100	80	5.0	2.0	0.20
LEGAL: 8-23-11	NOV 78	165	7.2	0.6	89	82	2.5	0.0	0.03
DOMISTIC	NOV 79	170	7.2	1.2	93	70	2.0	0.0	0.03
	FEB 80	170	7.2	1.3	90	78	6.0	0.0	0.05
	OCT 80	170	7.2	0.6	80	75	7.0	1.0	0.09
GENEREUX, LOUIS ->	DEC 81	143	6.9	1.3	80	60	12.5	2.0	0.02
	NOV 82	152	7.1	1.1	79	67	11.5	0.0	0.01
W-3	OCT 83	154	7.2	1.2	74	68	5.0	0.0	0.02
	OCT 84	154	7.2	1.4	77	56	5.5	1.0	0.01
	DEC 85			1.0					
BUHLMANN, JOHN	OCT 79	130	7.5	0.9	46	59	2.0	1.5	0.02
LEGAL: 13-23-11	FEB 80	128	7.4	1.6	60	55	4.0	1.0	0.01
STOCK	OCT 80	130	7.4	0.9	55	55	4.0	1.0	0.03
	DEC 81	117	7.0	1.4	60	70	10.0	4.0	0.03
W-4	JAN 83	129	7.2	1.4	42	60	9.0	0.0	0.02
	OCT 83	133	7.5	1.0	67	55	3.5	3.0	0.01
	DEC 85			1.0					
HEADQUARTERS RANCH	NOV 77	139	7.2	1.1	70	73	2.5	0.9	0.03
N & M FARMS	NOV 78	154	7.4	1.5	80	81	2.0	6.0	0.11
ROGER RACE	NOV 79	145	7.3	0.9	57	65	2.0	1.0	0.02
LEGAL:	OCT 80	145	7.4	0.7	65	65	5.0	1.0	0.03
DOMESTIC	DEC 81	139	7.2	1.2	75	65	10.0	2.0	0.02
	JAN 83	150	7.4	1.1	64	69	27.5	1.0	0.01
W-5	OCT 83	152	7.4	1.3	76	90	5.0	0.0	0.02
	OCT 84	150	7.4	1.2	67	79	5.5	2.0	0.04
	DEC 85			2.5					
SWANSON II	MAR 79	153	7.3	1.8	74	71	1.0	1.0	0.02
N & M FARMS	OCT 80	250	7.3	1.0	70	60	5.0	1.0	0.03
LEGAL:	DEC 81								
DOMESTIC	JAN 83	153	7.3	0.9	79	88	22.0	2.0	0.02
	OCT 83	156	7.4	1.3	70	86	4.5	1.0	0.01
W-6	OCT 84	156	7.3	1.6	71	61	3.5	1.0	0.03
	DEC 85			3.0					

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
TITTERINGTON,	NOV 77	160	7.4	0.6	90	70	0.0	2.0	0.10
GERALD	NOV 78	158	7.3	1.0	96	75	2.5	1.0	0.02
LEGAL: 22-23-10	MAR 79	160	7.3	1.4	91	93	2.0	2.0	0.02
DOMESTIC	NOV 79	145	7.3	0.7	60	85	2.0	0.0	0.01
	DEC 81	155	7.2	1.5	80	70	2.0	2.0	0.02
W-7	JAN 83	161	7.4	1.0	81	84	21.0	2.0	0.02
	OCT 83	159	7.4	0.8	91	70	2.5	2.0	0.02
	OCT 84	166	7.4	1.0	81	77	5.0	2.0	0.04
	DEC 85	165	7.4	1.5	83	79	8.0	0.0	0.02
TITTERINGTON,	OCT 79	145	7.3	0.7	60	85	2.0	0.0	0.01
GERALD	FEB 80	145	7.3	1.5	70	77	4.0	0.0	0.02
LEGAL: 22-23-10	OCT 80	150	7.3	0.7	70	55	5.0	0.0	0.02
FLOW WELL	DEC 81	145	7.2	0.9	80	70	19.5	4.0	0.03
	JAN 83	152	7.3	0.8	78	68	14.5	0.0	0.01
W-8	NOV 83	153	7.3	0.8	80	81	3.0	1.0	0.02
	OCT 84	154	7.4	0.8	74	81	5.5	1.0	0.03
	DEC 85			1.0					
CORKLE, DICK	NOV 78	122	7.3	1.0	49	55	2.5	2.0	0.03
LEGAL: 26-23-10	MAR 79	125	7.2	1.0	66	66	2.0	4.0	0.01
DOMESTIC	OCT 79	125	7.2	1.2	42	50	2.0	3.0	0.02
	FEB 80	126	7.2	1.6	55	60	6.0	3.0	0.03
W-9	OCT 80	125	7.2	0.9	50	45	5.0	3.0	0.02
	DEC 81	122	7.2	1.2	65	40	15.5	3.0	0.03
	JAN 83	126	7.2	1.2	52	64	7.0	5.0	0.02
	OCT 83	126	7.4	1.5	54	59	4.0	3.0	0.02
	OCT 84	125	7.3	1.5	56	58	6.0	3.0	0.02
	DEC 85			2.0					
MIGNERY, DAVE	NOV 77	165	7.2	0.5	82	80	2.5	0.5	0.03
LEGAL: 23-23-10	NOV 78	164	7.2	0.7	86	78	2.0	1.0	0.02
FLOW	FEB 80	146	7.4	1.5	70	64	4.0	1.0	0.06
	OCT 80	160	7.2	0.4	80	70	6.0	0.0	0.02
W-10	DEC 81	155	7.2	0.8	90	70	13.0	2.0	0.03
	JAN 83	169	7.3	0.8	83	79	18.5	2.0	0.02
	OCT 83	168	7.3	0.7	89	74	4.0	2.0	0.03
	OCT 84	165	7.3	0.7	90	77	4.5	0.0	0.01
	DEC 85			2.0					
SCHRUNK, ELLIS	NOV 77	170	7.4	0.1	50	60	0.0	1.0	0.10
LEGAL: 21-23-9	NOV 78	165	7.2	0.3	82	79	2.5	0.0	0.02
DOMISTIC	MAR 79	170	7.2	0.4	96	85	1.0	0.0	0.01
	NOV 79	160	7.3	0.9	107	98	1.0	0.0	0.01
W-11	FEB 80	170	7.2	0.5	87	70	5.0	0.0	0.02
	OCT 80	165	7.3	0.4	90	75	5.0	1.0	0.02
	DEC 81	156	7.2	0.6	85	65	14.5	2.0	0.03
	JAN 83	166	7.3	0.6	89	80	30.0	0.0	0.01
	OCT 84	172	7.3	0.5	92	78	4.5	1.0	0.03
	DEC 85	174	7.4	0.7	100	74	5.5	2.0	0.04

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SCARLETT, MICK	NOV 77	250	7.4	0.5	120	110	0.0	2.0	0.10
LEGAL: 11-22-12	NOV 78	245	7.1	0.8	77	113	2.0	0.9	0.02
DOMESTIC	NOV 79	260	7.2	1.2	143	128	2.0	0.0	0.01
	FEB 80	260	7.2	0.8	127	115	6.0	0.0	0.02
W-12	OCT 80	290	7.2	0.7	135	120	5.0	0.0	0.02
	DEC 81	260	7.2	1.4	130	120	9.5	1.0	0.03
	NOV 82	300	7.2	1.6	147	137	17.5	0.0	0.02
	OCT 83	270	7.2	1.3	142	147	5.0	1.0	0.02
	OCT 84	250	7.2	0.9	140	119	4.0	2.0	0.03
	DEC 85	250	7.3	1.3	140	143	5.0	1.0	0.02
WAGONHAMMER SOUTH	NOV 77	140	7.1	2.5	60	50	0.0	2.0	0.20
LEGAL: 10-22-11	NOV 78	134	6.9	3.7	50	71	2.5	2.6	0.03
DOMESTIC	NOV 79	135	6.9	4.8	49	56	2.0	2.0	0.12
	FEB 80	130	6.9	4.0	50	55	7.0	0.0	0.02
W-13	OCT 80	125	6.9	2.6	50	50	5.0	0.0	0.04
	DEC 81	130	6.9	3.8	60	50	12.0	5.0	0.17
	NOV 82	139	6.9	3.3	48	61	14.5	1.0	0.02
	OCT 83	140	6.9	4.0	48	92	5.5	3.0	0.04
	OCT 84	140	7.0	4.0	50	67	5.0	2.0	0.07
	DEC 85	135	7.0	4.0	45	70	6.0	2.0	0.05
LANDGREN, JIM	NOV 77	250	7.4	0.2	130	80	0.0	1.0	0.20
LEGAL: 18-22-10	NOV 78	240	7.8	0.8	132	121	2.5	1.0	0.17
	MAR 79	540	7.8	0.9	300	276	2.0	1.0	0.18
DOMESTIC	NOV 79	240	8.0	1.3	128	120	2.0	1.0	0.06
	OCT 80	250	7.6	0.7	125	120	4.0	3.0	0.08
W-14	DEC 81	290	7.2	1.0	150	120	12.5	4.0	0.04
	NOV 82	300	7.2	0.8	131	102	14.5	0.0	0.01
	OCT 83	310	7.6	0.9	154	166	2.5	1.0	0.02
	OCT 84	300	7.4	0.9	168	143	5.5	1.0	0.04
	DEC 85	300	7.4	1.2	160	136	4.5	4.0	0.15
DWYER, LEO	NOV 77	155	7.1	0.2	100	50	0.0	7.0	0.10
LEGAL: 2-22-9	NOV 78	152	7.2	0.5	74	88	2.5	9.0	0.04
DOMESTIC	MAR 79	155	7.2	0.7	79	75	2.0	8.0	0.03
	NOV 79	155	7.2	1.0	77	65	2.0	6.0	0.03
W-15	FEB 80	155	7.2	0.6	75	60	6.0	0.0	0.04
	OCT 80	158	7.2	0.4	65	60	5.0	8.0	0.03
	DEC 81	150	7.1	0.7	70	75	16.0	6.0	0.03
	JAN 83	160	7.3	0.6	72	81	26.0	5.0	0.03
	OCT 84	161	7.3	0.5	80	72	5.0	3.0	0.04
	DEC 85	165	7.6	0.7	82	68	3.5	10.0	0.11
PITZER RANCH	NOV 77	150	7.2	0.8	70	60	0.0	1.0	0.10
LEGAL: 5-21-12	NOV 78	138	7.2	1.4	66	60	2.5	0.0	0.03
DOMESTIC	NOV 79	140	7.2	2.2	65	64	2.0	1.0	0.03
	OCT 80	135	7.2	1.8	60	60	6.0	0.0	0.03
W-16	DEC 81	138	7.1	1.7	70	55	16.0	2.0	0.02
	NOV 82	147	7.2	1.6	68	64	18.5	1.0	0.02
	OCT 83	145	7.2	1.7	66	90	3.5	2.0	0.02
	OCT 84	145	7.2	1.8	72	82	14.5	3.0	0.02
	DEC 85	158	7.1	2.7	64	81	2.5	1.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SMITH, NORMAN	NOV 77	157	7.1	2.9	50	50	0.0	2.0	0.20
LEGAL: 32-22-11	NOV 78	152	6.8	4.2	65	69	2.5	3.5	0.02
DOMESTIC	JUN 79	150	6.9	4.4	45	28	2.0	3.0	0.04
	NOV 79	160	7.0	4.7	60	68	2.0	1.0	0.02
W-17	FEB 80	150	6.9	4.2	55	55	5.0	0.0	0.02
	OCT 80	163	7.0	3.7	60	65	3.0	1.0	0.02
	DEC 81	150	6.7	5.2	50	60	13.0	3.0	0.03
	NOV 82	160	6.8	3.7	59	59	32.0	1.0	0.01
	NOV 83	154	7.0	3.3	64	60	2.0	1.0	0.02
	OCT 84	160	6.9	3.8	62	60	4.0	1.0	0.03
	DEC 85	174	7.4	0.7	100	74	5.5	2.0	0.04
REICKS, AMBROSE	NOV 78	280	7.3	0.7	157	152	2.5	1.0	0.14
LEGAL: 35-22-10	MAR 79	280	7.4	0.9	142	158	1.0	1.0	0.04
DOMESTIC	FEB 80	275	7.4	1.5	20	129	4.0	0.0	0.07
	OCT 80	300	7.5	0.5	160	135	4.0	0.0	0.10
W-18	DEC 81	300	7.3	0.8	150	150	11.5	2.0	0.07
	JAN 83	450	7.3	1.2	234	196	18.0	5.0	0.77
	OCT 83	350	7.6	1.1	187	153	5.0	1.0	0.21
	OCT 84	410	7.5	1.2	190	182	7.0	2.0	0.15
	DEC 85			1.0					
ERICSON PARK	NOV 77	170	7.4	0.2	90	70	0.0	1.0	0.30
LEGAL: 23-21-12	NOV 78	166	7.4	0.4	86	92	2.5	1.0	0.06
DOMESTIC	NOV 79	170	7.4	1.0	85	75	2.0	2.0	0.05
	OCT 80	154	7.3	0.7	85	75	5.0	1.0	0.04
W-19	DEC 81								
	NOV 82	160	7.3	0.5	89	75	13.0	1.0	0.23
	OCT 83	179	7.4	0.7	90	96	4.0	1.0	0.06
	OCT 84	180	7.3	0.8	95	95	5.0	1.0	0.05
	DEC 85	182	7.4	0.8	90	98	4.5	2.0	0.09
KASSELDER, KEN	NOV 77	400	7.1	0.5	190	180	0.0	5.0	0.20
LEGAL: 22-21-11	NOV 78	400	7.0	1.0	200	189	5.0	6.5	0.02
DOMESTIC	NOV 79	400	7.0	1.6	210	188	5.0	8.0	0.03
	OCT 80	350	7.0	1.6	195	195	6.0	8.0	0.03
W-20	DEC 81	420	7.0	1.2	210	200	13.5	7.0	0.03
	NOV 82	410	7.1	0.8	213	190	26.5	5.0	0.01
	OCT 83	420	7.1	0.9	216	210	4.0	5.0	0.02
	OCT 84	420	7.2	1.0	212	200	12.0	6.0	0.02
	DEC 85	430	7.1	1.2	219	201	6.0	12.0	0.04
POLAND, RALPH	NOV 77	350	7.1	0.4	230	100	10.0	3.0	0.50
LEGAL: 21-21-10	NOV 78	350	7.0	0.7	184	175	2.3	1.5	0.05
DOMESTIC	NOV 79	350	7.1	1.4	105	172	3.0	1.0	0.01
	OCT 80	360	7.1	0.9	195	175	5.0	0.0	0.03
W-21	DEC 81	400	7.0	1.0	210	180	12.0	4.0	0.02
	NOV 82	420	7.2	1.0	222	211	14.5	6.0	0.01
	OCT 83	450	7.0	1.0	228	215	5.0	6.0	0.01
	OCT 84	455	7.2	1.0	239	211	6.5	7.0	0.10
	DEC 85	480	7.6	1.4	126	230	7.5	16.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
KAISER, LOUIS	NOV 77	400	7.5	0.5	180	180	1.0	2.0	0.70
LEGAL: 29-21-9	NOV 78	450	7.2	0.9	237	218	2.5	2.5	0.77
DOMESTIC	NOV 79	470	7.2	2.2	240	248	5.0	3.0	0.04
	OCT 80	440	7.2	0.9	245	205	5.0	0.0	0.05
W-22	DEC 81	450	7.3	1.5	240	220	15.5	3.0	0.05
	NOV 82	450	7.6	0.8	247	210	13.5	2.0	0.03
	OCT 83	450	7.6	0.8	250	221	5.0	4.0	0.04
	OCT 84	450	7.3	1.5	241	220	5.5	3.0	0.57
	DEC 85	450	7.6	1.8	339	214	6.0	2.0	0.07

TRANSECT WELL WATER QUALITY REPORT

Table 13

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLG 1-1								
7/7/82	182	7.8	0.6	75	80	10.5	3.0	0.03
6/16/83	182	8.1	0.8	91	81	6.0	4.0	0.05
10/5/83	187	8.0	0.4			5.5	3.0	0.02
7/18/84	193	7.6	0.6	87		4.5	8.0	0.05
9/24/84	190	8.0	0.3	95	98	6.0	4.0	0.02
6/10/85	188	7.9	1.3	90	80	5.5	6.0	0.04
8/13/85	192	7.8	0.9	94	82	7.0	6.0	0.04
10/7/85	193	8.0	0.6	88	80	4.5	8.0	0.02
TRANSECT WELL LLG 1-2								
7/7/82	162	6.4	5.8	40	60	19.0	12.0	0.15
6/16/83	118	7.6	2.6	39	40	8.5	11.0	0.22
10/5/83	115	6.5	2.4			5.0	7.0	0.10
7/18/84	109	6.8	1.8	33		5.0	10.0	0.18
9/24/84	103	6.3	1.8	46	50	7.0	7.0	0.40
6/10/85	114	6.5	2.7	38	51	6.5	10.0	0.07
8/13/85	104	6.4	2.4	37	32	5.5	9.0	0.09
10/7/85	103	6.5	1.7	38	49	5.5	9.0	0.07
TRANSECT WELL LLG 1-3								
7/7/82	113	6.5	0.9	40	50	19.0	5.0	0.07
6/16/83	104	6.5	0.8	40	57	7.5	4.0	0.04
10/5/83	82	6.6	0.5			5.0	3.0	0.03
7/18/84	98	6.6	0.7	35		7.0	7.0	0.06
9/24/84	83	6.7	0.5	32	41	6.0	4.0	0.04
6/10/85	86	6.7	0.9	31	38	7.0	6.0	0.05
8/13/85	78	6.8	0.7	23	49	5.5	9.0	0.14
10/7/85	76	6.9	0.6	31	48	6.5	7.0	0.13
TRANSECT WELL LLG 1-4								
7/7/82	99	6.3	2.7	30	50	16.0	4.0	0.12
6/16/83	128	6.5	3.6	26	38	5.0	16.0	1.19
10/5/83	59	6.6	0.9			6.0	7.0	0.35
7/18/84	77	6.6	1.7	28		4.5	10.0	1.40
9/24/84	79	6.6	1.7	25	56	6.0	9.0	0.90
6/10/85	75	7.6	1.7	26	35	5.5	7.0	0.41
8/13/85	84	7.0	1.6	24	38	7.0	13.0	0.86
10/7/85	94	6.4	1.1	22	49	5.5	16.0	3.50
TRANSECT WELL LLG 2-1								
7/6/82	270	7.6	0.7	30	100	18.5	3.0	0.10
6/20/83	220	7.6	0.8	124	101	7.5	1.0	0.03
10/5/83	210	7.8	0.4			5.0	1.0	0.03
7/18/84	240	7.6	0.6	120		2.5	2.0	0.04
9/24/84	240	7.5	0.5	128	100	5.0	1.0	0.02
6/10/85	220	7.6	0.7	129	93	6.0	0.0	0.02
8/13/85	220	7.8	0.9	123	103	7.5	2.0	0.06
10/7/85	210	7.8	0.5	131	82	5.0	0.0	0.02

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLG 2-2								
7/6/82	186	7.6	0.7	95	75	12.5	8.0	0.19
6/20/83	186	7.5	1.1	86	78	5.0	6.0	0.11
10/5/83	179	7.5	0.4	95	91	5.0	1.0	0.03
7/18/84	186	7.8	0.5	100		3.0	6.0	0.12
9/24/84	176	7.3	0.4	82	78	5.0	4.0	0.09
6/10/85	188	7.6	0.6	98	70	7.0	6.0	0.12
8/13/85	179	7.7	0.8	97	59	5.0	6.0	0.16
10/7/85	183	7.5	0.5	107	84	6.0	3.0	0.07
TRANSECT WELL LLG 2-3								
7/6/82	198	7.0	0.7	95	70	16.0	4.0	0.09
6/20/83	205	6.8	0.8	100	71	7.0	5.0	0.10
10/5/83	200	7.1	0.3			5.5	2.0	0.07
7/18/84	220	7.6	0.5	101		4.0	8.0	0.12
9/24/84	200	7.0	0.4	104	90	5.0	4.0	0.07
6/10/85	210	7.3	0.6	110	72	7.0	5.0	0.07
8/13/85	210	7.3	0.7	110	78	6.0	1.0	0.03
10/7/85	200	7.1	0.6	102	81	7.0	1.0	0.04
TRANSECT WELL LLG 2-4								
7/6/82	170	6.9	0.7	75	65	11.5	12.0	0.44
6/20/83	170	6.6	1.0	78	62	8.0	6.0	0.16
10/5/83	176	7.8	0.4	75	79	5.5	6.0	0.17
7/18/84	166	7.2	0.5	70		5.0	8.0	0.26
9/24/84	142	7.0	0.5	63	56	6.0	6.0	0.16
6/10/85	161	7.0	0.8	63	56	5.0	11.0	0.09
8/13/85	143	7.1	0.7	60	46	5.0	9.0	0.09
10/7/85	154	7.1	0.5	70	81	5.0	11.0	0.32
TRANSECT WELL LLG 2-5								
7/6/82	205	6.7	1.1	55	65	22.5	34.0	2.90
6/20/83	200	6.4	0.9	63	62	13.0	28.0	0.11
10/5/83	240	7.1	0.7	60	96	8.5		
7/18/84	210	7.4	0.7	57		7.0	53.0	0.87
9/24/84	270	6.8	0.6	58	82	7.0	69.0	0.84
6/10/85	198	8.0	0.8	51	66	10.5	130.0	11.00
8/13/85	210	6.9	0.8	60	71	5.0	50.0	1.00
10/7/85	162	7.0	0.9	44	78	8.5	170.0	14.50
TRANSECT WELL LLG 3-1								
7/7/82	160	9.1	1.1	78	110	11.5	37.0	0.53
9/24/84	156	8.0	1.3	71	46	5.5	0.0	0.01
6/10/85	150	8.0	1.9	74	70	6.5	1.0	0.02
8/13/85	161	8.0	1.8	77	68	5.5	2.0	0.03
10/7/85	162	7.9	1.7	78	70	5.5	0.0	0.01
TRANSECT WELL LLG 3-2								
7/7/82	230	7.4	0.6	111	100	12.0	1.0	0.02
10/5/83	193	7.8	1.0			4.5	1.0	0.02
9/24/84	195	7.8	0.9	100	85	5.0	1.0	0.02
6/10/85	195	7.9	1.3	92	97	5.0	1.0	0.02
8/13/85	196	7.8	1.1	99	89	5.0	1.0	0.03
10/7/85	198	7.8	1.2	97	95	5.5	1.0	0.03

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLG 3-3								
7/7/82	250	8.0	7.0	77	110	18.5	17.0	0.29
10/5/83	240	7.6	7.4	71	101	6.5	3.0	0.01
7/18/84	230	7.7	6.1	71		6.0	14.0	0.22
9/24/84	210	7.8	7.4	71	94	6.0	4.0	0.03
6/10/85	210	7.6	7.8	79	99	9.0	3.0	0.03
8/13/85	210	7.6	6.6	75	86	6.5	7.0	0.04
10/7/85	220	7.6	6.8	70	92	5.5	7.0	0.03
TRANSECT WELL LLG 3-4								
7/7/82	200	6.3	12.5	27	65	19.5	16.0	0.35
10/5/83	174	6.0	10.8			10.0	6.0	0.02
7/18/84	240	6.3	19.8	22		6.5	9.0	0.11
9/24/84	230	6.3	17.6	20	81	6.5	5.0	0.04
6/10/85	200	6.0	17.2	23	48	6.5	5.0	0.04
8/13/85	153	6.2	9.6	22	50	9.0	6.0	0.05
10/7/85	191	6.3	10.2	31	59	9.0	17.0	0.48
TRANSECT WELL LLG 4-1								
7/7/82	200	8.0	1.0	100	90	17.5	18.0	0.42
6/16/83	140	8.1	2.5	66	59	7.5	1.0	0.03
10/5/83	152	7.8	2.4	69	68	4.5	1.0	0.02
7/18/84	141	8.0	2.8	56		4.0	2.0	0.04
9/24/84	162	7.8	2.0	71	89	6.5	1.0	0.03
6/10/85	210	7.8	0.9	117	90	5.0	6.0	0.12
8/13/85	220	8.0	0.9	116	97	5.0	3.0	0.08
10/7/85	180	7.8	2.1	85	89	5.0	2.0	0.05
TRANSECT WELL LLG 4-2								
7/7/82	116	7.0	4.2	30	60	17.0	6.0	0.10
6/16/83	117	6.9	4.3	32	48	7.5	10.0	0.20
10/5/83	119	7.1	4.2			6.0	10.0	0.18
7/18/84	121	9.1	5.3	33		3.0	14.0	0.25
9/24/84	121	6.9	4.9	21	69	6.5	10.0	0.22
6/10/85	128	7.0	6.6	30	24	8.5	5.0	0.04
8/13/85	123	7.1	6.2	30	45	5.0	6.0	0.08
10/7/85	126	6.9	6.1	25	40	5.0	6.0	0.03
TRANSECT WELL LLG 4-3								
7/7/82	91	6.2	4.2	120	30	17.5	15.0	0.28
6/16/83	67	6.4	1.7	24	41	14.5	24.0	0.70
10/5/83	69	6.3	1.6	29	43	4.5	8.0	0.13
7/18/84	72	6.3	0.9	31		4.5	8.0	0.11
9/24/84	67	6.4	0.9	23	58	6.0	7.0	0.16
6/10/85	67	6.3	1.7	21	32	5.0	3.0	0.04
8/13/85	65	6.6	1.6	23	38	5.0	4.0	0.28
10/7/85	65	6.3	1.3	21	28	5.5	3.0	0.04

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLG 5-1								
7/7/82	183	9.1	0.7	100	100	13.0	24.0	0.79
6/16/83	190	7.7	1.0	92	88	7.0	4.0	0.08
10/5/83	172	7.7	0.8			5.0	1.0	0.02
7/18/84	184	7.6	0.9	91		4.5	4.0	0.06
9/24/84	178	7.5	0.8	90	70	7.0	3.0	0.02
6/10/85	185	7.8	1.0	44	81	7.5	9.0	0.18
8/13/85	178	7.5	0.8	90	81	6.5	4.0	0.07
10/7/85	184	7.4	0.6	96	99	5.0	6.0	0.13
TRANSECT WELL LLG 5-2								
7/6/82	105	6.9	1.4	30	55	18.5	25.0	0.71
6/16/83	105	6.3	2.6	44	41	5.0	8.0	0.16
10/5/83	100	6.6	1.7			5.0	2.0	0.02
7/18/84	103	7.1	1.6	41		3.5	7.0	0.04
9/24/84	100	6.4	1.6	32	57	6.0	4.0	0.03
6/10/85	100	6.6	2.2	37	25	5.0	8.0	0.12
8/13/85	104	6.5	1.9	40	42	5.5	9.0	0.11
10/7/85	104	6.6	1.8	33	46	5.0	8.0	0.05
TRANSECT WELL LLG 5-3								
7/6/82	87	6.5	1.8	30	45	18.0	18.0	0.50
6/16/83	95	6.1	2.3	36	37	7.5	6.0	0.09
10/5/83	85	6.3	2.2			6.0	5.0	0.07
7/18/84	87	6.8	1.6	35		4.5	8.0	0.09
9/24/84	100	6.5	1.7	28	39	6.0	5.0	0.14
6/10/85	81	6.5	2.7	26	23	4.0	6.0	0.10
8/13/85	82	6.6	2.4	22	23	7.0	7.0	0.07
10/7/85	75	6.4	2.2	22	57	5.5	7.0	0.07
TRANSECT WELL LLG 5-4								
7/6/82	77	6.6	1.9	25	30	12.5	19.0	0.62
6/16/83	89	6.3	3.6	23	38	7.0	7.0	0.12
10/5/83	74	6.6	3.0			4.5	3.0	0.03
7/18/84	74	6.9	2.9	21		4.0	6.0	0.04
9/24/84	77	6.6	2.1	27	60	6.5	4.0	0.14
6/10/85	72	6.7	2.7	22	40	6.5	3.0	0.03
8/13/85	74	6.7	2.4	27	44	4.0	6.0	0.07
10/7/85	74	6.4	2.6	33	41	5.5	6.0	0.03
TRANSECT WELL LLG 6-1								
7/7/82	162	7.2	0.7	64	65	16.0	26.0	0.90
6/16/83	205	7.8	0.6	117	96	6.0	4.0	0.08
10/5/83	205	7.9	0.4			5.5	2.0	0.05
7/18/84	220	7.7	0.5	119		2.0	1.0	0.04
9/24/84	210	7.8	0.4	115	87	4.5	1.0	0.02
6/10/85	210	7.8	0.7	116	86	7.0	1.0	0.03
8/13/85	210	7.9	0.6	120	89	5.0	2.0	0.04
10/7/85	210	7.8	0.5	124	92	7.5	1.0	0.03

GARFIELD COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLG 6-2								
7/7/82	132	6.9	0.7	69	50	12.5	5.0	0.25
6/16/83	184	7.7	0.7	96	89	6.5	2.0	0.12
10/5/83	182	7.6	0.4	96	90	5.5	1.0	0.12
7/18/84	184	7.6	0.4	94		2.0	2.0	0.12
9/24/84	170	7.4	0.5	88	79	5.0	2.0	0.13
6/10/85	185	7.6	0.7	107	74	6.0	0.0	0.08
8/13/85	178	7.5	0.7	92	69	6.0	1.0	0.13
10/7/85	181	7.6	0.6	100	81	5.0	1.0	0.12
TRANSECT WELL LLG 6-3								
7/7/82	190	7.6	0.6	90	90	14.5	19.0	0.59
6/16/83	130	7.1	0.7	63	58	8.0	3.0	0.12
10/5/83	124	7.0	0.5			4.0	1.0	0.05
7/18/84	124	7.2	0.5	61		5.0	3.0	0.13
9/24/84	124	6.9	0.4	59	49	5.5	1.0	0.11
6/10/85	136	7.1	0.7	64	50	6.0	2.0	0.18
8/13/85	124	7.0	0.8	64	46	7.0	1.0	0.11
10/7/85	122	6.8	0.5	54	50	6.5	0.0	0.13
TRANSECT WELL LLG 6-4								
7/7/82	160	7.5	0.9	130	120	24.5	6.0	0.12
6/16/83	132	6.9	0.6	56	60	4.5	1.0	0.14
10/5/83	130	7.0	0.5			4.5	2.0	0.12
7/18/84	154	7.5	0.6	76		4.0	13.0	0.51
9/24/84	142	7.0	0.6	64	48	6.0	4.0	0.80
6/10/85	160	7.1	0.7	75	58	8.0	4.0	0.43
8/13/85	141	7.2	0.7	68	62	6.5	4.0	0.46
10/7/85	220	7.1	0.9	70	64	5.0	10.0	1.00

WHEELER TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLW 1-1								
7/12/82	170	7.5	0.7	30	70	15.5	2.0	0.17
7/6/83	184	7.8	1.0	102	93	8.5	4.0	0.24
9/29/83	181	7.7	0.4	91	72	5.5	1.0	0.19
7/10/84	171	7.4	0.6	89	75	3.5	1.0	0.18
9/20/84	180	7.5	0.6	97	80	6.5	4.0	0.27
6/12/85	169	7.6	0.7	89	73	6.0	2.0	0.17
8/14/85	171	7.9	0.7	90	77	4.5	7.0	0.27
10/15/85	170	7.6	0.7	90	78	5.0	1.0	0.18
TRANSECT WELL LLW 1-2								
7/12/82	160	6.7	0.8	60	60	23.5	11.0	0.29
7/6/83	195	7.6	1.2	111	96	7.0	6.0	0.16
9/29/83	167	7.0	0.6	92	78	4.5	7.0	0.23
7/10/84	200	7.4	0.6	106	100	4.5	3.0	0.28
9/20/84	164	7.0	0.8	81	84	6.5	15.0	0.59
6/12/85	200	8.0	0.7	113	79	4.5	4.0	0.22
8/14/85	205	7.4	0.8	99	84	8.0	9.0	0.38
10/15/85	179	7.1	0.7	76	72	5.0	11.0	0.31
TRANSECT WELL LLW 1-3								
7/12/82	120	6.5	0.9	40	50	20.0	15.0	0.92
7/6/83	116	6.3	1.6	49	54	6.5	7.0	0.26
9/29/83	161	6.5	0.7	52	66	9.5	11.0	0.72
7/10/84	130	6.2	1.0	49	40	5.5	9.0	0.36
9/20/84	150	6.5	0.9	50	59	13.0	11.0	0.66
6/12/85	114	6.5	1.0	48	57	3.5	14.0	0.81
8/14/85	136	6.8	1.4	50	61	8.0	18.0	0.98
10/15/85	93	6.6	0.8	51	56	5.5	14.0	1.20
TRANSECT WELL LLW 1-4								
7/12/82	92	6.5	2.4	30	45	13.5	130.0	4.00
7/6/83	104	6.7	2.7	44	46	8.5	12.0	0.25
9/29/83	108	6.9	1.7	39	39	1.0	47.0	1.89
7/10/84	109	6.3	2.2	39	52	1.5	11.0	0.23
9/20/84	121	6.7	2.1	43	59	6.0	15.0	0.40
6/12/85	118	6.7	1.0	51	42	6.5	15.0	0.64
8/14/85	110	6.9	1.2	35	65	5.5	24.0	0.86
10/15/85	107	6.7	1.1	48	63	5.0	15.0	0.26
TRANSECT WELL LLW 2-1								
7/12/82	164	7.7	0.7	80	80	12.5	3.0	0.11
7/6/83	171	7.9	0.9	91	81	8.5	2.0	0.11
9/29/83	174	7.8	0.4	81	79	4.0	2.0	0.12
7/10/84	174	7.6	0.3	90	71	2.5	3.0	0.12
9/20/84	178	7.6	0.3	90	78	5.0	4.0	0.13
6/12/85	173	7.7	0.7	91	77	4.0	3.0	0.13
8/14/85	176	7.8	0.7	91	77	6.5	2.0	0.13
10/15/85	171	7.6	0.6	88	81	5.0	1.0	0.14

WHEELER TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLW 2-2								
7/12/82	81	6.6	0.9	30	35	13.0	18.0	3.00
7/6/83	79	6.7	2.8	34	34	6.5	18.0	2.50
9/29/83	79	6.8	1.1	37	40	2.0	23.0	3.50
7/10/84	80	6.5	1.0	36	29	5.0	14.0	2.70
9/20/84	82	6.6	1.1	41	49	6.5	19.0	2.75
6/12/85	80	6.7	1.3	29	30	4.5	13.0	1.36
8/14/85	77	6.7	1.1	24	47	5.0	21.0	2.60
10/15/85	82	6.6	1.2	24	49	5.0	14.0	2.70
TRANSECT WELL LLW 2-3								
7/12/82	81	6.5	1.7	20	35	13.0	19.0	4.55
7/6/83	77	6.6	2.5	25	40	6.5	16.0	2.80
9/29/83	80	6.8	1.2	33	38	3.5	16.0	3.00
7/10/84	87	6.5	1.6	35	51	5.5	25.0	6.20
9/20/84	86	6.8	1.9	31	41	6.0	37.0	11.50
6/12/85	84	6.9	1.7	31	37	5.0	18.0	2.80
8/14/85	89	6.7	2.3	29	51	5.5	23.0	2.90
10/15/85	87	6.6	1.7	36	60	12.5	20.0	2.90
TRANSECT WELL LLW 2-4								
7/12/82	92		0.9	40	55	17.0	57.0	4.55
7/6/83	86	6.5	1.6	37	38	9.5	12.0	2.30
9/29/83	94	6.4	1.0	32	36	6.0	16.0	2.80
7/10/84	90	6.3	0.9	31	41	5.0	13.0	2.30
9/20/84	89	6.6	1.3	30	42	5.5	20.0	4.00
6/12/85	94	7.0	0.8	30	43	1.0	11.0	0.24
8/14/85	94	6.6	1.0	25	44	5.0	19.0	2.00
10/15/85	93	6.4	0.9	24	51	5.5	17.0	2.10
TRANSECT WELL LLW 3-1								
7/12/82	172	7.4	2.6	70	75	11.0	14.0	0.35
7/6/83	184	7.5	2.0	90	81	7.5	5.0	0.05
9/29/83	184	7.6	1.3	90	81	5.0	5.0	0.04
7/10/84	182	7.4	1.0	89	81	5.5	6.0	0.03
9/20/84	181	7.3	1.2	90	82	6.0	4.0	0.04
6/12/85	187	7.8	1.0	96	85	4.5	7.0	0.12
8/14/85	200	7.6	1.0	89	89	5.5	12.0	0.24
10/15/85	130	6.8	8.1	23	52	5.0	8.0	0.06
TRANSECT WELL LLW 3-2								
7/12/82	194	7.0	11.9	30	60	14.0	16.0	0.37
6/21/83	193	7.0	16.4	28	70	5.5	11.0	0.24
9/29/83	190	7.1	10.9	27	75	4.5	15.0	0.37
7/10/84	175	6.9	10.6	29	69	4.5	15.0	0.24
9/20/84	184	6.8	8.7	22	70	6.0	17.0	0.39
6/12/85	126	6.8	6.3	27	49	5.0	6.0	0.04
8/14/85	175	7.1	7.8	30	68	4.5	28.0	0.80
10/15/85	130	6.8	8.1	23	52	5.0	8.0	0.06

WHEELER TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLW 3-3								
7/12/82	125		10.8	20	60	10.5	83.0	5.25
6/21/83	88			314	47	6.0	74.0	2.20
9/29/83	93	7.0	4.8	20	43	5.0	12.0	0.12
7/10/84	86	6.5	3.6	21	48	5.0	17.0	0.41
9/20/84	86	6.3	4.4	35	50	5.0	6.0	0.17
6/12/85	68	6.6	3.8	24	31	5.5	6.0	0.06
8/14/85	77	6.7	3.9	19	41	4.5	9.0	0.11
10/15/85	134	6.6	4.3	23	42	6.0	7.0	0.07
TRANSECT WELL LLW 3-4								
7/12/82	114		7.6	10	50	15.5	120.0	3.48
6/21/83	86		16.5	16	44	6.0	47.0	1.70
9/29/83	104	7.2	5.5	26	52	5.5	10.0	0.24
7/10/84	106	6.9	6.6	12	51	4.5	9.0	0.14
9/20/84	68	6.6	3.8	24	53	5.5	11.0	0.33
6/12/85	117	6.4	7.4	24	45	5.0	6.0	0.04
8/14/85	101	6.8	6.6	20	44	6.0	8.0	0.09
10/15/85	93	6.8	4.4	22	59	6.5	8.0	0.07
TRANSECT WELL LLW 4-1								
7/12/82	190	7.6	3.4	80	90	14.5	15.0	0.40
6/21/83	205	7.7	7.0	77	98	7.0	6.0	0.08
9/29/83	192	7.8	3.4	76	87	6.0	4.0	0.03
7/10/84	200	7.6	5.4	77	75	4.0	6.0	0.03
9/20/84	225	7.3	9.9	66	99	6.0	5.0	0.04
6/12/85	240	7.6	10.7	66	96	6.0	6.0	0.04
8/14/85	240	7.4	11.3	70	101	7.5	7.0	0.06
8/14/85	240	7.4	11.3	70	101	7.5	7.0	0.06
10/15/85	210	7.3	8.8	69	90	5.0	8.0	0.04
TRANSECT WELL LLW 4-2								
7/12/82	153	7.1	3.2	50	60	15.0	8.0	0.08
6/21/83	159	7.0	4.3	56	73	8.0	6.0	0.07
9/29/83	149	7.0	2.3	56	70	5.0	5.0	0.05
7/10/84	150	6.9	2.3	58	67	4.5	6.0	0.03
9/20/84	132	7.0	1.9	64	81	7.5	6.0	0.07
6/12/85	169	7.1	2.3	69	84	5.0	7.0	0.07
8/14/85	167	7.3	2.4	70	70	5.5	8.0	0.13
10/15/85	164	7.1	2.3	68	70	5.0	9.0	0.08
TRANSECT WELL LLW 4-3								
7/12/82	137	7.0	3.1	50	60	13.0	7.0	0.12
6/21/83	164	7.2	3.9	69	79	9.0	8.0	0.10
9/29/83	156	7.3	2.0	65	60	4.5	6.0	0.07
7/10/84	154	7.3	2.0	61	84	3.5	10.0	0.11
9/20/84	87	7.2	1.3	60	72	5.5	4.0	0.06
6/12/85	141	7.3	1.9	59	65	5.0	4.0	0.04
8/14/85	125	7.2	1.4	59	52	5.0	6.0	0.06
10/15/85	133	7.1	1.5	62	77	4.5	6.0	0.04

WHEELER TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLW 4-4								
7/12/82	96		3.6	10	50	16.5	51.0	1.87
6/21/83	77			23	42	9.0	48.0	1.50
9/29/83	75	6.6	2.2	19	49	5.0	10.0	0.14
7/10/84	85	6.4	1.6	27	42	3.0	9.0	0.12
9/20/84	70	6.8	1.2	32	44	6.5	21.0	0.63
6/12/85	75	6.4	1.3	34	38	7.0	14.0	0.23
8/14/85	77	6.9	1.3	30	52	5.5	11.0	0.17
10/15/85	74	6.8	1.1	29	51	5.0	16.0	0.29
TRANSECT WELL LLW 5-1								
7/12/82	300	7.4	0.5	140	100	17.0	6.0	0.03
7/6/83	270	7.5	1.3	131	136	6.0	4.0	0.02
9/29/83	250	7.8	1.0	121	109	2.5	6.0	0.03
7/10/84	300	7.7	1.1	70	139	6.5	12.0	0.02
9/20/84	290	7.4	1.1	140	133	5.0	7.0	0.03
6/12/85	305	7.7	1.6	145	110	6.0	11.0	0.02
8/14/85	290	7.9	1.3	124	106	3.0	11.0	0.03
10/15/85	280	7.7	1.2	127	100	5.0	10.0	0.05
TRANSECT WELL LLW 5-2								
7/12/82	180	7.4	0.7	95	80	10.5	1.0	0.02
7/6/83	185	7.5	1.1	97	95	8.5	1.0	0.02
9/29/83	183	7.6	0.8	98	76	3.5	1.0	0.06
7/10/84	440	7.9	5.2	181	171	8.0	10.0	0.19
9/20/84	185	7.4	1.0	91	89	6.0	4.0	0.06
6/12/85	181	7.5	1.1	89	79	5.5	1.0	0.03
8/14/85	181	7.6	1.0	94	84	4.5	1.0	0.03
10/15/85	176	7.4	1.0	91	94	5.0	0.0	0.03
TRANSECT WELL LLW 5-3								
7/12/82	190	7.4	0.7	95	80	15.0	6.0	0.26
7/6/83	190	7.6	0.9	94	99	8.5	2.0	0.14
9/29/83	192	7.6	0.5	102	88	2.5	2.0	0.15
7/10/84	189	7.4	0.5	98	79	3.0	3.0	0.19
9/20/84	193	7.4	0.6	109	87	5.0	5.0	0.22
6/12/85	193	7.7	0.7	99	87	6.0	4.0	0.22
8/14/85	193	7.6	0.7	101	86	6.0	3.0	0.11
10/15/85	191	7.7	0.6	102	89	4.5	4.0	0.26
TRANSECT WELL LLW 5-4								
7/12/82	199	7.7	0.5	110	90	12.5	1.0	0.05
7/6/83	199	7.9	0.9	107	102	6.0	0.0	0.03
9/29/83	200	7.8	0.4	108	88	3.5	1.0	0.03
7/10/84	200	7.7	0.5	107	89	3.5	1.0	0.04
9/20/84	190	7.6	0.7	101	92	5.5	1.0	0.05
6/12/85	200	8.4	0.8	110	91	5.5	4.0	0.13
8/14/85	200	7.8	0.6	104	91	6.0	1.0	0.06
10/15/85	200	7.6	0.6	106	99	5.0	1.0	0.07

WHEELER TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLW 5-5								
7/6/83	380	7.9	8.3	49	147	10.0	8.0	0.10
9/29/83	195	7.7	0.8	110	85	3.5	3.0	0.12
9/20/84	200	7.8	0.7	111	103	5.5	5.0	0.12
6/12/85	290	8.0	1.1	144	111	6.5	3.0	0.08
8/14/85	198	7.8	0.8	103	96	6.0	4.0	0.11
10/15/85	190	7.9	0.7	111	96	3.5	1.0	0.08
TRANSECT WELL LLW 6-1								
7/12/82	400	7.3	8.9	120	150	17.0	19.0	0.05
6/21/83	290	7.3	4.0	114	131	10.5	15.0	0.08
9/29/83	300	7.3	2.3	120	129	10.0	13.0	0.03
7/10/84	330	7.3	4.0	124	140	5.0	17.0	0.05
9/20/84	350	7.3	5.7	123	160	11.0	19.0	0.06
6/12/85	340	7.3	3.0	128	141	11.5	22.0	0.03
8/14/85	350	7.8	4.2	129	148	9.0	24.0	0.04
10/15/85	310	7.4	0.8	134	147	10.0	23.0	0.07
TRANSECT WELL LLW 6-2								
7/12/82	187	7.6	0.6	90	100	14.0	3.0	0.26
6/21/83	187	7.6	1.0	94	87	8.0	5.0	0.27
9/29/83	186	7.6	0.6	99	71	5.0	2.0	0.25
7/10/84	185	7.5	0.6	85	71	4.5	7.0	0.28
9/20/84	190	7.2	0.7	100	84	8.0	7.0	0.27
6/12/85	181	7.7	0.8	86	75	5.0	5.0	0.25
8/14/85	195	7.7	0.7	89	72	5.5	8.0	0.29
10/15/85	174	7.6	0.7	99	82	5.0	1.0	0.22
TRANSECT WELL LLW 6-3								
7/12/82	190	6.9	2.7	90	130	25.0	30.0	1.91
6/21/83	250	6.7	3.6	70	108	14.0	20.0	0.44
9/29/83	240	7.8	4.6	78	91	5.0	21.0	0.80
7/10/84	300	6.8	9.2	87	119	6.0	19.0	0.13
9/20/84	255	7.0	5.4	82	113	8.0	21.0	0.19
6/12/85	275	7.1	7.4	80	106	5.0	23.0	0.13
8/14/85	270	7.5	7.8	73	101	4.5	25.0	0.24
10/15/85	240	7.1	1.6	86	83	11.0	22.0	0.14
TRANSECT WELL LLW 6-4								
7/10/84	300	6.9	11.6	21	58	7.5	32.0	
9/20/84	290	6.7	12.4	28	97	5.5	31.0	1.20
6/12/85	183	6.9	3.7	31	60	7.5	58.0	0.95
8/14/85	158	7.5	3.2	30	60	9.0	140.0	2.70
10/15/85	136	6.6	2.1	29	70	6.0	43.0	1.60

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLB 1-1								
7/13/82	190	7.4	1.2	90	85	9.0	1.0	0.04
7/7/83	195	7.6	1.6	96	97	6.5	1.0	0.02
9/28/83	193	7.4	1.6	90	89	7.5	1.0	0.02
7/11/84	189	7.3	1.2	95	95	3.5	1.0	0.03
9/19/84	193	7.4	1.1	99	84	6.5	2.0	0.03
6/13/85	190	7.6	1.4	99	90	4.0	1.0	0.02
8/26/85	200	7.4	1.5	92	91	5.5	1.0	0.03
10/8/85	190	7.3	1.1	91	83	6.0	0.0	0.02
TRANSECT WELL LLB 1-2								
7/13/82	148	8.0	0.6	70	70	12.0	28.0	0.85
7/7/83	151	7.8	0.6	61	63	6.5	4.0	0.02
9/28/83	155	7.7	1.1	71	67	5.0	0.4	0.03
7/11/84	153	7.6	0.6	69	62	3.5	6.0	0.03
9/19/84	147	7.6	0.6	73	68	3.0	4.0	0.03
6/13/85	153	7.8	1.0	70	70	6.0	7.0	0.03
8/26/85	149	7.6	0.8	67	73	5.0	9.0	0.06
10/8/85	150	7.6	0.7	70	63	4.0	9.0	0.05
TRANSECT WELL LLB 1-3								
7/13/82	137	7.6	1.3	55	55	12.5	7.0	0.07
7/7/83	139	8.0	1.2	60	61	7.5	3.0	0.02
9/28/83	140	8.0	1.7	63	53	7.0	3.0	0.03
7/11/84	130	7.8	1.5	58	81	5.5	6.0	0.04
9/19/84	148	7.8	1.5	61	61	6.0	3.0	0.04
6/13/85	147	7.8	2.0	61	60	5.5	4.0	0.04
8/26/85	142	7.6	1.9	62	56	4.5	7.0	0.10
10/8/85	137	8.0	1.4	66	58	6.0	6.0	0.03
TRANSECT WELL LLB 1-4								
7/13/82	149	6.9	2.0	55	60	15.0	24.0	0.84
7/7/83	90	6.9	1.9	40	62	5.0	9.0	0.07
9/28/83	74	6.7	1.6	38	38	19.0	3.0	0.03
7/11/84	106	6.5	0.7	41	50	4.5	5.0	0.03
9/19/84	117	6.9	0.7	50	53	6.0	3.0	0.06
6/13/85	79	7.0	1.7	37	44	5.0	2.0	0.03
8/26/85	104	6.8	1.3	45	42	5.0	6.0	0.06
10/8/85	94	6.7	1.1	41	41	5.0	5.0	0.04
TRANSECT WELL LLB 1-5								
7/13/82	350	6.9	2.9	125	150	15.0	27.0	0.57
7/7/83	245	7.4	2.8	93	103	7.5	8.0	0.03
9/28/83	116	7.8	2.1	50	39	4.5	8.0	0.07
7/11/84	300	6.6	1.3	1	150	12.5	22.0	0.07
9/19/84	204	7.0	0.8	87	91	7.5	9.0	0.07
6/13/85	98	7.0	1.1	42	50	5.0	5.0	0.05
8/26/85	290	6.9	0.7	143	136	8.0	8.0	0.14
10/8/85	126	6.7	0.8	59	64	7.0	6.0	0.04

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLB 2-1								
7/13/82	210	7.3	0.8	110	100	10.0	2.0	0.04
7/7/83	200	7.4	1.2	106	94	5.5	0.5	0.02
9/28/83	200	7.4	1.3	117	92	16.5	5.0	0.03
7/11/84	220	7.4	0.9	102		4.0	1.0	0.03
9/19/84	205	7.4	0.9	109	95	5.5	4.0	0.07
6/13/85	210	7.4	1.3	112	101	5.0	6.0	0.14
8/26/85	210	7.4	1.5	107	94	4.0	3.0	0.06
10/8/85	200	7.4	1.0	110	99	7.0	0.0	0.02
TRANSECT WELL LLB 2-2								
7/13/82	182	7.6	0.5	80	75	5.0	23.0	0.72
7/7/83	174	7.6	0.8	85	74	8.5	4.0	0.02
9/28/83	176	7.4	0.5	84	101	3.5	5.0	0.20
7/11/84	184	7.3	0.5	82		4.0	7.0	0.03
9/19/84	184	7.7	0.7	85	99	6.0	4.0	0.04
6/13/85	184	7.6	0.8	90	87	5.5	7.0	0.02
8/26/85	183	7.5	0.9	81	73	5.0	10.0	0.08
10/8/85	181	7.3	0.5	82	73	5.5	10.0	0.08
TRANSECT WELL LLB 2-3								
7/13/82	149	8.0	0.7	70	65	11.0	22.0	0.56
7/7/83	141	7.8	0.7	68	61	6.0	4.0	0.04
9/28/83	147	8.0	1.7	63	75	3.0	9.0	0.16
7/11/84	148	7.6	0.5	71	61	4.0	6.0	0.08
9/19/84	148	8.0	0.5	78	69	6.0	3.0	0.04
6/13/85	153	7.8	0.8	75	65	6.0	4.0	0.05
8/26/85	150	7.8	0.7	75	71	4.0	1.0	0.04
10/8/85	146	7.9	0.6	75	78	6.0	1.0	0.02
TRANSECT WELL LLB 2-4								
7/13/82	170	7.3	2.7	70	70	13.0	80.0	2.20
7/7/83	147	6.7	6.2	50	52	5.0	14.0	0.31
9/28/83	122	6.6	1.9	54	54	3.0	4.0	0.03
7/11/84	160	6.5	2.1	66	64	3.5	6.0	0.03
9/19/84	145	6.8	2.1	52	61	7.5	11.0	0.21
6/13/85	147	6.9	1.8	52	56	7.5	7.0	0.03
8/26/85	150	7.0	1.8	58	57	5.0	11.0	0.06
10/8/85	136	6.8	1.2	65	65	6.5	1.0	0.03
TRANSECT WELL LLB 2-5								
7/13/82	180	7.2	2.8	65	60	11.0	16.0	0.38
7/7/83	179	7.4	5.2	58	65	5.0	11.0	0.08
9/28/83	171	7.0	10.3	52	62	9.5	40.0	1.06
7/11/84	196	7.2	0.9	94	82	6.0	37.0	0.96
9/19/84	174	7.7	0.9	78	78	6.0	200.0	3.00
6/13/85	140	7.0	2.1	60	48	5.0	8.0	0.07
8/26/85	168	6.9	1.4	57	62	5.5	18.0	0.12
10/8/85	154	6.7	1.9	62	64	7.0	10.0	0.06

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLB 3-1								
7/13/82	250	7.4	1.3	115	100	12.5	4.0	0.05
7/7/83	230	7.4	1.2	113	121	6.0	1.0	0.03
9/28/83	230	7.4	1.5	118	120	5.0	2.0	0.03
7/11/84	240	7.6	1.1	117		5.0	6.0	0.12
9/19/84	230	7.6	1.2	120	119	4.0	2.0	0.04
6/13/85	240	7.6	1.6	119	105	5.0	4.0	0.07
8/26/85	240	7.4	1.7	121	101	5.0	4.0	0.07
10/8/85	210	7.3	1.3	120	109	5.0	1.0	0.02
TRANSECT WELL LLB 3-2								
7/13/82	162	7.6	0.7	75	70	10.0	7.0	0.16
7/7/83	163	7.7	1.2	79	75	5.5	7.0	0.16
9/28/83	162	7.6	0.7	77	75	4.5	7.0	0.15
7/11/84	166	7.7	0.6	81		5.5	10.0	0.22
9/19/84	164	7.6	0.7	80	79	7.5	5.0	0.11
6/13/85	166	7.5	0.8	87	71	6.5	5.0	0.10
8/26/85	162	7.4	0.7	79	70	5.0	4.0	0.10
10/8/85	163	7.6	0.7	87	71	6.5	8.0	0.24
TRANSECT WELL LLB 3-3								
7/13/82	280	6.7	3.6	60	90	31.5	20.0	0.22
7/7/83	270	6.5	8.6	60	115	24.5	16.0	0.10
9/28/83	255	6.5	7.1	59	81	16.0	14.0	0.02
7/11/84	280	6.8	9.3	60		11.0	18.0	0.04
9/19/84	260	6.9	6.3	69	83	17.0	18.0	0.32
6/13/85	255	7.1	5.7	91	99	12.0	12.0	0.05
8/26/85	260	7.0	7.4	71	93	14.5	20.0	0.07
10/8/85	250	7.1	4.0	100	118	10.5	13.0	0.03
TRANSECT WELL LLB 3-4								
7/13/82	280	6.7	3.7	60	90	28.5	19.0	0.18
7/7/83	260	7.0	9.5	67	107	28.0	17.0	0.12
9/28/83	260	7.1	7.5	54	100	21.0	22.0	0.22
7/11/84	290	6.7	9.8	51		24.5	27.0	0.22
9/19/84	320	6.8	7.8	50	124	25.5	43.0	0.86
6/13/85	300	6.7	8.6	60	97	21.5	27.0	0.08
8/26/85	310	6.9	9.4	63	101	30.5	32.0	0.09
10/8/85	290	6.8	7.5	57	109	25.0	30.0	0.07
TRANSECT WELL LLB 4-1								
7/13/82	205	7.4	0.5	100	90	9.5	6.0	0.12
7/7/83	198	7.6	1.1	98	92	6.0	6.0	0.10
9/28/83	200	7.6	1.5	80	92	6.5	8.0	0.16
7/11/84	200	7.9	0.6	100		5.5	10.0	0.18
9/19/84	190	7.5	0.7	99	90	6.0	5.0	0.06
6/13/85	200	7.5	0.9	99	90	5.5	10.0	0.15
8/26/85	199	7.5	0.8	96	64	4.0	9.0	0.07
10/8/85	194	7.4	0.7	91	91	5.0	10.0	0.12

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLB 4-2								
7/13/82	240	7.6	0.6	110	100	5.0	9.0	0.14
7/7/83	210	7.8	1.0	118	119	4.0	3.0	0.08
9/28/83	210	7.7	0.5	114	125	2.0	2.0	0.06
7/11/84	220	7.8	0.5	121		5.5	2.0	0.06
9/19/84	220	7.9	0.6	129	99	5.0	6.0	0.13
6/13/85	220	7.9	0.7	125	93	5.0	2.0	0.05
8/26/85	210	7.6	0.6	121	102	5.5	1.0	0.05
10/8/85	200	7.7	0.6	120	109	6.0	1.0	0.04
TRANSECT WELL LLB 4-3								
7/7/83	220	8.1	0.6	112	131	5.0	37.0	1.16
9/28/83	240	7.6	7.8	91	113	8.5	13.0	0.27
7/11/84	260	7.3	2.7	109		3.5	12.0	0.14
9/19/84	250	8.1	0.9	112	110	5.5	18.0	0.38
6/13/85	220	7.5	0.7	119	95	6.5	4.0	0.08
8/26/85	260	7.7	1.1	124	127	6.0	14.0	0.19
10/8/85	210	7.4	0.6	115	110	4.0	7.0	0.07
TRANSECT WELL LLB 6-1								
7/7/83	250	7.6	2.8	110	133	6.0	6.0	0.10
9/28/83	200	7.6	2.3	92	91	5.0	7.0	0.16
7/11/84	230	7.6	2.6	91		5.5	9.0	0.16
9/24/84	250	8.0	2.1	125	117	6.0	3.0	0.03
6/13/85	205	7.6	3.2	93	90	6.0	7.0	0.10
8/21/85	245	7.6	2.5	83	92	6.5	2.0	0.03
10/8/85	183	7.6	2.7	81	78	3.5	12.0	0.26
TRANSECT WELL LLB 6-2								
7/7/83	117	7.4	12.1	145	60	8.5	32.0	1.15
9/28/83	106	7.9	2.9	36	54	4.5	27.0	0.89
7/11/84	124	7.4	2.3	49		2.0	17.0	0.43
9/19/84	106	7.3	2.0	36	60	5.5	13.0	0.26
6/13/85	112	7.1	2.8	41	49	4.5	16.0	0.35
8/21/85	146	7.2	2.8	50	40	2.0	4.0	0.06
10/8/85	104	6.9	2.5	40	51	5.0	14.0	0.27
TRANSECT WELL LLB 7-1								
7/13/82	164	7.4	1.8	75	60	17.5	3.0	0.03
7/7/83	164	7.6	2.1	71	66	5.5	2.0	0.01
9/28/83	145	7.4	2.4	69	89	13.0	3.0	0.02
7/11/84	164	7.4	1.7	74	71	5.5	4.0	0.03
9/19/84	164	7.2	2.1	72	71	5.0	4.0	0.06
6/13/85	166	7.4	2.0	78	79	5.0	4.0	0.03
8/26/85	164	7.3	2.1	71	76	5.0	5.0	0.05
10/8/85	161	7.2	1.9	70	82	5.0	6.0	0.08

BOONE COUNTY TRANSECT WELLS Lower Loup N.R.D.

DATE:	COND.	pH	N-NO3	ALK.	HARD.	CL-	SO4	IRON
TRANSECT WELL LLB 7-2								
7/13/82	155	7.6	1.7	65	70	10.0	8.0	0.15
7/7/83	158	8.0	2.0	74	72	7.0	6.0	0.09
9/28/83	159	8.0	2.2	72	75	4.5	6.0	0.06
7/11/84	144	7.6	1.2	66	67	6.5	7.0	0.07
9/19/84	158	7.6	1.7	64	68	6.0	5.0	0.05
6/13/85	165	8.0	1.9	78	68	5.5	8.0	0.09
8/26/85	164	7.7	1.7	69	63	5.0	9.0	0.07
10/8/85	153	7.9	1.8	66	75	5.5	11.0	0.14
TRANSECT WELL LLB 7-3								
7/13/82	110	6.9	0.8	50	40	15.0	11.0	0.23
7/7/83	101	7.0	3.2	34	42	5.5	13.0	0.35
9/28/83	94	6.8	2.5	27	63	3.0	3.0	0.02
7/11/84	97	6.7	0.8	40	42	6.0	6.0	0.04
9/19/84	144	7.0	0.7	63	61	8.0	9.0	0.23
6/13/85	94	7.1	2.7	32	43	5.0	6.0	0.07
8/26/85	109	7.0	0.8	45	47	5.0	8.0	0.07
10/8/85	94	6.9	2.1	31	50	5.0	6.0	0.04
TRANSECT WELL LLB 7-4								
7/13/82	260	6.9	0.7	120	105	15.5	23.0	0.69
7/7/83	230	7.7	0.8	79	77	11.5	16.0	0.15
9/28/83	148	6.5	0.6	69	61	5.0	6.0	0.20
7/11/84	119	6.7	0.6	53	57	5.0	8.0	0.45
9/19/84	230	6.9	0.8	109	93	11.5	9.0	0.94
6/13/85	146	7.4	0.7	63	52	6.0	8.0	0.07
8/26/85	210	7.1	1.0	92	88	9.0	15.0	1.08
10/8/85	154	6.9	0.6	72	60	5.0	11.0	0.61

SPALDING REPORT
TRANSECT WELLS: GARFIELD, WHEELER, BOONE
Table 14

The transect well stations for Garfield, Wheeler, and Boone Counties are notated by cluster number and well depth.

Example: LG 1-15

This stands for Lower Loup NRD, Garfield County, transect well cluster 1, depth of well is 15 feet (see Figures 22 and 23).

BASELINE HYDROCHEMICAL DATA FOR CLUSTER WELLS IN BOONE, WHEELER AND GARFIELD COUNTIES
10/11-15/82

GARFIELD COUNTY WELLS:	Temp.: °C	pH:	HCO3-: mg/l	SO4=: mg/l	Cl-: mg/l	NO3-N: mg/l	PO4-P: mg/l	F-: mg/l	Ca++: mg/l	Mg++: mg/l	Na+: mg/l	K+: mg/l	SiO2 mg/l	Atrazine: µg/l
LG 1-15	14.0	6.21	25	7	0.9	1.3	< 0.02	< 0.10	6.8	1.0	4.8	2.9	25	< 0.01
LG 1-40	11.7	6.66	39	7	2.2	0.4	0.05	< 0.10	8.2	1.6	6.8	2.9	39	< 0.01
LG 1-60	12.0	6.35	34	10	3.4	3.0	< 0.02	< 0.10	12	2.0	6.7	3.0	30	-
LG 1-155	12.0	8.39	99	6	0.6	0.8	0.08	0.13	26	1.0	5.6	4.5	61	-
LG 2-13	14.8	6.08	66	33	2.8	0.2	< 0.02	0.20	15	3.5	16.0	2.8	38	< 0.01
LG 2-32	11.7	6.18	90	10	1.4	< 0.1	0.09	0.14	16	3.5	12.0	3.5	52	< 0.01
LG 2-50	11.8	6.82	116	4	1.2	< 0.1	0.16	0.22	20	3.9	14.0	5.0	53	-
LG 2-71	12.2	7.29	112	< 1	0.5	< 0.1	0.19	0.13	22	3.7	7.3	4.9	61	-
LG 2-148	13.1	7.32	161	2	1.5	< 0.1	0.10	0.14	35	3.7	9.3	6.4	52	-
LG 3-20	-	5.79	15	12	5.6	17	0.05	< 0.10	22	2.9	13.0	2.4	40	< 0.01
LG 3-104	12.9	7.51	88	8	2.8	8.0	0.05	0.12	33	2.9	6.0	4.8	62	< 0.01
LG 3-168	12.9	8.22	97	2	0.4	1.0	< 0.02	0.18	23	2.1	5.2	3.0	62	-
LG 3-527	14.7	8.07	11	2	0.2	0.8	< 0.02	0.39	26	3.1	5.2	4.7	66	-
LG 4-31	16.0	5.88	10	8	1.3	3.1	< 0.02	< 0.10	6.4	0.84	4.5	1.2	25	< 0.01
LG 4-65	12.5	6.85	32	5	1.1	4.3	0.11	< 0.10	10	1.7	5.0	4.6	66	< 0.01
LG 4-173	12.8	7.84	126	2	0.2	0.6	0.06	0.12	28	3.0	6.6	3.6	63	-
LG 5-16	15.7	6.35	17	6	0.9	2.4	< 0.02	< 0.10	5.6	0.52	2.4	0.54	26	< 0.01
LG 5-30	14.8	6.21	25	7	1.0	1.8	< 0.02	< 0.10	7.4	1.0	5.3	1.9	27	< 0.01
LG 5-68	12.2	6.37	43	6	0.8	0.9	< 0.02	0.14	9.5	1.6	6.5	2.7	42	-
LG 5-142	12.5	7.98	109	10	0.5	0.3	0.05	0.21	25	3.0	6	3.0	61	-
LG 6-15	13.5	6.71	77	2	1.1	0.1	0.11	0.18	12	3.2	7.5	4.2	29	0.02
LG 6-30	10.8	6.77	74	2	0.5	< 0.1	0.11	0.18	13	2.8	6.7	3.8	60	0.02
LG 6-50	11.3	7.69	110	< 1	0.4	< 0.1	0.14	0.25	20	4.4	7.6	5.2	62	-
LG 6-155	12.8	7.92	134	2	1.2	< 0.1	0.11	0.25	27	4.0	10	4.2	58	-

BASELINE HYDROCHEMICAL DATA FOR CLUSTER WELLS IN BOONE, WHEELER AND GARFIELD COUNTIES
10/11-15/82

WHEELER COUNTY WELLS:	Temp.: °C	pH:	HCO3-: mg/l	SO4=: mg/l	Cl-: mg/l	NO3-N: mg/l	PO4-P: mg/l	F-: mg/l	Ca++: mg/l	Mg++: mg/l	Na+: mg/l	K+: mg/l	SiO2 mg/l	Atrazine: µg/l
LW 1-12	14.0	6.21	46	4	1.2	1.0	0.11	< 0.10	10	1.8	2.7	8.0	29	< 0.01
LW 1-25	12.0	6.35	59	14	8.0	0.7	0.06	< 0.10	15	2.6	7.1	8.6	28	-
LW 1-73	11.0	6.82	93	3	2.6	0.1	0.06	0.13	18	3.2	7.8	4.4	40	-
LW 1-113	13.0	7.45	100	3	0.5	< 0.1	0.31	0.17	22	2.6	5.7	4.7	51	-
LW 2-16	13.0	6.31	41	11	1.2	< 0.1	0.06	< 0.10	7.5	1.2	6.5	1.6	30	< 0.01
LW 2-28	11.5	6.45	42	8	0.9	< 0.1	0.08	< 0.10	6.5	1.1	5.3	2.0	38	< 0.01
LW 2-64	11.5	6.59	41	8	0.6	< 0.1	0.07	< 0.10	6.4	1.2	4.9	2.1	39	-
LW 2-117	11.5	7.81	97	3	0.5	< 0.1	0.33	0.15	22	2.4	5.4	4.7	58	-
LW 3-24	15.1	6.22	11	10	1.2	8.4	0.06	< 0.10	14	1.6	3.4	1.6	22	< 0.01
LW 3-33	15.9	6.27	11	8	1.2	6.2	0.05	< 0.10	11	1.4	3.0	1.4	22	< 0.01
LW 3-70	13.0	6.72	26	8	2.0	13	0.10	< 0.10	18	3.2	6.5	5.5	55	-
LW 3-134	13.4	7.47	104	4	0.8	0.8	0.14	0.11	24	3.8	5.7	3.9	48	-
LW 4-25	14.8	6.35	14	9	2.4	2.2	0.05	< 0.10	10	0.82	3.9	1.2	34	< 0.01
LW 4-58	13.0	6.72	47	9	2.1	2.3	0.09	0.11	16	2.4	4.2	2.6	40	< 0.01
LW 4-77	13.0	6.98	56	9	1.7	2.1	0.11	0.11	16	3.1	4.4	3.3	49	-
LW 4-134	13.1	7.71	92	4	0.8	1.6	0.13	0.13	24	2.5	4.6	5.5	48	-
LW 5-11	12.5	6.96	116	< 1	0.4	0.2	0.12	0.19	25	3.0	5.7	5.8	52	-
LW 5-33	10.5	6.98	118	2	0.3	0.1	0.22	0.17	26	3.8	5.5	4.9	51	-
LW 5-56	12.2	6.90	111	4	0.6	< 0.1	0.16	0.18	24	3.4	5.5	5.0	48	-
LW 5-98	12.5	6.70	103	2	0.5	0.3	0.18	0.18	23	3.2	5.4	4.6	47	-
LW 5-441	14.9	6.89	150	11	0.5	0.7	0.05	0.47	31	4.2	14	6.2	73	-
LW 6-16	-	6.86	113	26	12	0.1	< 0.02	0.16	35	4.6	9.6	6.8	25	0.06a
LW 6-28	12.0	6.70	182	28	8.2	0.2	0.05	< 0.10	43	8.2	14	7.3	56	0.13a
LW 6-56	12.6	6.91	166	22	3.5	0.3	0.17	0.32	44	5.9	9.0	7.7	39	-
LW 6-130	13.1	7.54	109	< 1	1.1	0.1	0.22	0.26	23	2.6	6.3	6.4	49	< 0.01

a- Uncertainty of + or - 50% in these values due to interference believed to be due to plasticizer (hose) contamination during sampling.

BASELINE HYDROCHEMICAL DATA FOR CLUSTER WELLS IN BOONE, WHEELER AND GARFIELD COUNTIES
10/11-15/82

BOONE COUNTY WELLS:	Temp.: °C	pH:	HCO3-: mg/l	SO4=: mg/l	Cl-: mg/l	NO3-N: mg/l	PO4-P: mg/l	F-: mg/l	Ca++: mg/l	Mg++: mg/l	Na+: mg/l	K+: mg/l	SiO2 mg/l	Atrazine: µg/l
LB 1-12	13.2	5.99	40	11	1.9	1.3	< 0.02	0.13	15	2.2	4.2	1.2	23	< 0.01
LB 1-30	13.0	5.62	37	6	1.0	0.5	0.07	< 0.10	6	0.90	4.0	1.3	36	< 0.01
LB 1-65	12.2	7.22	65	7	0.2	0.7	0.13	0.12	17	2.6	4.1	4.1	53	-
LB 1-100	12.5	6.70	76	8	0.6	0.2	0.19	0.14	18	2.4	4.3	4.4	49	-
LB 1-170	13.2	6.69	108	4	0.5	0.8	0.27	0.18	25	3.8	5.0	5.0	47	-
LB 2-12	-	6.55	42	21	3.8	2.0	0.05	< 0.10	14	2.1	9.2	2.5	32	< 0.01
LB 2-30	-	5.85	43	11	1.5	3.0	0.06	< 0.10	13	2.1	8.0	2.5	36	< 0.01
LB 2-65	13.0	7.21	79	5	0.6	0.1	0.24	0.18	17	2.7	5.2	4.0	51	-
LB 2-100	13.0	6.50	94	9	0.7	0.1	0.21	0.20	22	3.4	5.0	4.9	48	-
LB 2-145	13.0	6.40	124	3	0.3	0.5	0.28	0.25	27	4.2	5.1	5.7	46	-
LB 3-12	13.0	6.00	58	18	22	6.2	< 0.02	< 0.10	26	3.5	16	3.0	16	< 0.01
LB 3-25	12.0	5.65	69	19	17	4.1	0.06	< 0.10	26	3.5	16	3.2	38	< 0.01
LB 3-80	12.5	6.85	88	6	0.2	0.3	0.27	0.16	20	2.9	4.5	5.1	55	-
LB 3-135	13.0	7.31	133	24	0.6	0.9	0.25	0.24	30	5.1	5.4	5.8	45	-
LB 4-12	13.0	7.21	126	13	2.2	0.2	0.16	0.34	28	4.8	7.0	6.9	31	< 0.01
LB 4-60	12.1	6.92	135	< 1	0.2	0.1	0.36	0.23	28	4.8	5.9	4.8	52	-
LB 4-90	13.0	6.69	109	7	0.6	0.3	0.23	0.18	25	4.1	5.3	5.3	48	-
LB 6-118	11.5	7.40	96	8	1.1	2.8	0.17	0.18	23	5.7	5.7	3.7	52	-
LB 6-175	11.2	7.34	142	5	0.6	2.0	0.26	0.23	32	6.5	6.4	6.0	40	-
LB 7-14	14.0	5.82	84	20	6.7	0.1	0.06	< 0.10	22	3.4	11	3.0	28	< 0.01
LB 7-30	12.2	5.90	65	10	1.9	0.2	0.05	< 0.10	14	2.6	8.7	3.2	36	< 0.01
LB 7-65	12.0	7.22	76	7	0.6	1.2	0.16	0.12	18	2.9	4.5	4.3	53	-
LB 7-110	13.0	6.50	83	4	0.4	1.6	0.22	0.18	20	3.5	4.8	4.0	46	-

BEAVER CREEK WATER QUALITY REPORT

Table 15

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: W-2, HWY 281

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	190	7.6	1.6	*	85	91	4.0	15.0	0.22
1-80	200	7.4	1.9	0.55	103	*	10.0	7.0	0.27
5-80	170	9.4	0.8	0.35	85	70	7.0	4.0	0.14
6-80	168	9.2	0.7	0.37	10	65	7.0	6.0	0.13
7-80	185	7.8	0.7	0.45	82	75	5.0	7.0	0.10
8-80	198	7.6	1.7	0.50	20	67	5.0	6.0	0.16
9-80	194	7.3	0.7	0.35	95	80	5.0	4.0	0.15
10-80	134	7.5	0.6	0.35	85	50	6.0	4.0	0.17
1180	194	7.4	0.7	0.35	95	90	7.0	4.0	0.16
12-80	195	7.4	0.6	*	95	80	17.0	4.0	*
1-81	170	7.5	0.7	0.36	85	90	7.0	5.0	0.16
2-81	164	7.2	0.8	0.45	15	80	13.0	7.0	0.20
3-81	165	7.6	0.8	0.45	90	80	17.0	4.0	0.13
4-81	173	7.4	0.7	0.50	15	75	10.0	6.0	0.28
5-81	192	7.3	0.7	0.55	15	80	12.0	6.0	0.37
6-81	*	7.0	0.8	0.70	20	100	17.0	8.0	0.85
7-81	250	6.9	0.8	0.55	15	60	13.0	7.0	0.42
8-81	250	7.0	0.9	0.60	120	120	15.0	8.0	0.23
9-81	210	7.0	0.9	0.50	15	90	12.0	7.0	0.31
10-81	198	7.1	0.8	0.35	95	105	24.0	8.0	0.13
12-21-81	250	7.0	1.9	0.98	120	100	19.0	16.0	0.24
1-14-82	190	7.0	1.6	0.80	15	70	13.0	10.0	0.35
2-17-82	190	7.0	1.6	0.94	10	60	21.0	8.0	0.23
3-22-82	240	7.8	1.7	1.45	35	80	28.0	12.0	0.19
4-26-82	260	8.6	1.5	0.90	80	100	18.0	8.0	0.29
5-19-82	260	8.0	2.1	1.60	10	110	20.0	13.0	0.43
7-16-82	200	8.8	0.8	0.47	90	85	10.0	9.0	0.13
8-12-82	210	7.0	0.6	0.45	80	89	24.0	9.0	0.13
9-16-82	185	7.0	2.1	0.40	10	90	17.5	10.0	0.07
10-20-82	250	7.3	3.6	0.71	38	100	16.0	17.0	0.16
1-13-83	280	7.0	1.8	0.94	122	116	34.5	7.0	0.23
2-15-83	230	7.0	1.5	1.08	100	120	30.0	9.0	0.47
6-15-83	240	8.3	4.6	0.30	86	109	10.5	9.0	0.07
7-14-83	240	8.9	4.7	0.34	74	80	10.0	10.0	0.07
8-18-83	210	8.7	4.1	0.32	84	81	8.5	8.0	0.04
9-22-83	200	7.9	2.1	0.30	24	89	22.0	6.0	0.06
10-18-83	190	7.4	1.7	0.41	79	92	9.5	10.0	0.12
11-21-83	260	7.6	3.2	1.14	66	107	12.5	16.0	0.15
2-14-84	210	7.4	1.7	1.26	22	82	7.5	18.0	0.19
6-27-84	200	7.6	1.0	0.90	91	99	6.5	*	0.26
7-16-84	310	8.0	2.0	1.10	110	116	17.0	9.0	0.18
8-27-84	240	7.6	3.3	0.78	79	117	4.0	14.0	0.18
9-18-84	210	7.5	2.7	0.39	*	*	*	10.0	0.14
10-22-84	320	7.4	2.1	0.94	102	103	21.0	19.0	0.21
12-18-84	300	7.6	2.2	*	119	110	8.5	13.0	0.10
1-15-85	260	7.6	2.6	0.50	99	107	8.5	11.0	0.13
3-18-85	360	7.9	1.7	0.70	63	95	9.0	7.0	0.10
6-13-85	210	7.8	3.7	0.31	83	100	10.5	10.0	0.09
7-16-85	240	7.7	5.2	0.28	21	87	7.0	11.0	0.08
8-15-85	250	8.0	7.0	0.29	76	104	6.0	13.0	0.09
9-17-85	340	7.7	1.6	0.92	127	105	19.5	9.0	0.17
10-21-85	350	7.8	1.7	0.78	147	125	19.0	18.0	0.17

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: W-4, MIGNERY

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	240	7.5	1.6	*	110	88	7.0	15.0	0.14
1-80	200	7.6	1.7	0.40	110	*	10.0	6.0	0.15
5-80	200	8.0	0.8	0.50	105	100	7.0	6.0	0.18
6-80	205	8.0	0.9	0.58	100	87	6.0	5.0	0.20
7-80	200	7.8	0.7	0.32	106	90	5.0	3.0	0.09
8-80	196	7.8	0.8	0.40	90	50	4.0	8.0	0.08
9-80	195	7.7	0.5	0.28	95	90	5.0	2.0	0.06
10-80	195	7.4	0.5	0.30	105	85	6.0	3.0	0.08
11-80	220	7.4	0.5	0.38	105	85	7.0	6.0	0.12
12-80	200	7.5	0.5	*	105	85	*	4.0	*
1-81	200	7.6	0.5	0.36	110	90	7.0	4.0	0.10
2-81	184	7.5	0.6	0.32	85	80	13.0	5.0	0.13
3-81	200	7.7	0.6	0.26	140	90	17.0	6.0	0.10
4-81	195	7.8	0.7	0.48	95	75	10.0	5.0	0.23
5-81	240	7.5	0.7	0.70	105	90	10.0	6.0	0.20
6-81	*	7.7	0.6	0.45	110	95	12.0	5.0	0.14
7-81	210	7.4	0.5	0.35	110	100	12.0	4.0	0.13
8-81	230	7.4	1.2	0.75	95	95	15.0	7.0	0.20
9-81	200	7.8	0.8	0.45	100	80	11.0	5.0	0.15
10-81	230	7.6	0.9	0.50	110	90	15.0	7.0	0.11
12-81	250	7.0	1.9	0.98	120	100	19.0	16.0	0.24
1-82	190	7.4	0.7	0.55	105	85	13.0	4.0	0.15
2-82	200	7.3	1.7	1.60	100	90	25.0	10.0	0.21
3-82	245	7.5	1.7	1.21	95	110	30.0	11.0	0.17
4-82	280	7.9	1.0	0.69	130	110	22.0	7.0	0.17
5-82	255	7.8	1.1	0.97	130	110	22.5	8.0	0.19
7-82	210	7.9	0.7	0.49	105	85	10.5	6.0	0.10
8-82	230	7.7	0.9	0.77	100	95	17.5	7.0	0.14
9-82	190	7.9	0.8	0.35	100	110	16.0	3.0	0.09
10-82	225	7.5	0.9	0.95	105	100	12.5	8.0	0.18
1-83	310	7.5	1.0	0.82	173	145	17.0	7.0	0.20
2-83	230	7.0	1.5	1.08	100	120	30.0	9.0	0.47
6-83	255	7.8	1.3	0.90	133	106	14.5	8.0	0.16
7-83	260	7.9	1.0	0.65	123	105	7.0	6.0	0.10
8-83	210	7.8	0.9	0.38	118	94	5.0	4.0	0.05
9-83	200	7.8	1.1	0.33	101	81	23.0	5.0	0.09
10-83	220	7.4	0.8	0.42	102	97	7.0	9.0	0.10
11-83	230	7.6	1.2	0.71	104	103	8.5	19.0	0.15
2-84	220	7.5	1.2	0.95	86	91	7.5	10.0	0.14
6-84	220	7.4	1.2	1.81	115	80	5.5	*	0.25
7-84	310	7.9	1.2	1.17	149	110	14.5	9.0	0.13
8-84	270	7.6	1.3	0.99	121	109	11.0	17.0	0.14
9-84	220	7.5	0.8	0.50	*	*	*	6.0	0.11
10-22-84	300	7.6	1.1	1.06	102	99	15.5	19.0	0.18
12-18-84	300	7.6	1.2	*	138	130	8.0	12.0	0.12
1-15-85	250	7.2	0.9	0.60	131	100	5.5	4.0	0.14
3-18-85	240	7.8	1.1	0.62	120	55	6.5	6.0	0.12
6-13-85	250	7.8	1.3	0.52	130	112	7.5	7.0	0.14
7-16-85	245	7.7	1.1	0.51	109	101	7.5	7.0	0.11
8-15-85	240	7.7	1.0	0.52	109	99	9.0	10.0	0.12
9-17-85	310	7.6	1.2	1.09	131	108	20.0	10.0	0.16
10-21-85	345	7.9	1.2	0.79	157	150	7.5	8.0	0.13

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: W-5, SCHRUNK

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	220	7.7	1.4	*	96	98	7.5	11.0	0.11
1-80	192	7.7	1.7	0.30	105	*	8.0	5.0	0.13
5-80	200	8.1	0.8	0.40	105	82	7.0	4.0	0.12
6-80	200	8.2	0.8	0.40	105	93	6.0	4.0	0.12
7-80	200	8.0	0.7	0.31	192	88	4.0	3.0	0.06
8-80	200	8.0	0.8	0.35	95	80	4.0	8.0	0.07
9-80	195	8.0	0.7	0.28	100	80	5.0	2.0	0.04
10-80	200	7.6	0.5	0.30	90	85	5.0	3.0	0.07
11-80	220	7.5	0.5	0.32	115	95	8.0	2.0	0.07
12-80	198	7.7	0.5	*	115	90	*	3.0	*
1-81	200	7.7	0.5	0.34	105	90	7.0	2.0	0.09
2-81	183	7.6	0.7	0.30	100	90	13.0	7.0	0.12
3-81	192	7.8	0.7	0.40	100	90	17.0	5.0	0.08
4-81	200	8.0	0.6	0.29	110	75	10.0	4.0	0.16
5-81	200	7.8	0.5	0.45	110	100	10.0	5.0	0.14
6-81	*	8.0	0.5	0.29	100	80	10.0	5.0	0.09
7-81	190	7.5	0.5	0.30	115	95	10.0	4.0	0.07
8-81	200	7.7	0.9	0.50	120	80	15.0	5.0	0.15
9-81	200	8.0	0.7	0.29	100	70	10.0	3.0	0.09
10-81	200	7.8	0.7	0.30	110	100	18.0	3.0	0.08
12-81	225	7.4	0.9	0.65	120	105	19.0	7.0	0.14
1-82	198	7.4	0.8	0.52	105	95	16.0	6.0	0.14
2-82	200	7.4	1.7	1.82	100	80	28.5	11.0	0.23
3-82	240	7.7	1.7	1.20	130	105	28.5	13.0	0.22
4-82	250	8.0	0.9	0.52	120	110	21.0	7.0	0.14
5-82	250	8.0	1.0	0.65	120	110	20.0	7.0	0.13
7-82	205	8.0	0.9	0.46	105	100	11.5	5.0	0.12
8-82	210	7.7	0.8	0.49	120	105	15.0	4.0	0.11
9-82	200	7.9	0.8	0.34	100	135	32.5	3.0	0.06
10-82	270	7.8	0.9	0.68	105	100	23.0	6.0	0.13
1-83	290	7.8	1.0	0.84	142	130	35.0	7.0	0.18
2-83	260	7.8	1.1	1.10	140	141	16.5	7.0	0.23
6-83	255	7.8	1.4	0.68	123	85	10.5	7.0	0.14
7-83	250	8.1	0.9	0.46	120	107	6.0	4.0	0.07
8-83	220	8.0	1.0	0.36	119	95	6.0	3.0	0.05
9-83	200	8.0	1.1	0.30	117	87	20.0	6.0	0.06
10-83	210	8.0	0.8	0.33	115	90	6.5	6.0	0.09
11-83	230	7.8	1.1	0.59	104	98	7.5	16.0	0.14
2-84	220	7.5	1.3	0.90	91	100	6.0	11.0	0.16
6-84	240	7.6	1.1	1.32	115	90	4.5	*	0.25
7-84	300	7.9	1.1	0.91	139	119	11.0	8.0	0.12
8-84	250	8.1	1.1	0.78	118	110	6.5	14.0	0.13
9-84	220	7.9	0.8	0.39	*	*	*	7.0	0.11
10-22-84	290	7.8	1.2	0.97	111	100	17.5	18.0	0.19
12-18-84	270	7.7	1.1	*	133	130	10.0	9.0	0.12
1-15-85	240	7.4	0.9	0.49	119	102	6.5	4.0	0.13
3-18-85	230	7.9	1.1	0.51	115	96	5.5	6.0	0.12
6-13-85	240	7.8	1.2	0.39	119	104	4.5	5.0	0.10
7-16-85	240	7.7	0.9	0.38	121	86	6.5	5.0	0.10
8-15-85	230	8.0	1.0	0.38	111	93	5.5	7.0	0.11
9-17-85	295	7.8	1.2	1.01	130	115	17.0	11.0	0.19
10-21-85	305	7.9	1.0	0.61	138	130	13.5	7.0	0.13

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: W-6, DWYER

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	200	7.8	1.8	*	93	90	3.0	7.0	0.13
1-80	190	7.6	1.7	0.25	100	*	8.0	5.0	0.15
5-80	197	8.2	0.7	0.40	105	83	8.0	4.0	0.10
6-80	197	8.5	0.7	0.36	95	85	6.0	4.0	0.10
7-80	184	8.0	0.8	0.32	83	80	4.0	4.0	0.06
8-80	184	8.0	0.9	0.35	85	80	4.0	9.0	0.09
9-80	174	8.4	0.7	0.30	85	70	5.0	3.0	0.05
10-80	180	7.6	0.6	0.25	90	75	5.0	4.0	0.07
11-80	187	7.4	0.6	0.31	100	90	8.0	3.0	0.08
12-80	183	7.7	0.7	*	100	80	*	4.0	*
1-81	185	7.6	0.6	0.35	100	85	7.0	3.0	0.09
2-81	179	7.4	0.7	0.35	80	65	13.0	6.0	0.13
3-81	185	7.9	0.7	0.11	65	90	15.0	5.0	0.08
4-81	200	8.0	0.6	0.30	90	100	7.0	3.0	0.23
5-81	185	8.0	0.6	0.40	100	80	10.0	4.0	0.13
6-81	*	7.9	0.6	0.28	105	90	10.0	5.0	0.09
7-81	183	7.6	0.6	0.30	90	85	7.0	3.0	0.07
8-81	197	7.8	0.9	0.45	100	90	15.0	6.0	0.13
9-81	185	8.0	0.8	0.28	100	70	10.0	3.0	0.08
10-81	180	8.0	0.8	0.30	100	80	21.0	4.0	0.10
12-81	210	7.4	1.0	0.60	110	100	15.5	6.0	0.14
1-82	190	7.3	1.1	0.48	100	80	17.5	4.0	0.12
2-82	200	7.3	1.7	1.28	90	90	24.0	9.0	0.23
3-82	245	7.6	1.7	1.22	120	100	28.5	13.0	0.25
4-82	230	8.0	0.9	0.45	120	100	22.5	5.0	0.12
5-82	240	7.9	1.0	0.71	110	100	22.5	7.0	0.13
7-82	200	7.9	0.8	0.45	95	80	13.0	6.0	0.11
8-82	200	7.8	0.8	0.49	100	70	33.5	4.0	0.11
9-82	183	8.0	0.8	0.34	120	120	27.0	3.0	0.08
10-82	200	7.7	0.9	0.59	100	95	12.0	6.0	0.13
1-83	250	7.6	0.9	0.63	126	120	25.5	5.0	0.16
2-83	230	7.6	1.0	0.87	118	115	19.5	7.0	0.23
6-83	250	7.9	1.7	0.61	119	109	10.0	7.0	0.13
7-83	240	7.9	1.0	0.46	112	104	6.0	4.0	0.07
8-83	210	7.7	1.3	0.45	102	100	7.0	6.0	0.10
9-83	198	8.0	1.2	0.30	102	67	14.0	6.0	0.08
10-83	200	7.8	0.8	0.32	99	92	4.0	6.0	0.10
11-83	210	7.7	1.0	0.51	98	101	9.0	12.0	0.15
2-84	220	7.6	1.2	0.85	96	98	5.5	11.0	0.17
6-84	210	7.6	0.9	0.97	99	88	6.5	*	0.22
7-84	280	8.0	1.0	0.80	127	104	8.5	8.0	0.13
8-84	240	7.7	1.1	0.71	103	109	7.5	13.0	0.13
9-84	200	7.7	0.9	0.39	*	*	*	8.0	0.11
10-22-84	270	7.7	1.2	1.06	99	103	14.0	20.0	0.38
12-18-84	260	7.6	1.1	*	129	138	11.0	6.0	0.13
1-15-85	220	7.3	1.1	0.42	109	99	6.0	5.0	0.13
3-18-85	210	7.7	1.0	0.44	105	93	6.0	6.0	0.12
6-13-85	230	7.7	1.1	0.37	107	97	6.0	5.0	0.09
7-16-85	230	7.7	1.0	0.37	100	86	5.5	5.0	0.09
8-15-85	210	7.8	1.0	0.35	101	88	7.0	7.0	0.11
9-17-85	280	7.8	1.0	0.92	123	116	13.0	10.0	0.19
10-21-85	290	8.0	1.1	0.98	136	118	11.5	7.0	0.14

BEAVER CREEK WATER TESTS, BOONE COUNTY

STATION: B-1, BAUM

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	200	7.7	1.4	*	96	94	3.0	7.0	0.16
1-80	180	7.8	1.6	0.20	95	*	7.0	6.0	0.15
2-80	195	7.6	1.0	0.12	88	82	8.0	3.0	0.16
5-80	194	8.2	0.8	0.40	95	82	7.0	5.0	0.11
6-80	195	8.1	0.8	0.35	100	82	6.0	4.0	0.10
7-80	187	8.0	0.7	0.34	95	80	4.0	4.0	0.09
8-80	188	8.0	0.9	0.37	95	80	4.0	9.0	0.11
9-80	174	8.4	0.7	0.30	85	85	5.0	3.0	0.07
10-80	185	7.8	0.5	0.25	90	85	6.0	3.0	0.09
12-80	184	7.3	0.6	0.37	95	80	7.0	5.0	0.10
1-81	185	7.6	0.6	0.40	95	75	7.0	3.0	0.11
2-81	184	7.4	0.8	0.66	90	80	12.0	8.0	0.23
3-81	168	7.6	0.7	0.35	85	80	15.0	3.0	0.10
4-81	180	7.9	0.7	0.43	100	85	10.0	5.0	0.18
5-81	180	8.1	0.7	0.37	100	80	10.0	7.0	0.16
6-81	*	7.9	0.7	0.33	100	80	10.0	7.0	0.13
7-81	195	7.6	0.6	0.32	100	85	7.0	4.0	0.11
8-81	194	7.8	0.8	0.40	100	70	15.0	5.0	0.12
8-81	180	8.0	0.7	0.28	100	80	7.0	3.0	0.10
10-81	185	7.8	0.8	0.25	100	90	18.0	3.0	0.10
12-81	200	3.0	1.0	0.56	105	90	15.5	6.0	0.14
1-82	190	7.2	1.0	0.50	100	80	15.5	6.0	0.13
2-82	282	7.3	1.7	1.61	100	70	24.5	11.0	0.25
3-82	250	7.7	1.8	1.36	120	100	33.0	15.0	0.33
4-82	220	8.0	0.9	0.44	110	90	22.5	5.0	0.12
5-82	220	7.6	1.2	0.98	110	100	21.5	10.0	0.27
7-82	194	8.0	0.6	0.46	95	90	9.5	6.0	0.11
8-82	200	7.9	0.7	0.45	100	95	11.0	4.0	0.11
9-82	185	8.0	0.8	0.34	90	115	14.5	3.0	0.09
10-82	200	7.8	0.9	0.65	90	100	20.5	8.0	0.15
1-83	240	7.7	0.9	0.63	127	114	17.0	5.0	0.17
2-83	230	7.6	1.2	1.51	121	127	12.5	11.0	0.27
6-83	245	8.0	1.4	0.58	112	100	11.5	7.0	0.13
7-83	230	7.9	0.9	0.46	117	115	6.5	4.0	0.10
8-83	200	7.9	1.1	0.42	101	94	5.5	5.0	0.08
9-83	198	7.9	1.0	0.30	97	80	26.0	6.0	0.07
10-83	200	7.8	0.7	0.32	100	89	6.5	7.0	0.12
11-83	200	7.6	0.9	0.52	99	89	8.0	11.0	0.17
2-84	210	7.6	1.1	0.83	93	81	6.0	10.0	0.18
6-84	200	7.6	1.0	0.90	97	82	5.0	*	0.22
7-84	260	8.0	1.0	0.70	119	111	6.0	7.0	0.13
8-84	220	8.0	0.9	0.59	102	92	5.5	12.0	0.12
9-84	198	8.1	0.7	0.34	*	*	*	7.0	0.09
10-22-84	260	7.9	1.1	0.87	107	99	11.0	16.0	0.23
12-18-84	250	7.7	1.1	*	121	102	8.5	7.0	0.14
1-15-85	210	7.3	1.0	0.41	101	100	5.0	4.0	0.13
3-18-85	200	7.9	0.9	0.41	100	84	5.5	6.0	0.13
6-13-85	245	7.4	3.8	0.71	83	99	14.0	15.0	0.14
7-16-85	220	7.5	0.9	0.35	101	98	5.5	5.0	0.08
8-15-85	200	7.9	1.0	0.34	101	91	6.5	6.0	0.11
9-17-85	260	7.9	1.0	0.84	126	102	15.0	10.0	0.20
10-21-85	260	8.2	0.8	0.68	120	113	8.5	7.0	0.13

BEAVER CREEK WATER TESTS, BOONE COUNTY

STATION: B-2, WILTON

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	200	7.6	1.7	*	90	100	3.0	7.0	0.13
1-80	175	7.7	1.8	0.55	85	*	5.0	6.0	0.18
2-80	190	7.6	1.2	0.22	92	78	7.0	5.0	0.15
5-80	195	8.0	0.8	0.35	110	72	5.0	4.0	0.10
6-80	195	7.8	0.8	0.37	102	94	7.0	4.0	0.11
7-80	200	7.8	0.8	0.33	100	87	4.0	4.0	0.08
8-80	200	7.8	0.9	0.38	100	90	4.0	6.0	0.11
9-80	185	8.4	0.7	0.30	100	75	5.0	3.0	0.07
10-80	188	7.8	0.6	0.30	90	80	6.0	3.0	0.09
12-80	195	7.4	0.7	0.50	100	95	8.0	3.0	0.09
1-81	225	7.5	0.8	0.70	95	85	7.0	7.0	0.22
2-81	174	7.4	0.9	0.56	90	65	12.0	9.0	0.24
3-81	160	7.6	0.8	0.18	95	80	15.0	2.0	0.17
4-81	180	7.8	0.6	0.38	100	90	10.0	5.0	0.19
5-81	190	8.0	0.5	0.34	110	95	10.0	4.0	0.14
6-81	*	7.7	0.6	0.32	110	90	9.0	7.0	0.14
7-81	200	7.5	0.6	0.32	105	95	7.0	6.0	0.12
8-81	197	8.0	0.8	0.35	100	90	15.0	4.0	0.10
9-81	196	7.8	0.8	0.28	100	90	10.0	3.0	0.11
10-81	187	7.8	0.9	0.26	100	80	15.0	4.0	0.10
12-81	200	7.3	1.0	0.56	105	80	20.0	7.0	0.13
1-82	190	7.1	1.0	0.59	100	80	18.5	7.0	0.14
2-82	200	7.3	1.6	1.58	100	90	27.5	11.0	0.27
3-82	250	7.6	1.8	1.23	115	100	26.0	14.0	0.33
4-82	215	8.0	0.8	0.41	110	90	25.0	5.0	0.11
5-82	220	7.6	1.7	1.05	100	100	21.0	13.0	0.39
7-82	200	7.8	0.8	0.49	100	90	15.0	7.0	0.20
8-82	200	7.9	0.7	0.46	100	93	25.5	5.0	0.11
9-82	190	7.8	0.7	0.30	110	110	17.5	2.0	0.07
10-82	196	7.6	0.9	0.58	91	115	23.5	6.0	0.14
1-83	220	7.6	0.9	0.62	117	106	13.5	5.0	0.16
2-83	220	7.5	1.1	1.10	103	91	22.0	7.0	0.24
6-83	210	7.8	1.3	0.50	111	97	8.5	6.0	0.13
7-83	230	8.0	0.9	0.43	110	98	5.0	4.0	0.09
8-83	200	7.7	1.1	0.39	101	96	6.0	5.0	0.08
9-83	200	8.0	1.1	0.29	92	106	11.5	7.0	0.07
10-83	200	7.8	0.7	0.30	103	81	4.0	7.0	0.09
11-83	200	7.8	0.9	0.52	108	99	7.0	10.0	0.16
2-84	200	7.7	1.0	0.77	92	91	4.0	10.0	0.19
6-84	200	7.6	1.2	0.90	94	97	6.5	*	0.22
7-84	250	8.0	0.9	0.63	114	94	8.0	7.0	0.13
8-84	200	7.1	0.8	0.49	108	99	9.0	10.0	0.13
9-84	200	7.9	0.7	0.34	*	*	*	8.0	0.11
10-22-84	245	7.7	1.0	0.79	102	98	11.5	14.0	0.22
12-18-84	240	7.6	1.1	*	111	130	8.0	9.0	0.14
1-15-85	210	7.3	1.2	0.60	110	91	6.0	6.0	0.15
3-18-85	200	7.8	1.0	0.38	100	86	6.0	6.0	0.14
6-13-85	220	7.9	1.1	0.35	109	100	5.5	5.0	0.13
7-16-85	220	7.8	0.9	0.32	103	102	4.5	6.0	0.09
8-15-85	200	8.1	1.1	0.31	100	91	5.5	6.0	0.11
9-17-85	240	7.6	0.9	0.74	112	101	12.0	9.0	0.20
10-21-85	250	8.0	0.9	0.51	121	106	8.0	7.0	0.13

BEAVER CREEK WATER TESTS, BOONE COUNTY

STATION: B-3, TIEDE

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	200	7.7	1.7	*	97	90	3.0	7.0	0.15
1-80	185	7.8	1.8	0.20	100	*	6.0	5.0	0.15
5-80	200	8.0	0.8	0.35	100	90	5.0	4.0	0.11
6-80	200	7.7	1.0	0.40	111	100	7.0	6.0	0.18
7-80	200	7.8	0.8	0.33	100	103	5.0	4.0	0.08
8-80	200	7.8	1.2	0.40	100	85	5.0	8.0	0.15
9-80	194	8.0	0.9	0.32	100	90	5.0	4.0	0.06
10-80	200	7.8	0.6	0.30	95	90	5.0	3.0	0.09
12-80	200	7.4	0.8	0.52	100	80	10.0	4.0	0.10
1-81	200	7.6	0.8	0.40	100	90	5.0	4.0	0.13
2-81	174	7.4	0.9	0.70	90	75	12.0	10.0	0.23
3-81	182	7.6	0.7	0.13	100	100	17.0	5.0	0.09
4-81	187	7.7	0.7	0.33	100	95	10.0	5.0	0.19
5-81	192	8.0	0.6	0.34	100	90	12.0	4.0	0.13
6-81	*	7.8	0.7	0.32	110	90	10.0	7.0	0.19
7-81	200	7.5	0.7	0.32	100	95	7.0	6.0	0.13
8-81	200	8.0	0.8	0.35	105	100	17.0	6.0	0.10
9-81	195	7.8	0.7	0.28	105	85	11.0	3.0	0.10
10-81	200	7.8	0.9	0.27	100	100	18.0	4.0	0.10
12-81	200	7.3	1.0	0.61	100	100	15.0	6.0	0.13
1-82	200	7.2	1.1	0.66	100	90	18.5	7.0	0.14
2-82	200	7.3	1.5	1.58	100	70	20.0	10.0	0.28
3-82	250	7.8	1.9	1.39	110	100	29.5	19.0	0.58
4-82	230	7.8	0.9	0.39	105	95	15.0	4.0	0.12
5-82	210	*	1.2	1.30	100	100	15.5	27.0	*
7-82	200	7.8	0.8	0.47	100	85	15.0	7.0	0.17
8-82	200	7.8	0.7	0.47	105	90	19.5	5.0	0.12
9-82	195	7.8	0.7	0.31	110	100	30.0	3.0	0.08
10-82	200	7.6	1.0	0.58	94	100	17.0	7.0	0.17
1-83	220	7.6	0.9	0.61	116	109	21.5	6.0	0.17
2-83	220	7.6	1.1	1.10	118	105	18.0	8.0	0.27
6-83	210	8.1	1.3	0.50	116	106	9.0	6.0	0.13
7-83	240	8.0	1.1	0.40	120	110	8.5	5.0	0.09
8-83	230	7.8	0.9	0.36	118	100	6.0	4.0	0.08
9-83	202	7.9	1.1	0.29	105	106	8.0	7.0	0.07
10-83	200	7.8	0.8	0.30	107	110	6.5	7.0	0.10
11-83	200	7.8	0.9	0.49	101	92	6.5	11.0	0.16
2-84	210	7.8	1.0	0.72	99	109	4.5	10.0	0.19
6-84	200	7.4	1.3	0.96	100	74	5.5	*	0.27
7-84	250	8.1	0.9	0.58	118	95	6.0	7.0	0.12
8-84	205	8.1	0.8	0.44	110	95	6.0	10.0	0.14
9-84	205	8.0	0.8	0.35	*	*	*	8.0	0.11
10-22-84	250	7.8	0.9	0.77	108	98	10.0	14.0	0.22
12-18-84	250	7.8	1.1	*	121	109	6.5	9.0	0.14
1-15-85	210	7.4	1.1	0.55	108	112	5.0	6.0	0.14
3-18-85	205	7.8	1.0	0.38	107	96	5.0	6.0	0.14
6-13-85	220	8.2	1.2	0.35	114	94	4.5	6.0	0.11
7-16-85	230	8.0	0.9	0.32	117	112	5.5	6.0	0.09
8-15-85	210	7.9	0.9	0.31	100	107	5.5	6.0	0.11
9-17-85	245	7.8	0.9	0.71	109	109	9.0	9.0	0.21
10-21-85	260	7.9	0.9	0.50	124	120	8.0	6.0	0.13

BEAVER CREEK WATER TESTS, BOONE COUNTY

STATION: B-4, METZ

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	200	7.8	1.8	*	105	94	3.0	8.0	0.19
1-80	195	7.8	1.7	0.20	110	*	8.0	6.0	0.19
5-80	200	8.0	0.8	0.35	120	100	5.0	5.0	0.13
6-80	205	7.9	1.2	0.54	111	100	7.0	9.0	0.24
7-80	200	8.0	1.0	0.41	112	102	4.0	9.0	0.17
8-80	198	8.0	1.5	0.50	95	85	5.0	11.0	0.22
9-80	200	8.6	1.0	0.35	100	90	5.0	6.0	0.12
10-80	200	8.0	0.5	0.35	95	100	5.0	4.0	0.12
12-80	225	7.5	0.9	0.55	105	100	7.0	7.0	0.15
1-81	200	7.6	0.7	0.45	95	85	5.0	6.0	0.18
2-81	182	7.5	0.8	0.62	90	80	12.0	9.0	0.19
3-81	190	7.7	0.7	0.35	100	90	17.0	4.0	0.11
4-81	195	8.0	0.7	0.33	100	85	10.0	6.0	0.22
5-81	200	8.0	0.6	0.37	110	90	10.0	7.0	0.17
6-81	*	7.8	0.6	0.40	110	90	12.0	8.0	0.19
7-81	210	7.7	0.7	0.40	110	105	8.0	8.0	0.19
8-81	210	8.1	0.8	0.35	110	100	20.0	7.0	0.15
9-81	205	7.9	0.8	0.30	110	95	11.0	5.0	0.15
10-81	196	7.8	0.9	0.31	110	100	15.0	6.0	0.16
12-81	210	7.4	1.1	0.70	120	90	15.0	8.0	0.17
1-82	220	7.1	1.1	0.66	100	95	17.5	6.0	0.17
2-82	200	7.3	3.3	3.00	70	90	41.5	28.0	0.79
3-82	250	7.7	1.7	1.22	110	100	28.5	15.0	0.38
4-82	240	8.0	0.8	0.39	115	95	15.0	5.0	0.13
5-82	230	*	3.3	*	100	100	19.5	78.0	*
7-82	240	7.9	2.4	2.75	95	105	15.0	15.0	0.12
8-82	205	7.9	0.8	0.60	119	100	12.5	11.0	0.32
9-82	200	7.9	0.7	0.33	115	100	14.0	5.0	0.12
10-82	205	7.8	0.4	0.52	105	100	9.0	7.0	0.18
2-83	220	7.7	1.3	1.52	115	96	13.0	12.0	0.39
6-83	250	8.0	1.6	0.55	120	116	7.5	8.0	0.20
7-83	250	7.9	1.2	0.45	131	107	8.5	7.0	0.15
8-83	230	7.9	1.2	0.41	116	102	5.5	7.0	0.17
9-83	205	8.0	1.3	0.32	105	118	10.0	8.0	0.13
10-83	220	7.7	0.8	0.33	114	110	5.0	10.0	0.16
11-83	220	7.9	1.0	0.64	104	102	6.5	14.0	0.23
2-84	210	7.6	1.2	0.80	100	101	5.0	11.0	0.27
6-84	200	7.8	1.6	0.82	100	80	6.0	*	0.30
7-84	260	8.1	1.0	0.58	123	110	9.0	13.0	0.28
8-84	220	8.2	0.8	0.48	117	118	5.5	12.0	0.22
9-84	220	8.1	0.8	0.40	*	*	*	10.0	0.17
10-22-84	255	7.8	1.0	0.70	113	102	13.0	15.0	0.27
12-18-84	260	7.7	1.2	*	130	112	8.0	10.0	0.22
1-15-85	250	7.3	1.2	0.65	122	116	5.5	10.0	0.18
3-18-85	210	8.0	1.0	0.41	113	116	6.0	8.0	0.21
6-13-85	245	8.0	1.2	0.32	127	106	4.5	9.0	0.10
7-16-85	250	8.0	1.2	0.41	120	113	5.0	11.0	0.17
8-15-85	230	8.1	1.2	0.37	110	101	4.5	8.0	0.18
9-17-85	245	7.8	1.0	0.72	121	110	9.0	11.0	0.26
10-21-85	270	8.2	1.2	0.50	125	122	6.5	8.0	0.19

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: N & M TILE DRAIN

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
11-79	270	7.1	2.9	*	126	121	4.0	6.0	0.10
1-80	290	7.0	2.6	*	132	*	10.0	7.0	0.09
5-80	260	7.2	2.2	0.40	123	117	8.0	8.0	0.05
6-80	300	7.1	2.6	0.38	128	125	9.0	10.0	0.06
12-80	300	7.0	1.7	0.37	135	120	10.0	10.0	0.05
1-81	290	7.1	1.2	0.25	140	110	7.0	11.0	0.08
2-81	250	7.1	0.9	0.23	120	105	12.0	8.0	0.05
3-81	220	8.8	0.6	0.03	120	120	15.0	1.0	0.02
4-81	260	8.0	1.9	0.22	130	110	10.0	3.0	0.07
5-81	250	7.0	5.5	0.39	160	190	17.0	26.0	0.04
6-81	*	7.0	5.7	0.32	155	180	20.0	21.0	0.03
7-81	350	7.0	5.0	0.21	150	155	16.0	17.0	0.03
8-81	400	6.9	6.2	0.31	160	170	15.0	17.0	0.04
9-81	300	6.9	3.3	0.53	135	130	12.0	14.0	0.17
10-81	320	7.0	2.1	0.22	145	130	21.0	14.0	0.06
2-82	150	7.0	1.9	1.74	55	60	34.0	11.0	0.15
3-82	430	7.0	5.5	0.33	180	200	37.5	17.0	0.05
4-82	450	7.0	3.9	0.49	175	175	25.0	17.0	0.05
5-82	400	7.1	3.9	0.40	160	180	22.5	12.0	0.04
7-82	550	7.1	7.5	0.68	190	230	20.0	23.0	0.11
8-82	545	6.8	5.9	0.73	206	228	24.0	23.0	0.05
9-82	440	7.0	3.4	0.60	200	210	25.0	17.0	0.04
10-82	490	6.8	6.1	0.57	190	210	32.0	21.0	0.08
1-83	460	6.9	3.8	*	199	153	30.0	22.0	0.07
2-83	450	6.9	4.6	0.47	183	209	26.0	20.0	0.05
6-83	460	7.2	5.7	0.55	173	208	14.5	13.0	0.05
7-83	380	7.1	6.0	0.46	152	177	14.0	7.0	0.11
8-83	600	7.3	7.6	0.78	224	238	14.5	7.0	0.04
9-83	460	7.1	4.7	0.59	200	230	35.5	11.0	0.06
10-83	410	6.9	3.0	0.62	176	185	10.0	11.0	0.06
11-83	470	7.0	3.9	0.49	180	200	12.0	18.0	0.04
2-84	450	7.1	5.0	0.41	161	208	5.5	18.0	0.06
6-84	330	7.1	2.0	0.29	141	133	6.5	11.0	0.04
7-84	440	7.2	5.4	*	156	*	9.5	15.0	0.05
8-84	550	7.3	7.0	*	221	240	17.5	21.0	0.05
9-84	520	7.3	6.0	0.71	*	*	*	15.0	0.09
10-22-84	540	6.9	5.8	0.48	116	238	15.0	18.0	0.08
1-15-85	390	7.1	3.0	*	171	169	14.0	13.0	0.12
3-18-85	260	7.2	3.6	0.49	160	186	14.5	14.0	0.09
6-13-85	510	7.0	6.6	0.75	187	216	12.5	23.0	0.03
7-16-85	630	7.4	11.2	0.82	224	268	17.5	27.0	0.03
8-15-85	320	7.1	2.1	0.32	165	157	10.0	14.0	0.06
9-17-85	460	7.1	5.5	0.42	179	210	20.0	32.0	0.17
10-21-85	370	7.2	2.1	0.43	155	161	8.5	14.0	0.06

BEAVER CREEK WATER TESTS, WHEELER COUNTY

STATION: EXTRA SAMPLES COLLECTED

DATE:	COND.	pH	NO3-N	NH3	ALK.	HARD.	CL-	SO4=	IRON
W-1									
10-21-85	360	7.8	1.7	0.86	113	149	20.5	23.0	0.24
W-3									
10-21-85	350	8.2	1.1	1.04	160	135	23.0	8.0	0.12
E TUBE									
10-22-84	250	7.6	2.0	0.73	180	110	17.0	20.0	0.38
7-16-85	230	7.4	3.7	1.70	73	97	14.0	20.0	0.19
8-15-85	200	7.9	1.6	0.44	85	87	9.5	9.0	0.29
9-17-85	280	7.6	1.8	0.54	17	122	11.0	17.0	0.13
10-21-85	480	7.8	5.6	0.43	172	200	18.5	23.0	0.11
TUBE 24''									
10-22-84	300	7.4	3.2	0.86	61	111	26.0	48.0	0.10
TUBE 40''									
10-22-84	375	71.0	1.1	0.79	146	139	18.0	23.0	0.14
FOXLY DR.									
10-21-85	400	7.6	2.4	1.43	142	151	21.0	32.0	0.64

IRRIGATION WELL
WATER QUALITY MONITORING
Table 16

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
ANDREWS, MEL	8-83	300	7.6	0.7	151	138	6.5	1.0	0.01
G33100 21-21-7	8-84	295	7.3	0.9	153	141	5.5	5.0	0.04
IRRIGATION									
BATENHORST, LEO	7-84	610	7.6	2.3	311	300	5.5	13.0	0.02
G19678 16-18-7									
IRRIGATION									
BAUM, BUD	8-83	160	7.3	2.4	73	91	5.5	3.0	0.03
G34705 7-22-8	8-84	157	7.1	2.4	71	73	5.0	3.0	0.02
IRRIGATION									
BREMER, ELMER MS.	8-83	510	7.4	3.5	257	267	6.5	5.0	0.01
G13519 15-18-6	7-84	530	7.6	3.8	245	271	5.5	8.0	0.02
IRRIGATION									
BUETTNER, HAROLD	7-84	400	7.6	1.6	126	188	1.5	1.0	0.03
G61156 28-20-8									
IRRIGATION									
CARDER, NEIL	8-83	425	7.5	1.9	213	214	6.5	5.0	0.02
A07011 33-19-6	7-84	430	7.6	1.6	209	192	4.5	6.0	0.02
IRRIGATION									
CHOAT, LYNN	8-83	490	7.6	2.4	267	197	7.5	6.0	0.02
G38498 9-18-6	7-84	500	7.5	2.9	240	259	5.5	7.0	0.02
IRRIGATION									
CRUISE, FAY	8-83	490	7.5	1.0	236	237	8.0	4.0	0.02
G45505 10-18-5	8-84	490	7.3	2.6	255	250	5.5	7.0	0.03
IRRIGATION									
IWAN, KENNY	8-83	520	7.4	6.2	253	230	13.5	5.0	0.02
G32893 16-20-7	7-84	440	7.4	2.9	200	223	5.0	3.0	0.03
IRRIGATION									
JOHNSON, TOM	8-83	590	7.6	0.8	306	270	7.0	8.0	0.61
G19237 16-20-6	7-84	575	7.6	0.7	299	261	5.0	11.0	0.46
IRRIGATION									
KROHN, MRS.MARVIN	8-83	410	7.3	1.5	220	205	5.0	1.0	0.02
G34463 4-19-7	7-84	410	7.5	1.2	210	210	4.0	0.0	0.02
IRRIGATION									
LOWE, HAROLD	8-83	570	7.4	1.7	292	280	9.0	8.0	0.02
G10059 16-18-8	7-84	700	7.5	6.3	314	288	6.5	16.0	0.02
IRRIGATION									
NIEWHONER,DELBERT	8-83	580	7.5	3.3	250	274	7.5	12.0	0.02
G39381 15-21-6	8-84	595	7.2	3.5	271	281	5.5	16.0	0.03
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR BOONE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
NOBLE, GAYLE	8-83	310	7.1	1.3	160	136	5.5	0.0	0.01
G34626 7-21-8	7-84	300	7.6	1.2	147	168	3.5	1.0	0.03
IRRIGATION									
PELSTER, JOE	8-83	280	7.6	1.6	129	139	9.0	0.0	0.02
G37335 17-22-7	8-84	290	7.6	1.6	149	140	5.0	4.0	0.03
IRRIGATION									
ROBERG, WILLARD	8-83	600	7.2	7.7	273	258	17.5	7.0	0.02
G02356 12-19-6	8-84	600	7.3	7.5	274	294	4.0	9.0	0.03
IRRIGATION									
SHOTKOSKI, TOM	7-84	460	7.6	2.1	211	228	5.5	7.0	0.02
G25838 16-19-5									
IRRIGATION									
STORM, MELVIN	8-83	475	7.4	1.4	238	229	7.0	6.0	0.02
G18289 15-19-8	8-84	500	7.2	1.2	256	260	5.0	8.0	0.02
IRRIGATION									
WISE, HERB	8-83	720	7.8	3.7	326	300	10.5	19.0	0.30
G18289 15-19-8	7-84	640	7.5	2.0	312	278	8.5	21.0	0.41
IRRIGATION									
WIEGAND BROTHERS	8-83	605	7.4	4.2	273	272	18.0	12.0	0.02
G68914 30-22-6	8-84	600	7.2	1.9	272	279	20.5	19.0	0.07
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
ADAMS,RUSSELL JR	8-82	425	7.3	2.4	208	200	9.5	11.0	0.02
G37309 13-16-21	8-83	490	7.4	2.8	229	237	5.5	7.0	0.01
IRRIGATION	8-84	400	8.1	2.3	194	213	5.0	10.0	0.02
ANDERSON, HARRY	8-82	340	7.3	2.2	165	158	37.0	5.0	0.02
G32272 23-17-22									
IRRIGATION									
BARTAK, FRANK	8-82	195	7.7	0.8	110	84	8.0	0.0	0.02
G36715 14-18-21	8-83	210	7.6	1.3	105	86	7.5	1.0	0.01
IRRIGATION	8-84	195	7.5	1.0	95	92	5.5	4.0	0.03
BURNETT, JOE	8-83	360	7.5	1.9	189	164	7.0	5.0	0.02
G38006 15-18-21									
IRRIGATION									
CHERRY, CARL	8-82	655	7.3	1.3	285	324	27.0	61.0	0.18
G14418 16-13-19	8-83	660	7.3	1.8	285	298	13.5	43.0	0.09
IRRIGATION	8-84	600	7.8	1.8	282	287	8.5	40.0	0.04
CORBIN, JEROME	8-82	300	7.7	3.8	140	135	13.0	4.0	0.02
G35191 16-16-25									
IRRIGATION									
CROW, ROBERT	8-82	300	7.8	1.3	150	139	13.0	7.0	0.03
G25274 16-17-25									
IRRIGATION									
CUSTER PART.	8-83	500	7.4	1.8	258	240	13.0	6.0	0.01
G37641 21-14-17									
IRRIGATION									
DOCKWEILER, DAR.	8-82	480	7.3	1.7	234	240	25.0	13.0	0.02
G15684 14-13-20	8-84	495	8.0	1.5	236	252	4.5	11.0	0.02
IRRIGATION									
ERIKSON, DUANE	8-82	160	7.6	1.5	72	60	15.0	0.0	0.02
G27694 20-15-25									
IRRIGATION									
FERGUSON, ED	8-82	590	7.6	1.5	277	242	14.5	11.0	0.04
G32937 16-16-18									
IRRIGATION									
FOSTER, EARNEST	8-82	490	7.3	1.9	222	230	22.5	16.0	0.02
G32696 15-16-19									
IRRIGATION									
FRENCH, GENE	8-83	410	7.3	3.4	192	209	5.5	5.0	0.01
G27915 15-17-19									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRO (1.0
G'SCHWIND,FRANCIS	8-82	310	7.7	1.0	156	133	18.0	10.0	0.0
G32330 28-16-23	8-83	310	7.8	1.4	162	139	5.5	7.0	0.0
IRRIGATION									
GLEN INC.	8-84	210	7.1	1.8	87	131	8.5	5.0	0.1
G40095 9-19-24									
IRRIGATION									
GOVIER, GLENN	8-82	400	7.6	2.4	196	190	28.5	9.0	0.0
G15684 14-13-20	8-84	410	7.4	2.8	185	208	6.0	9.0	0.03
IRRIGATION									
GRIFFITH, JOHN	8-82	500	7.7	2.8	253	246	22.5	8.0	0.03
G24545 16-14-19									
IRRIGATION									
HAUMONT, HENRY	8-84	490	7.4	3.1	258	252	8.0	7.0	0.02
G18237 11-18-20									
IRRIGATION									
HAUMONT, JERRY	8-84	385	7.9	3.1	199	198	6.5	7.0	0.04
G26602 30-17-21									
IRRIGATION									
HAZLETT, ROBERT	8-84	470	7.6	0.9	229	222	7.0	21.0	1.0
G01771 34-20-19									
IRRIGATION									
MACK HORN FARM	8-82	490	7.4	1.3	230	240	25.5	11.0	0.0
G36820 8-14-21	8-83	450	7.8	1.9	192	211	5.5	10.0	0.01
IRRIGATION									
KLEEB, EDDIE	8-82	550	7.7	1.8	281	282	14.5	12.0	0.03
G29741 16-17-18									
IRRIGATION									
HYSLOP, BUD	8-82	600	7.8	2.9	260	270	18.0	29.0	0.02
G24558 21-17-20	8-83	640	7.6	4.1	288	255	6.0	28.0	0.0
IRRIGATION	8-84	640	7.6	3.9	309	258	8.5	30.0	0.0
KOLBO, RAY	8-82	250	7.6	2.7	121	107	18.5	2.0	0.01
G17388 27-16-24	8-83	295	7.6	4.0	129	140	6.5	5.0	0.0
IRRIGATION									
KOUBEK, JOHN	8-82	188	7.5	2.2	89	79	14.5	2.0	0.0
G25949 32-18-25									
IRRIGATION									
LARSON, ALFRED	8-84	500	7.6	2.9	238	259	8.0	8.0	0.0
G00936 25-15-20									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LEIBHART, JOS.	8-83	250	7.9	1.2	124	101	6.0	0.0	0.01
G40756 15-18-23									
IRRIGATION									
MATTOX, JOE	8-84	410	7.4	2.3	200	194	7.5	12.0	0.02
G35322 26-19-19									
IRRIGATION									
MILLS, GARY	8-83	280	7.8	1.5	134	112	5.0	4.0	1.01
G34355 32-18-25									
IRRIGATION									
MYERS, MORRIS	8-82	440	7.4	1.9	204	210	20.5	11.0	0.02
G34978 16-14-20	8.83	500	7.4	1.7	237	230	6.5	10.0	0.01
IRRIGATION									
OWEN, C. A.	8-82	450	7.4	1.3	228	200	18.0	7.0	0.02
G27401 14-16-20	8-83	450	7.4	1.9	210	200	6.0	6.0	0.02
IRRIGATION	8-84	420	7.8	1.6	210	198	6.0	7.0	0.03
PETRICK, BERNARD	8-82	550	7.4	1.4	261	260	17.5	7.0	0.02
G26853 15-15-18									
IRRIGATION									
POTTER, HENRY	8-82	230	7.5	1.3	110	92	24.5	0.0	0.01
G27285 21-15-24	9-83	230	7.6	1.9	101	98	18.0	1.0	0.02
IRRIGATION									
ROLAND, WILLIS	8-82	500	7.6	2.2	210	250	18.0	7.0	0.01
G30406 19-14-18									
IRRIGATION									
SCHWEITZER, CLYDE	8-83	440	7.4	1.6	213	211	5.0	9.0	0.01
G31809 21-19-20									
IRRIGATION									
SLAGLE, MELVIN	8-83	300	7.5	2.5	148	130	5.5	4.0	0.02
G37561 21-20-20									
IRRIGATION									
SPANEL, EDWARD	8-84	560	7.5	3.0	262	262	6.5	25.0	0.05
G31768 15-19-21									
IRRIGATION									
SUTTON, CONRAD	8-84	355	8.0	1.7	181	173	5.0	10.0	0.02
G03079 35-20-19									
IRRIGATION									
VOGEL, FRED	8-83	360	7.6	2.0	168	148	13.0	5.0	0.05
G14727 30-17-24									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR CUSTER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
WHITNEY, CLIFF	8-82	375	7.7	2.2	190	170	27.5	3.0	0.03
G39330 15-17-21	9-83	390	7.7	3.0	196	190	6.5	6.0	0.03
IRRIGATION	8-84	390	7.7	3.0	196	190	6.5	6.0	0.03
WILMOTH, ELLIS	8-83	240	7.8	1.2	123	118	5.5	2.0	0.02
G27135 2-18-22									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GARFIELD CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DANCZAK BROS. LEGAL: 17-21-16 IRRIGATION	7-82	450	7.7	7.2	185	195	10.5	9.0	0.03
MARES, ROY LEGAL: 33-22-16 IRRIGATION	7-82	175	7.6	1.4	80	65	10.5	3.0	0.01
SCHNEIDER,STANLEY LEGAL: 17-21-15 IRRIGATION	8-82	360	7.6	2.3	170	162	21.0	1.0	0.01
STRUCKMAN, ROLLIN LEGAL: 14-21-14 IRRIGATION	7-82	147	7.3	1.7	65	55	12.0	1.0	0.02
WHITE, DARRELL LEGAL: 33-22-14 IRRIGATION	7-82	123	7.1	2.6	50	45	9.5	3.0	0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR ROCK COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
HUTCHINSON, DAVE LEGAL: 9-25-20 IRRIGATION	8-82	160	7.4	0.9	70	58	9.0	0.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR LOUP COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
CONE, DON LEGAL: 31-23-20 IRRIGATION	7-82	155	7.3	1.3	64	60	17.0	2.0	0.02
CONE, EUGENE LEGAL: 21-22-20 IRRIGATION	7-82	280	7.5	1.1	130	110	19.0	2.0	0.01
MADISON, S. LEGAL: 28-21-19 IRRIGATION	7-82	305	7.5	1.8	150	130	14.5	1.0	0.02
DILLION, JOYCE LEGAL: 28-22-19 IRRIGATION	7-82	200	7.2	5.5	63	75	13.0	3.0	0.01
HARMON FARMS LEGAL: 5-21-20 IRRIGATION	7-82	125	7.1	1.0	56	45	15.0	2.0	0.02
KOVARIK, ELDON LEGAL: 20-21-18 IRRIGATION	7-82	410	7.5	1.9	192	175	13.0	2.0	0.01
PACKARD, FRED LEGAL: 15-21-17 IRRIGATION	7-82	300	7.6	1.8	145	130	8.0	2.0	0.01

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
BARNES, VIRGIL	7-82	610	7.6	1.7	310	280	21.0	9.0	0.02
G32077 20-18-11	9-83	590	7.8	2.0	309	299	15.0	8.0	0.02
IRRIGATION	8-85			2.0					
BAUER, LARRY	7-82	610	7.6	0.7	315	308	18.0	12.0	0.02
G35494 15-19-9	9-83	600	7.8	1.2	300	296	12.0	9.0	0.02
IRRIGATION	8-85			1.5					
BIRKBY, WILLIAM	7-82	750	7.4	1.1	360	314	24.5	19.0	0.05
G01175 15-18-10	8-85			1.0					
IRRIGATION									
DUTCHER, BERNARD	7-82	425	7.5	0.5	220	190	15.5	1.0	0.23
G35986 27-19-10	8-85			1.0					
IRRIGATION									
GOLDFISH, HAROLD	8-82	600	7.3	1.7	297	192	17.5	12.0	0.04
G35056 16-17-11	9-83	550	7.9	2.5	258	251	20.0	12.0	1.16
IRRIGATION	8-85			2.0					
HANSEN, GALEN	7-82	660	7.3	1.2	325	300	14.5	24.0	0.03
G37552 14-17-12	9-83	700	7.5	3.0	320	272	22.5	22.0	0.02
IRRIGATION	8-84	805	7.2	5.4	340	278	7.0	50.0	0.04
LANGER, MELVIN	7-82	325	7.3	1.3	158	140	11.5	3.0	0.03
G64067 8-20-10									
IRRIGATION									
MALMSTROM, WARREN	8-82	640	7.1	1.0	317	240	18.0	23.0	0.03
G30615 15-18-12	9-83	650	7.8	1.4	310	277	12.0	21.0	0.03
IRRIGATION	8-85			1.5					
MCINTYRE CORP.	7-82	600	7.3	1.5	298	285	21.0	13.0	0.02
G41949 26-17-9	8-85			1.5					
IRRIGATION									
MORROW, GENE	7-82	530	7.3	4.0	240	230	24.5	6.0	0.02
G37365 21-19-12	8-85			8.0					
IRRIGATION									
MOSIER, DR. R.	7-82	310	7.5	1.5	140	141	12.0	9.0	0.02
G30819 2-20-11	8-85			2.0					
IRRIGATION									
ONDRACEK, BOB	7-82	650	7.3	1.7	305	275	13.5	22.0	0.05
G11214 30-18-9	8-85			4.0					
IRRIGATION									
PRITCHARD, THOMAS	7-82	550	7.4	0.6	270	237	11.0	6.0	0.02
G24889 12-19-10	9-83	545	7.8	1.1	283	261	11.0	6.0	0.02
IRRIGATION	8-85			1.5					

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR GREELEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
RYAN, JAMES SR.	8-82	550	7.0	0.6	245	241	11.0	7.0	0.02
G45056 32-19-10	8-85			0.5					
IRRIGATION									
SCHMEITS, JOE	7-82	350	7.3	0.3	160	145	13.0	2.0	0.05
G39481 28-20-9	8-85			0.5					
IRRIGATION									
SCHMEITS, JULIA	8-82	450	7.2	0.9	246	303	16.5	4.0	0.02
G39481 28-20-9									
IRRIGATION									
SPELIC, JOE	9-83	350	7.8	0.8	186	179	7.0	3.0	0.03
IRRIGATION									
WILLNERD, KEN	8-82	655	7.2	1.3	317	285	15.5	29.0	0.02
G05516 21-17-10	8-85			1.5					
IRRIGATION									
WRAY RANCHES	8-82	260	7.3	1.9	137	16	13.0	3.0	0.02
G35431	8-85			2.0					
IRRIGATION									
ZWIENER, RICHARD	8-84	355	7.3	0.6	182	183	2.0	3.0	0.04
G63554 9-20-10									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
DAY, LESTER	8-82	139	7.3	0.9	61	68	20.0	1.0	0.01
IRRIGATION									
DWYER, LEO	8-82	162	7.4	1.3	66	80	23.5	3.0	0.01
G39741 11-22-9	9-83	192	7.0	2.0	175	91	8.5	3.0	0.01
IRRIGATION	8-84	170	7.4	1.7	77	68	5.0	3.0	0.02
	8-85			2.0					
ITA, DON	7-82	250	7.4	2.3	120	115	12.0	3.0	0.02
G40306 30-21-10	8-84	250	7.5	2.3	120	111	5.5	2.0	0.02
IRRIGATION	8-85			3.5					
KAISER, LOUIS	7-82	390	7.5	1.0	210	190	12.5	1.0	0.03
G33738 29-21-9	8-84	390	7.6	1.1	195	175	5.5	1.0	0.03
IRRIGATION	8-85			5.0					
KASSELDER, KEN	7-82	400	7.2	1.7	185	170	11.5	7.0	0.04
G34390 22-21-11	9-83	350	7.5	1.0	182	159	9.0	3.0	0.05
IRRIGATION	8-85			3.0					
N & M FARMS	8-82	148	7.4	0.9	72	62	10.0	2.0	0.02
G61485 28-23-10	8-85			2.0					
IRRIGATION									
N & M FARMS	8-82	162	7.4	0.7	79	68	16.5	2.0	0.02
G61462 3-22-10	8-85			1.5					
IRRIGATION									
N & M FARMS	8-82	156	7.2	0.8	77	60	11.0	3.0	0.04
G61475 12-22-10	8-85			2.0					
IRRIGATION									
NICHOLS, DWIGHT	7-82	148	7.3	0.8	75	60	16.0	1.0	0.02
G36050 9-23-11	8-85			2.0					
IRRIGATION									
OLSON, WARREN	7-82	210	7.0	16.0	45	95	18.0	5.0	0.02
G30108 17-23-12	9-83	192	7.0	8.1	57	99	29.5	2.0	0.02
IRRIGATION									
SCHRUNK, ELLIS	7-82	181	7.4	0.6	90	80	15.5	1.0	0.02
G02400 21-23-9	8-84	182	7.5	1.0	86	74	5.5	1.0	0.02
IRRIGATION	8-85			1.0					
SMITH, NORMAN	7-82	199	7.4	0.9	95	80	17.0	2.0	0.02
G44154 32-22-11	9-83	200	7.8	1.8	95	93	11.5	2.0	0.01
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR WHEELER CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
PELSTER, DUANE	7-82	200	7.3	4.4	75	90	15.5	5.0	0.03
G39575 18-21-12	8-85			6.0					
IRRIGATION									
WALKER L & C CO.	7-82	205	7.4	0.7	110	85	10.5	2.0	0.10
G33816 17-22-11	8-84	200	7.4	0.9	100	89	4.5	3.0	0.12
IRRIGATION	8-85			0.5					
WALKER L & C CO.	7-82	275	7.4	1.0	135	110	14.0	1.0	0.02
G33309 14-22-12	8-85			1.5					
IRRIGATION									
BERNT, JOHN	8-85			0.5					
G37689 33-21-10									
IRRIGATION									
LANDGREN, JIM	8-85			2.0					
G34398 18-22-10									
IRRIGATION									

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
BIALAS, GILBERT G30227 29-16-4 IRRIGATION	8-84	1160	7.4	11.5	402	285	16.5	160.0	0.03
BOARDMAN, MEL LEGAL: 5-15-6 IRRIGATION	8-84	350	7.1	11.7	81	152	9.5	32.0	0.03
BOROWIAK, BEN G15030 36-17-4 IRRIGATION	8-84	520	7.4	11.8	177	202	7.0	16.0	0.02
BOROWIAK, BEN G30741 1-16-4 IRRIGATION	8-84	375	7.0	23.0	63	155	10.5	11.0	0.03
BOROWIAK, DOMINIC G52562 20-16-4 IRRIGATION	8-84	345	7.7	1.2	187	144	8.5	6.0	0.03
BOROWIAK, HELEN G22799 13-16-4 IRRIGATION	8-84	280	6.6	15.0	51	98	11.0	11.0	0.03
CUNNINGHAM, CHES. G30443 23-16-7 IRRIGATION	8-83	900	7.2	3.9	402	401	18.5	38.0	0.04
CZARNICK, STEVE G62583 7-16-3 IRRIGATION	8-84	270	7.4	1.8	113	125	6.5	15.0	0.02
DUBAS, JIM LEGAL: 21-16-5 IRRIGATION	8-84	1040	7.5	24.0	301	312	21.0	140.0	0.02
GONSIOR, DOROTHY G05407 15-16-4 IRRIGATION	8-84	640	7.0	35.0	79	229	15.0	29.0	0.02
GROSCH, DON G05931 36-16-4 IRRIGATION	8-84	1180	7.5	9.6	358	310	23.0	180.0	0.14
JARECKE, DENNIS G48646 11-16-5 IRRIGATION	8-84	910	7.3	45.2	210	243	20.0	31.0	0.03
LAMBERSON, GUY G24265 10-15-8 IRRIGATION	8-83 7-84	610 700	7.4 7.2	3.1 6.3	310 340	242 284	7.5 7.0	9.0 13.0	0.01 0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LESIAK, DALE G35821 32-16-6 IRRIGATION	8-84	600	7.4	11.6	231	250	5.5	21.0	0.01
LESIAK, LOUIS G68307 19-16-5 IRRIGATION	8-84	560	7.5	6.7	220	268	11.0	39.0	0.03
MCPHILLIPS, MAC G16898 15-17-8 IRRIGATION	8-83 7-84	750 745	7.4 7.2	1.6 1.5	355 361	350 296	6.5 6.0	35.0 48.0	0.03 0.03
MILBY, DALE G46270 30-16-5 IRRIGATION	8-84	680	7.1	11.1	251	279	7.5	36.0	0.03
NELSON, JOHN G29505 19-17-6 IRRIGATION	8-83 7-84	560 550	7.5 7.6	3.4 3.7	251 265	279 293	7.5 5.5	10.0 17.0	0.08 0.10
OLSON, RAY G14881 16-17-4 IRRIGATION	8-83 8-84	600 595	7.3 7.3	1.4 1.2	281 279	258 257	8.5 5.5	10.0 13.0	0.02 0.02
PENCAK, RICHARD G25472 13-17-5 IRRIGATION	8-83	600	7.3	1.8	292	267	6.0	11.0	0.02
PEREGRINE, RAY G33905 4-15-6 IRRIGATION	8-84	350	7.0	8.9	109	162	11.0	23.0	0.03
PROSOSKI, TED G48479 6-16-4 IRRIGATION	8-84	270	7.7	9.7	122	151	8.0	12.0	0.02
RINKOL, BENNIE G35345 9-16-4 IRRIGATION	8-84	600	6.8	22.0	151	242	19.0	32.0	0.03
RUSSELL BROS. G17624 15-16-6 IRRIGATION	8-83 8-84	1030 980	7.4 7.4	4.6 4.2	409 391	303 250	15.5 15.0	140.0 140.0	0.06 0.03
SANTIN, DENNIS G53937 18-15-7 IRRIGATION	8-84	680	7.6	10.7	257	260	8.5	26.0	0.03
SANTIN, FRED G08154 16-15-7 IRRIGATION	8-83 8-84	560 630	7.5 7.4	4.5 4.8	276 291	241 207	8.5 5.5	15.0 18.0	0.01 0.02

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
SANTIN, BUD LEGAL: 8-15-7 IRRIGATION	8-84	625	7.3	7.3	209	279	13.5	88.0	0.02
SHOTKOSKI, CLIFF G65456 28-16-5 IRRIGATION	8-84	645	7.2	18.5	227	251	14.5	21.0	0.02
SHOTKOSKI, DAVE LEGAL: 25-16-6 IRRIGATION	8-84 8-84	645 290	7.3 7.4	6.3 9.0	244 101	277 144	16.5 8.5	52.0 10.0	0.03 0.02
SHOTKOSKI, HENRY LEGAL: 10-16-4 IRRIGATION	8-84	440	7.6	10.9	179	204	5.5	7.0	0.03
RINKOL, LEROY G23505 10-16-4 IRRIGATION	8-83 8-84	550 595	7.6 7.3	30.5 24.0	145 144	239 268	16.5 11.0	19.0 25.0	0.01 0.03
SHOTKOSKI, PAUL LEGAL: 34-16-6 IRRIGATION	8-84	450	7.6	6.7	175	206	10.0	17.0	0.04
SHOTKOSKI, RON LEGAL: 17-16-5 IRRIGATION	8-84	700	7.6	6.1	259	261	15.5	98.0	0.03
SOCK, RAY G36284 30-17-3 IRRIGATION	8-84	280	7.1	10.1	81	130	8.0	10.0	0.03
SULLIVAN, DALE G35428 15-15-7 IRRIGATION	8-84	320	7.7	1.0	159	149	18.5	7.0	0.02
SYSLO, LOUIS G48536 22-16-5 IRRIGATION	8-84	1000	7.2	33.6	340	210	16.0	52.0	0.03
TARNICK, RAY G26565 16-16-5 IRRIGATION	8-83 8-84	780 770	7.2 7.0	42.5 26.0	177 174	332 303	35.5 32.0	36.0 44.0	0.01 0.02
TARNICK, RAY G47554 21-16-5 IRRIGATION	8-84	700	7.3	29.0	179	292	17.0	24.0	0.02
TARNICK, STAN G25827 2-16-4 IRRIGATION	8-84	710	7.3	30.0	133	278	28.5	37.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR NANCE COUNTY

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
TARNICK, STAN LEGAL: 2-16-4 IRRIGATION	8-84	340	7.4	7.3	123	159	9.0	10.0	0.04
TAYLOR, WARREN G33579 16-17-7 IRRIGATION	8-83 7-84	540 540	7.8 7.2	1.5 1.3	278 271	242 218	9.5 6.0	8.0 11.0	0.02 0.04
TORSON, REGINA G13806 5-16-4 IRRIGATION	8-84	420	7.6	5.1	191	187	5.0	9.0	0.03
ULFERTS, PAUL G02009 5-15-6 IRRIGATION	8-84	440	7.0	23.0	98	206	11.5	10.0	0.03
ULFERTS, PAUL G35710 33-16-6 IRRIGATION	8-84	850	7.4	20.0	244	343	8.0	58.0	0.02
VALASEK, MIKE G35364 21-16-8 IRRIGATION	8-84	570	7.4	1.6	292	278	5.0	11.0	0.03
VOICHAHOSKE, BOB G68933 22-16-4 IRRIGATION	8-84	320	7.7	0.8	149	143	3.5	6.0	0.03
WILLIAMS, MONTY LEGAL: 1-15-6 IRRIGATION	8-84	380	7.1	15.4	90	170	25.0	14.0	0.02
ZIEMBA, EDDIE LEGAL: 1-16-5 IRRIGATION	8-84	530	7.7	11.6	178	228	10.5	24.0	0.02
ZYWIEC, LEO G35710 29-17-6 IRRIGATION	8-83 7-84	600 595	7.3 7.3	1.7 0.9	286 302	260 291	11.0 6.0	10.0 15.0	0.02 0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR PLATTE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
BENDER, BOB G4122 19-17-2 IRRIGATION	8-84	260	7.2	9.6	76	105	7.5	6.0	0.02
BENDER, BOB LEGAL: 20-17-3 IRRIGATION	8-84	400	7.5	0.6	159	192	8.0	29.0	0.04
BERNT, EUGENE G60055 21-17-3 IRRIGATION	8-84	255	6.9	13.7	69	112	6.5	8.0	0.03
BLASER, ALLAN G06548 35-17-1 IRRIGATION	8-84	1040	7.2	25.0	268	422	43.0	150.0	0.02
BLASER, RONALD LEGAL: 22-17-2 IRRIGATION	8-84	185	7.4	8.6	52	79	6.5	6.0	0.02
BLASER, RONALD G30971 21-17-2 IRRIGATION	8-84	200	7.3	10.1	42	100	6.5	7.0	0.02
BREDEHOFT, TED G25890 24-17-2 IRRIGATION	8-84	200	7.0	8.3	68	96	6.0	8.0	0.03
CHARIPAR, MARVIN G32120 26-17-1 IRRIGATION	8-84	300	7.5	2.6	106	135	8.5	19.0	0.04
CHELOHA, JULIUS G06456 8-17-2 IRRIGATION	8-84	595	7.4	2.4	251	285	12.0	39.0	0.50
CHELOHA, ROBERT G58033 28-17-2 IRRIGATION	8-84	300	7.0	19.2	41	113	10.5	13.0	0.02
JARECKI, JOE G65105 21-17-1 IRRIGATION	8-84	505	7.3	5.7	161	134	12.0	74.0	0.02
KLINK, TERRY G18361 7-17-1 IRRIGATION	8-83 8-84	610 650	7.3 7.4	4.5 5.3	261 268	254 257	8.0 7.0	24.0 46.0	0.05 0.58
KUMMER, ELMER G28585 17-17-2 IRRIGATION	8-84	470	7.0	17.9	142	219	8.5	13.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR PLATTE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
LUCHSINGER, SAM G38241 8-17-1E IRRIGATION	8-84	650	7.5	0.9	299	289	6.0	59.0	0.20
MICEK, ALOIS G33419 33-17-1 IRRIGATION	8-84	600	7.1	23.0	160	250	15.0	19.0	0.02
MICEK, ALOIS LEGAL: 31-17-1 IRRIGATION	8-84	280	7.2	9.4	80	112	5.5	9.0	0.02
MICEK, RICHARD LEGAL: 20-17-1 IRRIGATION	8-84	525	6.9	18.8	161	219	6.5	21.0	0.03
MUE-COW FARMS G17875 36-17-1 IRRIGATION	8-84	1140	7.4	0.7	311	531	40.0	190.0	0.44
MUELLER, FLOYD G69876 10-17-2 IRRIGATION	8-84	700	7.1	1.8	331	281	6.0	50.0	0.03
MUELLER, SCOTT G47852 36-17-2 IRRIGATION	8-84	200	7.2	5.7	62	92	6.5	7.0	0.02
MUELLER, SCOTT G38803 24-17-3 IRRIGATION	8-84	295	6.9	14.3	70	129	11.0	7.0	0.02
NANSEL, WILLIAM G17974 30-17-3 IRRIGATION	8-83 8-84	400 390	7.0 6.9	25.5 21.0	79 84	155 160	8.5 8.5	11.0 13.0	0.01 0.03
NELSON, RONALD G07748 14-17-3 IRRIGATION	8-84	500	7.3	18.0	140	227	13.5	21.0	0.02
NYFFELER, DAVE G06784 34-17-1 IRRIGATION	8-84	1030	7.2	8.6	274	387	40.5	71.0	0.03
NYFFELER, ROY G00424 24-17-2 IRRIGATION	8-84	175	7.3	6.9	51	80	4.5	7.0	0.06
OLSON, CLIFF G23620 3-19-4 IRRIGATION	8-84	600	7.3	6.3	280	294	5.5	12.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR PLATTE CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
PRIESTER, GERARD G35349 16-18-3 IRRIGATION	8-84	530	7.2	4.0	251	239	5.0	7.0	0.02
ROSNO, STANLEY G06641 29-17-1 IRRIGATION	8-84	240	7.0	11.3	47	120	8.0	10.0	0.02
SCHROEDER, BILL G38289 12-17-2 IRRIGATION	8-83	640	7.4	1.3	315	284	10.5	26.0	0.03
SOULIERE, BOB G23653 21-18-2 IRRIGATION	8-84	540	7.3	2.0	281	288	5.0	6.0	0.02
STEC, LEO G35855 24-17-3 IRRIGATION	8-84	200	7.0	5.3	69	98	6.5	5.0	0.05
TEADEN, QUENTIN G34332 16-17-2 IRRIGATION	8-83 8-84	280 425	7.5 7.1	11.0 18.3	74 89	115 171	9.5 10.0	6.0 17.0	0.01 0.02
TWOREK, STANLEY G58844 28-17-1 IRRIGATION	8-84	290	6.9	11.4	80	131	8.0	13.0	0.02
TWOREK, STANLEY G03635 27-17-1 IRRIGATION	8-84	290	7.4	3.8	105	151	5.5	18.0	0.02
WERNER, LEO G24782 3-18-4 IRRIGATION	8-84	460	7.2	3.0	222	236	4.5	5.0	0.03

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR SHERMAN CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0
BALZ, DALE G34217 16-14-14 IRRIGATION	8-28-85	560	7.4	1.4	264	282	5.0	19.0	0.01
HARRINGTON, ROBERT G23243 8-16-14 IRRIGATION	8-28-85	580	7.6	5.2	244	267	7.5	12.0	0.01
FULTON, JOE G14544 21-15-16 IRRIGATION	8-28-85	550	8.0	1.3	258	261	5.0	37.0	0.31

LOWER LOUP NATURAL RESOURCES DISTRICT WATER QUALITY TESTS FOR VALLEY CO.

NAME: (Std's)-	DATE:	COND (800)	pH	NO3-N (10.0)	ALK.	HARD.	CL.- (250)	SO4- (250)	IRON (1.0)
KOKES, R. A08025 21-19-15 IRRIGATION	8-28-85	655	7.6	0.6	309	289	5.0	48.0	0.03
KUSEK, G16340 14-20-15 IRRIGATION	8-28-85	174	7.5	0.7	81	70	5.5	4.0	0.10
KNAPP, ROBERT G56973 9-18-15 IRRIGATION	8-28-85	570	7.6	1.5	280	273	9.5	18.0	0.01
NOVAK, EUGENE G34383 27-19-16 IRRIGATION	8-28-85	500	7.4	0.8	244	229	6.0	24.0	0.01
PETERSON, BRYAN G42395 21-18-14 IRRIGATION	8-28-85	670	7.3	1.1	314	331	8.0	37.0	0.02
FOX, MIKE G33737 7-17-13 IRRIGATION	8-28-85	590	7.4	1.7	292	308	8.0	23.0	0.02
COLLINS, KEN G32881 10-20-13 IRRIGATION	8-29-85	245	7.2	3.4	117	108	6.5	0.0	0.02
COLLINS, KEN G29523 10-20-13 IRRIGATION	8-29-85	230	7.2	1.5	115	110	5.5	1.0	0.03
NOLL, LEROY A08028 14-19-14 IRRIGATION	8-29-85	880	7.4	5.2	307	350	12.0	170.0	0.01

CONSERVATION

CROP WATER USE

DEFICIT SCHEDULING

TENSIOMETERS

SOIL PROBE SCHEDULING

WATER FLOW METERS

CONSERVATION

The directors that formed the nucleus of the Board of Directors when the Lower Loup NRD was formed in 1972 were former Soil & Water Conservation District directors. Water conservation had been their middle name for a number of years. They were well-tuned to the reality that water resources were a commodity that required continued scrutiny.

The tools of a sound water conservation program are a common sense approach to irrigation. Crops need a certain amount of water to grow and produce a bountiful yield. Too much or too little can drastically affect yields.

The technology of scheduling irrigation water application was in place. It required a vigorous effort to transfer water conservation technology from the universities to the farm. The cost of fuel to pump water and apply fertilizer to grow a crop had been so low there was no incentive to conserve. When fossil fuels used in farming operations shot up in the '70's, growers became involved in a cost-price squeeze.

In the early '70's, the District, with assistance from the Cooperative Extension Service and the Soil Conservation Service, developed four programs to assist growers with conservation efforts. These four programs involved the use of irrigation water flow meters and the use of soil moisture monitoring devices that included soil moisture blocks, tensiometers, and the use of soil probes.

Each program involved the drafting and publication of a detailed report describing the equipment, how to use it, and the procedure to develop a record keeping program.

Irrigation Water Flow Meters

This publication provided an introduction to the use of flow meters, along with charts and graphs to aid in the proper application of water.

Soil Moisture Monitoring

Two publications were produced to aid in this effort. The use of electrical resistance blocks involved the use of buried gypsum blocks to monitor the moisture being held or released by the soil. Data on use of equipment was provided, along with the necessary forms for record keeping.

The use of tensiometers, along with the physical science of using soil suction properties to monitor soil moisture, is covered in another publication.

Scheduling with Soil Probes

This publication covers the most simple scheduling procedure, the "feel" method. While being the least expensive, it can, if used properly, be an effective tool to schedule irrigation.

Crop Water Use

In 1978, the District began a crop water use reporting service. The program involved the purchase and installation of four local weather stations. Data from the stations includes the reporting of maximum and minimum daily temperatures, humidity, solar radiation, total wind run, and precipitation.

The data is processed through the District's computer by use of the modified Penman equation. Data output involves the calculation of dew point temperature, accumulated solar radiation, and total wind run. This is then used to calculate the Evapotranspiration potential (Etp). Etp covers the water use for alfalfa. The water use for corn is calculated from the Etp for alfalfa.

In addition to Etp, the District calculates and reports information on growing degree days (GDD), sometimes referred to as "heat units." All seed corn companies publish the GDD information necessary to mature a crop. The daily accumulation of GDD then provides the grower with information on stage of growth.

Raw data is provided to the District office tri-weekly from May 1 to September 15 from the reporting stations at Merna in Custer County, Burwell in Garfield County, St. Paul in Howard County, and St. Edward in Boone County.

Growers can obtain this information by calling a toll-free Hot-line number (1-800-652-9329). The grower can obtain the reporting dates, daily crop water use for corn and alfalfa, last week's daily average for both corn and alfalfa, and the accumulated GDD figure. This information is supplied for 3 reporting areas--the east, central, and western parts of the District. The last bit of information is a forecast of crop water use for the following week.

The District coordinates crop condition with County Extension Agents and field staff to keep the reporting synchronized with actual conditions.

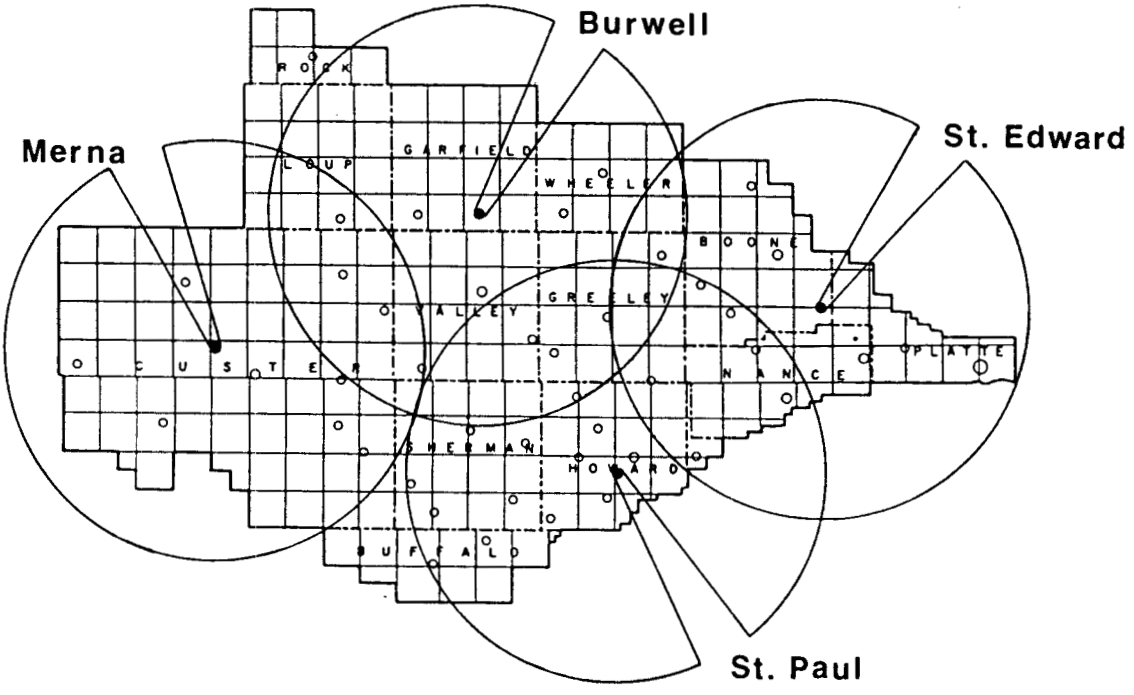
A complete resume of the 1978-1985 reporting is provided in Table 17.

Table 17

CROP WATER USE REPORT

1985

HOT LINE
1 - 800 - 652 - 9329
(TOLL FREE)



LOWER LOUP NATURAL RESOURCES DISTRICT

NO. HIGHWAY 11, HADAR INDUSTRIAL PARK
P. O. BOX 210, ORD, NEBRASKA 68862-0210
PHONE (308) 728-3221

LOWER LOUP NATURAL RESOURCES DISTRICT

CROP WATER USE INFORMATION COMPARISONS

R A I N F A L L (Inches)

YEAR	(DAYS)	MERNA	BURWELL	ST. PAUL	ST. EDWARD
1978	105	14.51	7.99	9.79	14.91
1979	105	10.10	8.46	11.11	8.36
1980	125	5.55	7.95	11.38	9.70
1981	138	20.55	15.34	21.44	20.31
1982	113	10.31	14.34	14.73	21.53
1983	106	11.03	9.98	11.61	12.98
1984	108	6.15	9.10	11.58	9.77
1985	108	11.30	14.66	12.50	12.38

W I N D R U N (Miles)

YEAR	(DAYS)	MERNA	BURWELL	ST. PAUL	ST. EDWARD
1978	105	19,200	17,917	13,214	14,903
1979	105	14,778	17,299	12,143	12,088
1980	125	21,863	21,464	15,428	16,651
1981	138	12,712	16,504	14,539	13,259
1982	113	17,492	14,920	14,402	11,354
1983	106	16,605	17,017	12,756	13,050
1984	108	15,682	13,870	13,455	10,329
1985	108	18,309	14,392	13,770	10,255

C R O P W A T E R U S E (Evapotranspiration / GDD)

		MERNA			BURWELL		
YEAR	(DAYS)	ALFALFA	CORN	GDD	ALFALFA	CORN	GDD
1978	105	31.44	25.85		25.43	20.89	
1979	105	25.22	19.45	2370	23.12	17.89	2453
1980	125	40.46	28.53	3136	35.55	26.55	2964
1981	138	26.65	18.95	2348	24.84	18.86	2451
1982	113	25.84	22.07	2313	23.09	19.95	2289
1983	106	29.36	22.45	2669	26.82	20.54	2597
1984	108	28.25	21.27	2545	27.07	21.23	2502
1985	108	28.50	19.96	2350	23.96	17.01	2401

		ST.PAUL			ST. EDWARD		
YEAR	(DAYS)	ALFALFA	CORN	GDD	ALFALFA	CORN	GDD
1978	105	27.21	21.96		23.57	18.52	
1979	105	22.31	17.61	2602	21.98	17.13	2689
1980	125	31.71	23.10	3078	31.91	23.10	3081
1981	138	24.90	17.93	2664	27.06	19.53	2677
1982	113	22.15	18.61	2515	19.83	16.73	2305
1983	106	26.79	20.99	2963	23.88	17.90	2725
1984	108	28.30	19.76	2934	24.80	16.91	2727
1985	108	26.62	19.33	2765	23.12	15.82	2620

EVAPO-TRANSPIRATION DATA MERNA WEATHER STATION Lower Loup Natural Resources District

MAY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1												10.0			3.0			0.0			0.0			2.0
2												29.0			6.0			0.0			0.0			7.0
3												32.5			25.5			6.0			2.5			19.5
4												32.5			32.5			11.5			10.5			35.5
5												33.0			32.5			21.5			10.5			49.5
6												35.0			32.5			26.0			13.5			56.5
7												35.0			38.0			30.0			17.0			71.0
8												39.5			52.5			30.0			18.5			84.5
9												39.5			72.5			41.5			19.0			99.0
10												39.5			88.0			50.5			35.5			111.0
11												45.0			88.0			63.0			44.5			124.0
12												47.5			95.0			64.0			61.5			129.0
13												47.5			98.5			64.0			76.5			129.0
14												51.5			103.5			64.0			85.5			133.5
15												62.0			108.5			64.0			101.5			139.5
16												62.5			120.0			64.0			114.0			143.5
17												62.5			125.5			64.0			128.0			149.5
18												62.5			142.5			66.0			145.0			162.0
19							0.21	0.04	122.0			63.5			160.5			69.5			164.0			177.5
20							0.20	0.04	134.5			70.0			162.5			74.5			178.0			188.5
21							0.34	0.07	152.5			80.0			163.5			75.5			199.0			204.0
22							0.40	0.09	169.0	0.51	0.12	96.0			172.5			85.0			211.0			222.0
23							0.43	0.09	188.0	0.13	0.03	98.0			184.5			102.0			219.0			241.0
24	0.26	0.06					0.44	0.10	210.0	0.35	0.08	108.0			196.5			125.0			237.0			258.5
25	0.36	0.08					0.45	0.10	232.0	0.25	0.06	122.0			201.0			140.5			247.5			277.5
26	0.22	0.05					0.32	0.08	254.5	0.16	0.04	135.0			209.5			163.5			254.5			292.5
27	0.15	0.03					0.38	0.10	273.0	0.10	0.03	149.5	0.25	0.08	223.5			187.0			265.5			307.0
28	0.17	0.04					0.47	0.12	295.5	0.22	0.06	163.0	0.08	0.03	233.0			204.5			276.5			321.0
29	0.18	0.04					0.39	0.11	314.5	0.28	0.08	174.5	0.23	0.08	245.0			216.5			287.0			336.5
30	0.27	0.13					0.38	0.11	330.5	0.30	0.09	186.0	0.18	0.07	248.0			221.5			299.0			350.5
31	0.27	0.13					0.15	0.04	338.5	0.34	0.11	199.0		0.10	248.0			227.5			319.5			359.5
	1.88	0.56	0.0	0.00	0.00	0.0	4.56	1.09	338.5	2.64	0.70	199.0	0.74	0.36	248.0	0.00	0.00	227.5	0.00	0.00	319.5	0.00	0.00	359.5

EVAPO-TRANSPIRATION DATA MERNA WEATHER STATION Lower Loup Natural Resources District

JUNE	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.15	0.08					0.31	0.09	355.5	0.28	0.09	219.0	0.23	0.09	257.0	0.06	0.01	227.5	0.28	0.06	332.5	0.41	0.10	371.5
2	0.17	0.09					0.41	0.13	377.0	0.31	0.10	232.0	0.04	0.02	257.0	0.19	0.05	233.5	0.29	0.07	338.0	0.21	0.05	375.0
3	0.21	0.12					0.43	0.14	405.5	0.27	0.10	247.0	0.13	0.06	262.0	0.24	0.06	245.5	0.22	0.06	347.5	0.22	0.06	378.0
4	0.21	0.13				260.5	0.50	0.17	436.5	0.28	0.10	266.0	0.22	0.10	271.0	0.26	0.07	255.5	0.17	0.05	362.5	0.11	0.03	381.5
5	0.08	0.05		0.54	0.15	316.5	0.42	0.15	466.0	0.24	0.09	284.5	0.02	0.01	282.5	0.18	0.05	263.5	0.32	0.10	385.5	0.03	0.01	384.0
6	0.11	0.05		0.37	0.11	334.5	0.39	0.14	489.0	0.41	0.16	309.5	0.44	0.22	294.5	0.25	0.07	270.5	0.28	0.08	402.5	0.21	0.06	395.5
7	0.27	0.12		0.24	0.07	341.5	0.34	0.13	497.0	0.35	0.14	337.0	0.24	0.12	306.5	0.26	0.07	279.5	0.26	0.07	421.0	0.26	0.08	419.5
8	0.24	0.11		0.11	0.03	343.0	0.22	0.09	506.5	0.35	0.15	364.0	0.20	0.10	318.0	0.30	0.09	308.0	0.32	0.09	436.5	0.50	0.16	446.5
9	0.32	0.15		0.07	0.02	343.5	0.34	0.14	522.5	0.25	0.11	379.0	0.35	0.19	324.0	0.35	0.11	326.0	0.21	0.06	443.5	0.34	0.12	461.5
10	0.55	0.27		0.26	0.09	355.5	0.31	0.13	546.5	0.30	0.14	399.0	0.27	0.15	336.0	0.25	0.08	342.5	0.26	0.08	453.5	0.28	0.10	474.5
11	0.49	0.25		0.40	0.14	386.5	0.59	0.26	574.5	0.23	0.11	419.5	0.21	0.12	349.0	0.30	0.10	361.5	0.07	0.02	467.0	0.39	0.14	480.5
12	0.39	0.21		0.37	0.13	412.0	0.35	0.16	604.0	0.36	0.18	448.5	0.24	0.14	362.5	0.24	0.08	382.0	0.16	0.05	484.0	0.23	0.09	482.5
13	0.35	0.19		0.49	0.18	432.0	0.33	0.16	633.5	0.34	0.17	472.5	0.27	0.16	381.0	0.17	0.06	392.0	0.17	0.06	502.5	0.28	0.11	492.0
14	0.49	0.28		0.51	0.20	464.5	0.42	0.21	658.5	0.21	0.11	483.0	0.13	0.06	397.5	0.33	0.13	406.0	0.29	0.11	525.5	0.26	0.11	506.0
15	0.40	0.24		0.32	0.13	486.5	0.24	0.12	675.5	0.35	0.19	492.0	0.32	0.20	410.5	0.28	0.11	420.5	0.22	0.08	549.0	0.32	0.14	522.0
16	0.36	0.22		0.37	0.15	500.5	0.20	0.11	687.5	0.33	0.18	507.0	0.32	0.19	428.5	0.28	0.12	438.0	0.23	0.09	570.5	0.38	0.17	541.0
17	0.45	0.28		0.08	0.03	503.5	0.25	0.14	699.5	0.36	0.21	524.5	0.22	0.13	444.5	0.09	0.04	449.5	0.28	0.12	592.0	0.50	0.23	551.5
18	0.31	0.20		0.07	0.03	519.5	0.39	0.22	723.5	0.26	0.15	533.0	0.16	0.10	451.5	0.18	0.08	464.5	0.26	0.11	608.0	0.31	0.15	560.5
19	0.41	0.27		0.31	0.14	556.5	0.16	0.09	734.0	0.36	0.22	556.0	0.31	0.19	464.5	0.10	0.05	481.5	0.30	0.13	630.0	0.34	0.17	567.5
20	0.37	0.25		0.36	0.17	575.5	0.31	0.18	752.0	0.29	0.18	577.5	0.27	0.17	481.5	0.22	0.10	504.5	0.29	0.13	652.5	0.40	0.20	589.0
21	0.25	0.17		0.35	0.17	599.5	0.29	0.18	773.0	0.26	0.17	592.5	0.20	0.13	497.5	0.41	0.20	533.5	0.28	0.13	675.5	0.39	0.20	607.0
22	0.33	0.24		0.14	0.07	613.5	0.26	0.16	796.0	0.32	0.21	614.0	0.26	0.17	513.5	0.27	0.14	558.5	0.37	0.18	704.0	0.41	0.22	622.0
23	0.18	0.13		0.21	0.11	627.0	0.44	0.28	825.5	0.42	0.28	642.5	0.28	0.19	534.0	0.34	0.32	585.0	0.32	0.16	722.0	0.31	0.17	644.5
24	0.32	0.24		0.20	0.11	641.0	0.17	0.11	852.0	0.31	0.21	659.5	0.17	0.12	549.5	0.37	0.20	608.5	0.33	0.17	738.0	0.47	0.27	668.0
25	0.31	0.24		0.27		646.0	0.31	0.21	886.0	0.28	0.20	683.0	0.25	0.18	562.5	0.19	0.11	631.5	0.27	0.15	762.0	0.40	0.24	693.5
26	0.33	0.26		0.31	0.15	669.0	0.43	0.33	921.5	0.30	0.22	707.0	0.11	0.08	578.5	0.27	0.15	654.0	0.35	0.20	789.5	0.16	0.10	697.0
27	0.36	0.29		0.24	0.18	689.0	0.57	0.40	947.5	0.34	0.25	739.5	0.20	0.15	599.0	0.10	0.06	669.5	0.27	0.16	807.0	0.31	0.19	703.5
28	0.35	0.29		0.28	0.14	710.0	0.38	0.27	968.0	0.32	0.24	767.5	0.31	0.23	624.0	0.06	0.04	681.5	0.36	0.21	832.5	0.28	0.18	712.0
29	0.34	0.29		0.29	0.18	732.0	0.37	0.27	995.5	0.26	0.20	783.5	0.27	0.21	645.5	0.24	0.15	699.5	0.32	0.19	853.0	0.27	0.18	725.0
30	0.38	0.33		0.27	0.17	753.0	0.48	0.36	1031.0	0.22	0.17	802.5	0.11	0.08	662.5	0.28	0.18	724.0	0.28	0.17	871.0	0.23	0.15	739.0
31																								
	9.48	6.04	0.0	7.43	3.05	552.0	10.61	5.53	692.5	9.16	5.03	603.5	6.75	4.06	414.5	7.06	3.08	496.5	8.03	3.34	551.5	9.21	4.18	379.5

EVAPO-TRANSPIRATION DATA MERNA WEATHER STATION Lower Loup Natural Resources District

JULY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.43	0.37		0.28	0.18	777.0	0.34	0.26	1051.0	0.27	0.21	828.0	0.19	0.14	638.0	0.26	0.17	748.0	0.07	0.04	884.0	0.26	0.18	758.0
2	0.31	0.27		0.14	0.09	799.0	0.27	0.21	1072.5	0.09	0.07	849.0	0.24	0.18	706.5	0.35	0.24	777.5	0.27	0.18	905.5	0.26	0.18	779.5
3	0.36	0.32		0.27	0.18	829.0	0.34	0.31	1102.0	0.17	0.14	867.0	0.34	0.27	737.5	0.36	0.25	804.0	0.30	0.20	929.0	0.39	0.28	803.5
4	0.50	0.45		0.10	0.07	844.0	0.27	0.25	1132.0	0.25	0.21	887.0	0.55	0.44	771.0	0.31	0.22	817.5	0.23	0.16	948.0	0.36	0.27	824.5
5	0.60	0.55		0.06	0.04	850.0	0.39	0.36	1163.5	0.26	0.22	910.5	0.31	0.25	794.5	0.31	0.22	832.0	0.30	0.21	970.0	0.32	0.24	842.0
6	0.40	0.37		0.07	0.05	857.0	0.52	0.48	1203.0	0.32	0.28	935.5	0.26	0.21	807.5	0.42	0.31	854.0	0.25	0.18	983.0	0.38	0.29	865.5
7	0.25	0.23		0.23	0.17	878.0	0.48	0.39	1237.0	0.33	0.29	961.5	0.34	0.28	831.5	0.40	0.30	879.5	0.24	0.18	1002.0	0.35	0.27	897.5
8	0.30	0.28		0.24	0.18	803.0	0.32	0.27	1269.5	0.24	0.21	976.5	0.33	0.28	856.0	0.37	0.28	906.0	0.26	0.20	1026.5	0.28	0.24	929.5
9	0.35	0.33		0.18	0.12	923.5	0.39	0.33	1308.5	0.26	0.23	1000.5	0.27	0.22	878.0	0.37	0.29	931.5	0.21	0.16	1053.5	0.38	0.33	958.0
10	0.26	0.25		0.28	0.19	949.5	0.35	0.30	1341.5	0.34	0.31	1030.5	0.26	0.21	893.0	0.37	0.29	959.0	0.23	0.18	1075.0	0.34	0.28	985.5
11	0.35	0.31		0.34	0.24	976.9	0.45	0.39	1376.5	0.29	0.27	1061.5	0.28	0.23	916.0	0.26	0.21	977.5	0.28	0.22	1093.5	0.46	0.39	1015.0
12	0.33	0.30		0.29	0.21	1005.5	0.31	0.27	1405.5	0.29	0.27	1092.0	0.31	0.26	940.5	0.26	0.21	997.0	0.38	0.31	1115.5	0.31	0.28	1048.5
13	0.36	0.33		0.37	0.27	1031.5	0.40	0.35	1442.5	0.33	0.31	1121.5	0.25	0.21	966.5	0.38	0.32	1024.0	0.39	0.32	1146.5	0.33	0.30	1080.5
14	0.31	0.28		0.30	0.22	1051.5	0.33	0.30	1475.0	0.21	0.20	1151.0	0.24	0.21	989.5	0.40	0.34	1050.5	0.24	0.20	1169.5	0.24	0.22	1104.5
15	0.30	0.28		0.28	0.21	1069.5	0.40	0.37	1505.0	0.26	0.24	1178.0	0.38	0.33	1017.5	0.40	0.34	1078.0	0.26	0.22	1190.0	0.33	0.31	1124.0
16	0.35	0.33		0.18	0.14	1084.0	0.42	0.39	1537.0	0.18	0.17	1202.5	0.41	0.36	1044.0	0.18	0.16	1097.0	0.31	0.29	1217.5	0.36	0.34	1150.0
17	0.34	0.32		0.16	0.12	1097.0	0.41	0.38	1585.5	0.27	0.26	1229.0	0.28	0.25	1059.5	0.28	0.24	1123.0	0.31	0.29	1237.5	0.40	0.38	1179.0
18	0.36	0.34		0.16	0.13	1113.5	0.37	0.36	1616.0	0.16	0.15	1250.0	0.29	0.26	1083.5	0.30	0.27	1151.0	0.33	0.31	1263.0	0.18	0.16	1206.0
19	0.31	0.30		0.24	0.19	1133.5	0.33	0.31	1645.5	0.28	0.26	1274.5	0.29	0.26	1113.5	0.41	0.37	1185.0	0.33	0.31	1293.0	0.24	0.22	1229.5
20	0.34	0.33		0.29	0.24	1157.5	0.30	0.28	1667.5	0.14	0.13	1300.5	0.37	0.34	1143.5	0.42	0.38	1218.5	0.24	0.23	1317.5	0.14	0.13	1248.5
21	0.16	0.15		0.30	0.25	1183.0	0.31	0.29	1690.5	0.13	0.12	1320.5	0.29	0.27	1172.0	0.31	0.29	1251.5	0.30	0.28	1344.0	0.26	0.25	1274.0
22	0.27	0.25		0.29	0.24	1210.0	0.31	0.30	1718.5	0.25	0.24	1341.0	0.33	0.31	1199.0	0.36	0.34	1286.0	0.34	0.32	1374.5	0.19	0.18	1295.5
23	0.19	0.18		0.26	0.22	1234.0	0.32	0.30	1748.0	0.24	0.23	1364.0	0.41	0.38	1226.5	0.19	0.18	1306.0	0.36	0.34	1401.5	0.28	0.27	1321.5
24	0.26	0.25		0.20	0.17	1253.0	0.35	0.34	1778.5	0.21	0.20	1388.0	0.34	0.32	1256.5	0.14	0.13	1325.0	0.25	0.24	1427.0	0.24	0.23	1345.5
25	0.34	0.33		0.25	0.22	1276.0	0.17	0.17	1797.5	0.18	0.18	1407.5	0.36	0.34	1287.5	0.29	0.28	1346.5	0.22	0.21	1449.0	0.30	0.29	1367.0
26	0.34	0.33		0.22	0.20	1298.0	0.27	0.27	1822.0	0.07	0.07	1415.0	0.22	0.24	1312.5	0.31	0.30	1369.5	0.22	0.22	1468.0	0.34	0.33	1390.5
27	0.31	0.30		0.20	0.18	1320.5	0.31	0.31	1855.0	0.08	0.08	1424.5	0.23	0.25	1335.0	0.24	0.22	1396.5	0.26	0.26	1482.0	0.33	0.33	1413.0
28	0.37	0.36		0.27	0.24	1342.5	0.39	0.39	1888.5	0.10	0.10	1437.0	0.16	0.17	1358.0	0.14	0.13	1422.5	0.33	0.33	1498.5	0.15	0.15	1434.5
29	0.45	0.44		0.15	0.14	1365.5	0.50	0.50	1927.0	0.10	0.10	1458.0	0.18	0.20	1375.5	0.29	0.27	1446.5	0.38	0.39	1520.0	0.08	0.08	1451.5
30	0.24	0.24		0.25	0.23	1378.0	0.35	0.35	1955.0	0.22	0.22	1484.5	0.24	0.26	1396.5	0.18	0.17	1469.0	0.33	0.34	1542.5	0.13	0.13	1469.5
31	0.29	0.29		0.18	0.17	1385.5	0.31	0.31	1982.0	0.22	0.22	1511.5	0.27	0.29	1424.0	0.27	0.26	1495.0	0.22	0.23	1566.5	0.10	0.10	1484.0
	10.33	9.66	0.0	7.03	5.50	632.5	10.98	10.09	951.0	6.74	6.19	709.0	9.22	8.22	761.5	9.53	7.98	771.0	8.64	7.55	695.5	8.71	7.63	745.0

EVAPO-TRANSPIRATION DATA MERNA WEATHER STATION Lower Loup Natural Resources District

AUGUST	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.14	0.14		0.18	0.17	1400.0	0.42	0.41	2013.0	0.15	0.15	1535.0	0.37	0.40	1454.0	0.31	0.30	1523.0	0.23	0.24	1590.5	0.07	0.07	1498.0
2	0.24	0.24		0.25	0.23	1424.5	0.36	0.36	2044.0	0.21	0.21	1561.0	0.36	0.39	1485.0	0.34	0.33	1554.5	0.24	0.26	1616.5	0.03	0.03	1512.0
3	0.23	0.23		0.25	0.23	1449.5	0.53	0.53	2079.0	0.24	0.24	1588.0	0.28	0.30	1515.5	0.26	0.26	1584.5	0.18	0.19	1643.5	0.18	0.18	1535.5
4	0.18	0.18		0.32	0.30	1477.5	0.34	0.34	2088.5	0.30	0.30	1622.5	0.19	0.21	1542.0	0.27	0.27	1615.0	0.24	0.26	1671.5	0.24	0.24	1560.5
5	0.20	0.20		0.36	0.34	1506.5	0.34	0.34	2117.0	0.21	0.21	1648.0	0.21	0.23	1566.5	0.10	0.10	1643.0	0.28	0.31	1700.5	0.29	0.29	1589.0
6	0.26	0.26		0.25	0.24	1535.5	0.39	0.39	2153.0	0.26	0.26	1667.0	0.21	0.23	1589.0	0.20	0.20	1673.0	0.31	0.35	1732.0	0.27	0.27	1612.5
7	0.29	0.29		0.36	0.35	1566.5	0.45	0.44	2188.5	0.26	0.26	1683.5	0.26	0.28	1615.5	0.27	0.27	1699.0	0.18	0.20	1760.5	0.37	0.37	1641.0
8	0.29	0.29		0.33	0.31	1599.5	0.17	0.17	2213.0	0.22	0.22	1702.5	0.23	0.25	1638.0	0.27	0.27	1726.5	0.24	0.24	1788.5	0.36	0.36	1668.0
9	0.27	0.27		0.33	0.31	1630.5	0.30	0.29	2245.0	0.14	0.14	1715.5	0.12	0.13	1647.0	0.42	0.42	1754.0	0.29	0.29	1812.0	0.29	0.28	1689.0
10	0.27	0.27		0.28	0.27	1654.5	0.30	0.29	2268.5	0.18	0.18	1731.0	0.08	0.09	1652.5	0.32	0.32	1784.0	0.31	0.31	1833.5	0.32	0.31	1699.0
11	0.29	0.28		0.22	0.21	1660.0	0.31	0.30	2295.0	0.20	0.19	1749.0	0.15	0.16	1665.5	0.28	0.28	1807.0	0.32	0.31	1859.0	0.18	0.17	1716.0
12	0.28	0.27		0.28	0.27	1687.0	0.38	0.37	2328.5	0.19	0.18	1770.5	0.03	0.03	1683.5	0.34	0.34	1831.0	0.31	0.30	1887.0	0.21	0.20	1735.0
13	0.30	0.29		0.34	0.33	1709.5	0.29	0.28	2351.5	0.12	0.12	1792.5	0.22	0.24	1709.5	0.15	0.15	1851.0	0.36	0.35	1915.5	0.23	0.22	1750.0
14	0.34	0.33		0.22	0.22	1723.5	0.26	0.25	2373.5	0.21	0.20	1815.0	0.11	0.12	1732.0	0.26	0.26	1875.5	0.37	0.36	1942.0	0.19	0.18	1763.0
15	0.16	0.15		0.08	0.08	1727.5	0.11	0.10	2390.0	0.16	0.15	1836.0	0.22	0.24	1758.0	0.27	0.27	1905.0	0.22	0.21	1969.5	0.14	0.13	1772.0
16	0.25	0.24		0.12	0.12	1733.5	0.24	0.22	2413.5	0.13	0.12	1852.0	0.19	0.21	1780.5	0.31	0.31	1940.0	0.36	0.34	2000.5	0.26	0.24	1790.5
17	0.32	0.30		0.14	0.14	1752.0	0.28	0.26	2440.0	0.13	0.12	1865.0	0.24	0.26	1804.0	0.37	0.36	1975.0	0.28	0.26	2028.5	0.31	0.29	1809.5
18	0.30	0.28		0.20	0.20	1779.0	0.30	0.28	2466.0	0.18	0.17	1879.5	0.28	0.30	1831.5	0.52	0.51	2019.5	0.29	0.27	2053.5	0.08	0.07	1819.5
19	0.18	0.17		0.11	0.11	1798.0	0.31	0.28	2491.0	0.19	0.17	1897.5	0.25	0.27	1862.5	0.36	0.35	2045.5	0.28	0.26	2073.5	0.19	0.17	1833.5
20	0.21	0.19		0.16	0.16	1816.5	0.32	0.29	2511.0	0.21	0.19	1916.5	0.15	0.16	1881.0	0.25	0.24	2069.5	0.16	0.15	2095.0	0.00	0.00	1848.0
21	0.33	0.30		0.17	0.17	1833.0	0.28	0.25	2532.5	0.24	0.21	1939.5	0.20	0.22	1905.0	0.23	0.22	2097.5	0.22	0.20	2117.5	0.19	0.17	1868.5
22	0.27	0.24		0.19	0.19	1852.0	0.36	0.32	2554.5	0.10	0.09	1957.0	0.14	0.15	1926.5	0.23	0.22	2124.0	0.26	0.23	2135.0	0.27	0.24	1893.5
23	0.38	0.34		0.23	0.23	1869.0	0.38	0.33	2586.5	0.18	0.16	1976.0	0.23	0.25	1948.5	0.20	0.19	2148.0	0.30	0.27	2152.0	0.23	0.20	1910.0
24	0.23	0.20		0.23	0.23	1886.5	0.28	0.24	2620.5	0.20	0.17	1997.0	0.20	0.22	1959.0	0.23	0.22	2176.0	0.34	0.30	2173.0	0.20	0.17	1919.0
25	0.30	0.26		0.18	0.18	1908.0	0.31	0.26	2645.0	0.18	0.15	2017.0	0.23	0.25	1975.5	0.29	0.27	2208.5	0.28	0.24	2196.5	0.22	0.19	1933.0
26	0.18	0.15		0.18	0.18	1919.5	0.08	0.07	2650.5	0.21	0.17	2033.5	0.27	0.29	1995.5	0.19	0.17	2236.0	0.25	0.21	2225.0	0.27	0.22	1952.5
27	0.20	0.17		0.08	0.08	1936.5	0.20	0.16	2667.5	0.19	0.16	2049.5	0.12	0.13	2004.5	0.16	0.15	2259.0	0.26	0.22	2254.0	0.27	0.22	1976.0
28	0.21	0.18		0.18	0.18	1953.5	0.28	0.23	2692.0	0.12	0.10	2065.0	0.09	0.10	2023.5	0.30	0.27	2286.0	0.27	0.22	2282.0	0.12	0.10	1998.5
29	0.22	0.18		0.25	0.24	1970.5	0.29	0.23	2718.5	0.16	0.13	2089.5	0.19	0.20	2052.0	0.31	0.28	2316.5	0.27	0.22	2304.0	0.24	0.19	2023.0
30	0.18	0.15		0.30	0.29	1994.5	0.21	0.16	2738.0	0.20	0.16	2116.0	0.14	0.15	2072.5	0.21	0.18	2345.0	0.29	0.23	2320.0	0.31	0.24	2050.5
31	0.25	0.20		0.26	0.25	2022.5	0.21	0.16	2757.5	0.19	0.15	2122.5	0.20	0.22	2096.0	0.22	0.19	2370.0	0.34	0.27	2346.0	0.28	0.21	2081.0
	7.75	7.24	0.0	7.03	6.81	637.0	9.28	8.60	775.5	5.86	5.43	611.0	6.16	6.68	672.0	8.44	8.17	875.0	8.53	8.07	779.5	6.81	6.22	597.0

EVAPO-TRANSPIRATION DATA MERNA WEATHER STATION Lower Loup Natural Resources District

SEPT.	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.34	0.27		0.28	0.27	2043.5	0.24	0.18	2772.5	0.20	0.15	2133.5	0.24	0.26	2114.0	0.31	0.27	2398.5	0.10	0.08	2365.0	0.28	0.21	2106.0
2	0.18	0.14		0.28	0.27	2061.0	0.27	0.20	2792.5	0.26	0.19	2154.0	0.23	0.24	2130.0	0.41	0.35	2429.0	0.25	0.19	2379.5	0.27	0.20	2137.0
3	0.24	0.18		0.30	0.28	2085.5	0.33	0.25	2817.0	0.10	0.07	2160.5	0.27	0.28	2150.5	0.28	0.23	2460.5	0.21	0.16	2395.5	0.22	0.16	2162.0
4	0.24	0.18		0.33	0.31	2114.0	0.24	0.17	2831.0	0.15	0.11	2177.0	0.28	0.28	2175.5	0.23	0.19	2485.0	0.25	0.19	2408.5	0.18	0.13	2186.0
5	0.29	0.21		0.26	0.24	2141.0	0.31	0.22	2861.0	0.22	0.15	2201.5	0.13	0.13	2195.5	0.31	0.25	2506.5	0.31	0.23	2420.0	0.24	0.17	2209.5
6	0.32	0.23		0.25	0.23	2162.0	0.22	0.15	2893.0	0.10	0.07	2201.5	0.12	0.12	2212.0	0.28	0.22	2524.5	0.36	0.26	2443.5	0.23	0.16	2235.5
7	0.37	0.26		0.27	0.25	2182.0	0.28	0.19	2923.0	0.20	0.13	2225.5	0.18	0.18	2229.5	0.31	0.24	2543.0	0.14	0.10	2455.0	0.27	0.18	2259.0
8	0.37	0.25		0.32	0.29	2204.5	0.35	0.23	2946.0	0.18	0.31	2241.5	0.22	0.22	2250.0	0.47	0.36	2574.0	0.22	0.15	2467.0	0.18	0.12	2272.0
9	0.29	0.19		0.32	0.28	2231.5	0.19	0.12	2955.0	0.21	0.14	2257.5	0.24	0.24	2269.0	0.37	0.28	2606.0	0.23	0.15	2480.5	0.18	0.12	2285.0
10	0.36	0.24		0.29	0.25	2260.0	0.21	0.13	2968.0	0.20	0.13	2279.0	0.29	0.29	2295.5	0.22	0.16	2620.5	0.14	0.09	2491.5	0.07	0.04	2296.5
11	0.34	0.22		0.12	0.10	2282.0	0.18	0.11	2988.5	0.23	0.14	2292.5	0.21	0.21	2307.0	0.37	0.27	2635.5	0.19	0.12	2502.5	0.01	0.01	2307.5
12	0.30	0.19		0.10	0.08	2290.5	0.25	0.15	3005.5	0.20	0.12	2301.5	0.08	0.08	2309.5	0.22	0.16	2644.5	0.22	0.14	2525.0	0.02	0.01	2319.5
13	0.25	0.16		0.16	0.14	2293.0	0.20	0.12	2018.5	0.22	0.13	2334.5	0.07	0.07	2311.0	0.24	0.17	2649.0	0.19	0.12	2540.0	0.07	0.04	2329.0
14	0.23	0.14		0.18	0.15	2297.0	0.18	0.10	3034.0	0.20	0.11	2345.0	0.06	0.06	2311.5	0.10	0.07	2654.0	0.15	0.09	2545.0	0.03	0.02	2337.0
15	0.22	0.13		0.17	0.14	2309.5	0.35	0.19	3051.0	0.12	0.07	2347.5	0.09	0.09	2313.0	0.21	0.14	2668.5	0.14	0.08	2545.0	0.06	0.03	2350.0
16				0.25	0.20	2323.0	0.09	0.05	3051.0										0.15	0.09	2545.0			
17				0.25	0.20	2339.0	0.30	0.16	3067.5															
18				0.20	0.16	2350.5	0.24	0.12	3082.0															
19				0.25	0.19	2365.5	0.23	0.11	3101.0															
20				0.20	0.15	2370.0	0.17	0.03	3115.5															
21							0.35	0.16	3134.5															
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	4.34	2.99	0.0	4.78	4.18	347.5	5.18	3.19	377.0	2.79	2.02	225.0	2.71	2.75	217.0	4.33	3.36	2985.0	3.25	2.24	199.0	2.31	1.60	269.0

EVAPO-TRANSPIRATION DATA BURWELL WEATHER STATION Lower Loup Natural Resources District

MAY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1												23.0			5.0			0.0			0.0			13.0
2												41.5			16.0			0.0			0.5			31.0
3												55.5			34.0			4.0			1.0			43.0
4												63.5			36.0			6.0			4.0			55.0
5												68.5			43.0			16.5			5.5			67.0
6												75.5			51.5			24.0			5.5			78.0
7												83.5			59.0			30.0			5.5			98.0
8												87.5			66.0			30.0			5.5			116.0
9												87.5			75.0			41.5			5.5			133.0
10												88.5			90.0			52.0			16.5			151.0
11												95.5			93.0			64.5			28.5			160.0
12												98.5			106.0			66.5			48.5			173.0
13												107.5			113.0			66.5			64.0			173.0
14												120.5			123.0			66.5			72.5			174.0
15												124.5			134.0			66.5			82.5			178.0
16												126.0			146.0			66.5			104.5			190.0
17												126.0			156.0			68.0			122.0			204.0
18												126.0			174.0			70.0			137.0			221.0
19												127.0			187.0			73.5			153.0			243.0
20							0.25	0.05	214.5			138.0			199.0			76.5			166.5			258.0
21							0.28	0.06	227.5			152.5			211.0			84.5			182.0			277.0
22							0.33	0.07	239.5			169.5			219.0			94.5			194.0			298.0
23							0.30	0.07	248.0			169.5			223.5			102.5			202.5			320.0
24							0.34	0.08	266.0			179.5			227.5			116.0			221.5			342.0
25							0.30	0.08	288.0			197.5			233.5			132.0			229.0			369.0
26	0.28	0.08					0.22	0.06	310.0	0.10	0.02	211.0	0.09	0.03	242.5			149.0			231.5			389.0
27	0.20	0.06					0.25	0.07	321.0	0.14	0.04	230.5	0.21	0.07	256.5			164.0			241.0			403.5
28	0.08	0.03					0.28	0.08	341.0	0.20	0.05	247.0	0.03	0.01	264.5			176.0			250.5			424.5
29	0.19	0.07					0.26	0.08	358.0	0.28	0.08	259.5	0.22	0.08	275.5			177.0			255.5			447.5
30	0.12	0.08					0.24	0.07	370.0	0.27	0.08	274.5	0.14	0.05	276.5			182.0			266.5			463.5
31	0.15	0.06					0.12	0.04	380.0	0.34	0.10	292.5	0.23	0.09	276.5			183.0			283.0			475.5
	1.02	0.38		0	0		3.17	0.81	380.0	1.33	0.37	292.5	0.92	0.33	276.5	0	0	183.0	0	0	283.0	0	0	475.5

EVAPO-TRANSPIRATION DATA BURWELL WEATHER STATION Lower Loup Natural Resources District

JUNE	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.09	0.04				235.0	0.25	0.08	395.0	0.24	0.08	310.5	0.19	0.08	279.5	0.14	0.01	185.0			291.5	0.34	0.08	489.0
2	0.19	0.09				244.0	0.24	0.08	411.0	0.30	0.10	323.5	0.05	0.02	279.5	0.15	0.02	195.0	0.29	0.06	302.5	0.21	0.05	492.0
3	0.20	0.10				260.0	0.26	0.09	433.0	0.26	0.09	339.5	0.16	0.07	284.5	0.24	0.06	209.0	0.27	0.06	313.0	0.23	0.06	498.0
4	0.19	0.11		0.33	0.08	277.0	0.24	0.09	457.0	0.25	0.09	360.5	0.27	0.12	297.5	0.24	0.06	216.0	0.22	0.06	332.0	0.13	0.04	504.0
5	0.16	0.09		0.33	0.08	295.0	0.34	0.13	483.0	0.26	0.10	379.5	0.06	0.03	309.5	0.16	0.04	220.0	0.31	0.09	355.0	0.11	0.03	510.0
6	0.14	0.05		0.43	0.11	319.5	0.20	0.08	503.0	0.40	0.15	404.0	0.36	0.18	321.5	0.26	0.06	226.0	0.27	0.07	373.0	0.11	0.03	520.5
7	0.24	0.10		0.36	0.10	337.0	0.27	0.11	509.0	0.34	0.13	431.0	0.24	0.12	334.5	0.25	0.04	237.0	0.24	0.06	390.5	0.26	0.08	542.5
8	0.17	0.07		0.23	0.10	348.0	0.24	0.10	520.0	0.31	0.13	456.0	0.03	0.02	338.5	0.25	0.07	252.0	0.33	0.09	410.5	0.36	0.12	569.5
9	0.27	0.12		0.11	0.03	359.5	0.25	0.11	537.0	0.21	0.09	469.0	0.25	0.13	342.5	0.28	0.08	272.0	0.26	0.07	423.5	0.30	0.10	589.5
10	0.45	0.20		0.07	0.02	361.5	0.28	0.13	557.0	0.28	0.12	488.0	0.21	0.12	246.0	0.22	0.07	290.0	0.20	0.06	430.5	0.16	0.06	603.5
11	0.38	0.18		0.33	0.11	377.5	0.40	0.19	580.0	0.24	0.11	509.0	0.18	0.10	360.0	0.17	0.06	306.0	0.19	0.06	445.5	0.28	0.10	610.5
12	0.32	0.16		0.29	0.10	404.0	0.21	0.10	605.0	0.30	0.14	536.0	0.22	0.13	375.0	0.10	0.03	323.0	0.21	0.07	463.5	0.22	0.08	615.5
13	0.31	0.16		0.40	0.14	426.0	0.25	0.13	630.0	0.35	0.17	562.0	0.24	0.15	393.0	0.13	0.06	332.0	0.17	0.06	480.5	0.25	0.10	625.5
14	0.42	0.22		0.45	0.17	457.0	0.31	0.16	654.0	0.15	0.08	572.0	0.09	0.06	407.0	0.30	0.11	346.0	0.26	0.09	502.5	0.20	0.08	639.5
15	0.31	0.17		0.22	0.08	480.0	0.20	0.11	669.0	0.24	0.13	577.0	0.22	0.14	416.0	0.25	0.10	360.0	0.21	0.07	524.0	0.26	0.11	659.5
16	0.32	0.18		0.32	0.12	497.0	0.24	0.13	682.0	0.35	0.19	586.0	0.26	0.15	428.0	0.22	0.09	375.0	0.23	0.08	545.0	0.35	0.15	684.5
17	0.28	0.17		0.04	0.02	503.0	0.21	0.12	700.0	0.32	0.18	603.0	0.18	0.11	443.0	0.08	0.03	388.0	0.23	0.09	565.0	0.41	0.19	699.5
18	0.26	0.16		0.02	0.01	518.5	0.23	0.14	722.0	0.17	0.10	612.5	0.15	0.09	449.0	0.18	0.08	402.0	0.27	0.11	583.0	0.21	0.10	708.5
19	0.36	0.23		0.33	0.14	536.5	0.15	0.09	732.0	0.27	0.16	630.5	0.25	0.15	465.0	0.14	0.06	420.0	0.29	0.12	604.5	0.30	0.15	720.5
20	0.27	0.18		0.32	0.14	557.5	0.27	0.17	749.0	0.27	0.16	651.5	0.24	0.15	481.0	0.17	0.08	440.5	0.25	0.11	626.5	0.37	0.19	742.0
21	0.24	0.16		0.29	0.13	583.5	0.24	0.15	769.0	0.27	0.17	671.5	0.20	0.13	498.0	0.38	0.18	468.5	0.20	0.09	651.0	0.32	0.17	763.5
22	0.35	0.24		0.13	0.06	602.0	0.17	0.11	786.5	0.27	0.17	692.5	0.24	0.16	514.0	0.16	0.08	494.5	0.31	0.14	679.0	0.38	0.21	779.0
23	0.15	0.11		0.17	0.08	617.0	0.33	0.22	810.5	0.41	0.27	720.5	0.25	0.17	535.0	0.37	0.19	520.5	0.30	0.14	694.0	0.28	0.16	803.5
24	0.18	0.13		0.13	0.07	632.0	0.15	0.10	836.5	0.36	0.24	741.5	0.17	0.12	553.0	0.30	0.16	545.5	0.32	0.16	711.0	0.38	0.22	829.5
25	0.21	0.16		0.22	0.12	651.0	0.25	0.18	866.5	0.32	0.22	763.5	0.26	0.18	566.0	0.25	0.13	570.0	0.29	0.15	736.0	0.34	0.20	856.5
26	0.28	0.21		0.26	0.14	675.0	0.36	0.26	897.5	0.25	0.18	786.0	0.17	0.12	583.0	0.16	0.09	591.5	0.31	0.16	763.0	0.11	0.07	861.5
27	0.28	0.22		0.27	0.15	697.0	0.46	0.33	923.5	0.41	0.30	819.0	0.22	0.16	604.5	0.04	0.02	605.5	0.29	0.16	782.0	0.28	0.17	871.5
28	0.26	0.21		0.30	0.17	719.5	0.35	0.26	945.0	0.31	0.23	845.0	0.30	0.22	628.5	0.07	0.04	621.5	0.32	0.18	804.0	0.25	0.16	882.5
29	0.22	0.18		0.29	0.17	741.5	0.36	0.28	970.0	0.27	0.20	864.0	0.25	0.19	647.5	0.20	0.12	639.5	0.30	0.17	824.0	0.26	0.17	896.5
30	0.33	0.28		0.30	0.18	765.0	0.36	0.28	998.5	0.31	0.24	895.0	0.13	0.10	664.5	0.29	0.18	664.5	0.31	0.18	843.0	0.21	0.14	914.5
31																								
	7.83	4.68	550.0	6.94	2.82	618.5	8.07	4.51	592.5	8.69	4.72	388.0	6.04	3.67	481.5	6.15	2.4	481.5	7.65	3.01	16449	7.87	3.57	439.0

EVAPO-TRANSPIRATION DATA BURWELL WEATHER STATION Lower Loup Natural Resources District

JULY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.34	0.29		0.22	0.14	789.0	0.32	0.26	1016.5	0.32	0.25	910.0	0.16	0.12	683.5	0.25	0.16	687.5	0.14	0.08	859.0	0.25	0.17	935.5
2	0.23	0.20				813.5	0.26	0.21	1034.5	0.03	0.02	928.0	0.16	0.12	706.5	0.28	0.18	715.5	0.30	0.19	880.5	0.27	0.19	957.5
3	0.28	0.25				842.0	0.28	0.26	1060.5	0.07	0.06	944.0	0.25	0.19	732.5	0.28	0.19	738.5	0.27	0.17	903.0	0.42	0.30	983.5
4	0.30	0.27		0.33	0.08	858.0	0.26	0.24	1091.5	0.24	0.20	967.0	0.41	0.32	764.5	0.24	0.17	751.5	0.23	0.15	922.0	0.35	0.26	1006.5
5	0.49	0.44		0.33	0.08	865.0	0.38	0.35	1123.5	0.27	0.23	992.0	0.22	0.18	789.5	0.29	0.20	767.5	0.27	0.18	943.0	0.30	0.23	1026.5
6	0.34	0.31		0.43	0.11	873.0	0.48	0.44	1163.5	0.35	0.30	1018.0	0.23	0.19	802.5	0.39	0.28	789.5	0.25	0.17	956.0	0.34	0.26	1047.5
7	0.18	0.17		0.36	0.10	889.0	0.52	0.44	1198.5	0.35	0.30	1045.0	0.28	0.23	824.5	0.35	0.26	814.5	0.25	0.18	973.0	0.32	0.25	1076.5
8	0.24	0.23		0.23	0.10	913.5	0.32	0.27	1226.5	0.31	0.27	1063.0	0.23	0.19	847.5	0.36	0.27	841.5	0.24	0.17	998.0	0.25	0.22	1105.5
9	0.20	0.19		0.23	0.15	937.5	0.39	0.34	1263.5	0.32	0.28	1088.0	0.25	0.21	869.5	0.35	0.27	867.5	0.10	0.07	1022.0	0.35	0.31	1134.5
10	0.21	0.20		0.22	0.14	964.5	0.34	0.30	1300.5	0.42	0.38	1119.0	0.25	0.21	886.5	0.34	0.27	893.5	0.17	0.13	1042.0	0.38	0.31	1161.5
11	0.26	0.22		0.24	0.16	992.5	0.39	0.35	1355.5	0.40	0.36	1154.0	0.23	0.20	909.5	0.21	0.17	911.5	0.27	0.21	1062.0	0.37	0.31	1190.5
12	0.19	0.16		0.33	0.23	1023.5	0.35	0.32	1364.5	0.36	0.33	1190.0	0.25	0.22	934.5	0.24	0.19	932.5	0.39	0.31	1084.0	0.27	0.25	1222.5
13	0.28	0.25		0.36	0.25	1051.5	0.46	0.42	1402.0	0.42	0.39	1225.0	0.23	0.20	959.5	0.35	0.29	859.5	0.33	0.26	1109.0	0.31	0.29	1255.5
14	0.25	0.22		0.32	0.23	1073.5	0.33	0.30	1434.0	0.20	0.19	1255.0	0.24	0.21	982.5	0.34	0.28	987.0	0.19	0.15	1131.0	0.25	0.23	1281.5
15	0.25	0.22		0.29	0.21	1092.5	0.31	0.29	1461.0	0.26	0.24	1281.0	0.28	0.25	1011.5	0.34	0.29	1014.0	0.26	0.21	1154.0	0.30	0.28	1301.5
16	0.32	0.29		0.21	0.16	1111.0	0.38	0.36	1490.0	0.22	0.21	1308.0	0.32	0.29	1036.5	0.29	0.25	1035.0	0.29	0.26	1178.0	0.23	0.22	1324.5
17	0.28	0.26		0.20	0.15	1130.0	0.36	0.34	1522.0	0.29	0.28	1337.0	0.25	0.23	1054.5	0.22	0.19	1060.0	0.29	0.27	1199.0	0.35	0.23	1350.5
18	0.33	0.31		0.21	0.16	1148.5	0.35	0.32	1550.0	0.06	0.06	1356.5	0.26	0.24	1079.5	0.28	0.25	1087.0	0.31	0.29	1223.0	0.12	0.11	1374.5
19	0.21	0.20		0.24	0.19	1171.0	0.36	0.33	1585.0	0.27	0.25	1383.5	0.22	0.20	1107.5	0.36	0.32	1120.0	0.31	0.29	1251.5	0.20	0.19	1396.5
20	0.26	0.25		0.27	0.21	1195.5	0.27	0.26	1607.0	0.36	0.34	1410.5	0.31	0.29	1135.5	0.32	0.29	1151.0	0.24	0.23	1277.0	0.15	0.14	1413.5
21	0.12	0.11		0.28	0.23	1223.5	0.29	0.28	1627.0	0.20	0.19	1429.5	0.27	0.25	1163.5	0.29	0.27	1183.0	0.34	0.32	1304.0	0.27	0.26	1437.5
22	0.18	0.17		0.24	0.20	1248.5	0.29	0.28	1652.5	0.23	0.22	1452.5	0.29	0.28	1189.5	0.30	0.28	1214.5	0.35	0.32	1335.5	0.16	0.15	1456.5
23	0.13	0.12		0.18	0.15	1270.5	0.35	0.34	1678.5	0.25	0.24	1477.5	0.33	0.31	1216.5	0.21	0.20	1236.5	0.34	0.32	1364.0	0.26	0.25	1479.5
24	0.16	0.15		0.16	0.14	1291.5	0.37	0.36	1708.5	0.21	0.20	1500.5	0.31	0.30	1244.5	0.13	0.12	1255.5	0.19	0.18	1385.0	0.18	0.17	1500.5
25	0.24	0.23		0.21	0.18	1314.5	0.13	0.13	1726.5	0.11	0.11	1516.5	0.28	0.26	1273.5	0.27	0.26	1275.5	0.13	0.12	1405.0	0.28	0.27	1520.5
26	0.35	0.33		0.16	0.14	1338.0	0.28	0.28	1748.5	0.09	0.09	1524.5	0.17	0.19	1297.0	0.27	0.26	1298.5	0.19	0.18	1423.0	0.29	0.28	1540.5
27	0.29	0.28		0.20	0.18	1363.5	0.32	0.32	1773.5	0.03	0.03	1530.5	0.19	0.21	1320.0	0.19	0.18	1325.5	0.21	0.20	1441.5	0.27	0.27	1562.5
28	0.31	0.30		0.14	0.13	1387.0	0.37	0.37	1804.5	0.09	0.09	1543.5	0.20	0.20	1345.0	0.16	0.15	1351.5	0.27	0.27	1460.5	0.11	0.11	1582.5
29	0.43	0.42		0.12	0.11	1410.5	0.48	0.48	1838.5	0.03	0.03	1560.5	0.23	0.25	1366.0	0.25	0.23	1375.0	0.48	0.48	1480.5	0.08	0.08	1596.5
30	0.17	0.17		0.25	0.23	1432.0	0.36	0.36	1870.0	0.20	0.20	1586.5	0.28	0.30	1388.0	0.17	0.16	1399.0	0.29	0.29	1503.0	0.07	0.07	1609.5
31	0.21	0.21		0.18	0.17	1448.0	0.29	0.29	1896.0	0.20	0.20	1615.5	0.36	0.39	1415.0	0.23	0.22	1426.5	0.20	0.20	1527.0	0.08	0.08	1621.0
	8.03	7.42	683.0	7.14	4.71	897.5	10.64	9.89	730.5	7.16	6.54	730.5	7.94	7.23	750.5	8.55	7.1	762.0	8.09	6.85	684.0	7.83	6.74	706.5

EVAPO-TRANSPIRATION DATA BURWELL WEATHER STATION Lower Loup Natural Resources District

AUGUST	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.11	0.11		0.22	0.21	1469.0	0.36	0.36	1927.0	0.14	0.14	1637.5	0.29	0.32	1448.5	0.22	0.21	1453.5	0.19	0.20	1554.5	0.04	0.04	1631.0
2	0.20	0.20		0.23	0.22	1495.0	0.33	0.33	1953.0	0.21	0.21	1662.0	0.35	0.38	1482.5	0.32	0.31	1483.0	0.23	0.24	1581.5	0.02	0.02	1643.5
3	0.20	0.20		0.32	0.30	1522.0	0.52	0.52	1979.0	0.25	0.25	1689.0	0.24	0.26	1516.0	0.23	0.22	1512.0	0.14	0.15	1605.5	0.17	0.17	1663.5
4	0.23	0.23		0.32	0.30	1554.0	0.33	0.33	2000.0	0.25	0.25	1715.0	0.19	0.21	1548.5	0.27	0.27	1542.0	0.25	0.27	1632.5	0.26	0.26	1694.5
5	0.21	0.21		0.28	0.27	1584.0	0.33	0.33	2026.0	0.22	0.22	1740.0	0.19	0.21	1576.5	0.08	0.08	1566.5	0.26	0.28	1662.5	0.28	0.28	1720.5
6	0.23	0.23		0.39	0.37	1615.0	0.47	0.46	2057.0	0.26	0.26	1760.0	0.22	0.24	1600.5	0.22	0.22	1597.0	0.28	0.31	1693.5	0.22	0.22	1740.5
7	0.26	0.26		0.32	0.31	1646.0	0.49	0.48	2093.0	0.27	0.27	1779.0	0.26	0.28	1628.5	0.30	0.30	1627.0	0.16	0.18	1721.5	0.28	0.28	1764.5
8	0.25	0.25		0.33	0.31	1677.0	0.15	0.15	2115.0	0.24	0.24	1799.0	0.29	0.31	1648.5	0.30	0.30	1655.0	0.30	0.30	1752.0	0.31	0.31	1791.5
9	0.23	0.23		0.24	0.23	1705.0	0.31	0.31	2145.0	0.18	0.18	1815.0	0.10	0.11	1654.5	0.35	0.35	1684.5	0.31	0.31	1777.0	0.19	0.19	1809.5
10	0.19	0.19		0.19	0.18	1719.0	0.26	0.25	2168.0	0.21	0.21	1831.0	0.07	0.08	1661.5	0.32	0.32	1712.0	0.31	0.31	1798.5	0.26	0.25	1819.5
11	0.28	0.28		0.30	0.29	1737.5	0.25	0.24	2189.0	0.25	0.24	1853.0	0.17	0.18	1673.5	0.29	0.29	1735.0	0.27	0.27	1824.0	0.11	0.11	1833.5
12	0.24	0.24		0.36	0.35	1760.5	0.33	0.32	2215.0	0.24	0.23	1876.0	0.02	0.02	1687.5	0.31	0.31	1763.0	0.27	0.27	1852.0	0.19	0.18	1851.5
13	0.26	0.26		0.20	0.20	1774.5	0.24	0.23	2236.0	0.09	0.09	1898.0	0.20	0.22	1711.5	0.18	0.18	1787.0	0.29	0.28	1880.0	0.19	0.18	1866.5
14	0.24	0.24		0.08	0.08	1779.5	0.24	0.23	2256.0	0.18	0.17	1922.0	0.10	0.11	1731.5	0.24	0.24	1814.5	0.33	0.32	1905.0	0.19	0.18	1877.5
15	0.12	0.12		0.09	0.09	1786.0	0.04	0.04	2271.5	0.17	0.16	1945.0	0.14	0.15	1754.5	0.28	0.28	1847.5	0.23	0.22	1933.0	0.15	0.14	1887.5
16	0.17	0.17		0.04	0.04	1800.0	0.28	0.26	2293.5	0.18	0.17	1961.0	0.16	0.17	1775.5	0.35	0.35	1883.5	0.33	0.32	1963.5	0.13	0.12	1902.5
17	0.25	0.24		0.11	0.11	1828.0	0.26	0.24	2315.5	0.18	0.17	1977.0	0.24	0.26	1798.5	0.32	0.32	1917.0	0.24	0.23	1991.5	0.21	0.19	1916.5
18	0.26	0.25		0.15	0.15	1852.5	0.31	0.28	2349.5	0.18	0.17	1991.0	0.32	0.35	1824.5	0.48	0.47	1951.5	0.28	0.27	2015.5	0.12	0.11	1926.5
19	0.15	0.14		0.13	0.13	1872.5	0.26	0.23	2378.5	0.22	0.20	2009.0	0.28	0.30	1853.0	0.33	0.32	1981.5	0.26	0.25	2037.5	0.20	0.18	1942.5
20	0.26	0.25		0.21	0.21	1890.5	0.41	0.36	2397.5	0.24	0.22	2028.0	0.13	0.14	1871.5	0.25	0.24	2007.0	0.15	0.14	2059.0	0.08	0.07	1958.5
21	0.24	0.22		0.18	0.18	1909.5	0.31	0.27	2419.5	0.33	0.29	2050.0	0.17	0.18	1891.5	0.27	0.26	2038.0	0.23	0.21	2081.0	0.08	0.07	1976.5
22	0.22	0.20		0.23	0.23	1927.5	0.32	0.28	2439.5	0.13	0.11	2070.0	0.17	0.18	1911.5	0.22	0.21	2065.0	0.25	0.23	2097.5	0.24	0.21	2000.5
23	0.35	0.32		0.25	0.25	1943.5	0.34	0.29	2465.0	0.17	0.15	2090.0	0.22	0.24	1933.5	0.19	0.18	2088.0	0.24	0.22	2112.5	0.24	0.21	2019.5
24	0.21	0.19		0.20	0.20	1964.5	0.32	0.27	2498.0	0.15	0.13	2108.0	0.21	0.23	1944.5	0.19	0.18	2114.0	0.24	0.22	2130.0	0.13	0.11	2028.5
25	0.29	0.26		0.10	0.10	1980.0	0.33	0.27	2522.5	0.15	0.13	2128.0	0.24	0.26	1960.5	0.29	0.27	2145.5	0.27	0.24	2151.5	0.19	0.16	2039.5
26	0.16	0.14		0.19	0.19	1999.0	0.06	0.05	2526.5	0.18	0.15	2145.0	0.23	0.25	1976.5	0.22	0.20	2177.5	0.25	0.22	2178.5	0.23	0.19	2054.5
27	0.09	0.08		0.24	0.24	2019.5	0.17	0.14	2541.5	0.18	0.15	2163.0	0.16	0.17	1985.5	0.15	0.14	2203.5	0.26	0.23	2203.5	0.19	0.16	2071.5
28	0.21	0.18		0.15	0.15	2039.5	0.26	0.21	2565.5	0.10	0.08	2177.0	0.06	0.07	2003.5	0.27	0.25	2231.5	0.30	0.26	2236.0	0.10	0.08	2090.5
29	0.21	0.18		0.22	0.22	2060.5	0.27	0.21	2589.0	0.17	0.14	2198.0	0.10	0.11	2027.5	0.30	0.27	2261.5	0.27	0.23	2259.0	0.22	0.17	2116.5
30	0.18	0.15		0.26	0.25	2084.5	0.23	0.18	2606.5	0.17	0.13	2222.0	0.09	0.10	2049.5	0.21	0.19	2288.5	0.27	0.22	2278.0	0.23	0.18	2141.5
31	0.23	0.19		0.26	0.25	2111.0	0.17	0.13	2622.5	0.19	0.15	2230.0	0.19	0.20	2071.5	0.26	0.23	2314.0	0.32	0.26	2303.0	0.27	0.21	2170.5
	6.73	6.41		6.79	6.61	663.0	8.95	8.25	726.5	6.08	5.66	614.5	5.8	6.29	656.5	8.21	7.96	887.5	7.98	7.66	776.0	5.72	5.23	549.5

EVAPO-TRANSPIRATION DATA BURWELL WEATHER STATION Lower Loup Natural Resources District

SEPT.	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.31	0.25		0.32	0.31	2133.0	0.22	0.16	2635.5	0.22	0.17	2241.0	0.21	0.23	2091.5	0.30	0.26	2343.5	0.13	0.10	2324.5	0.24	0.18	2190.5
2	0.15	0.12		0.29	0.28	2162.0	0.27	0.20	2654.5	0.25	0.19	2256.0	0.24	0.25	2091.5	0.33	0.28	2377.0	0.29	0.23	2340.5	0.25	0.19	2218.0
3	0.21	0.17		0.29	0.27	2190.0	0.33	0.24	2676.0	0.09	0.07	2262.0	0.24	0.25	2129.0	0.29	0.25	2407.0	0.22	0.17	2357.0	0.16	0.12	2241.0
4	0.22	0.17		0.36	0.34	2217.0	0.23	0.17	2692.0	0.11	0.08	2274.0	0.28	0.28	2152.0	0.21	0.17	2429.0	0.26	0.20	2369.0	0.15	0.11	2265.0
5	0.26	0.20		0.29	0.27	2242.5	0.24	0.16	2712.0	0.21	0.15	2298.0	0.10	0.10	2173.0	0.30	0.25	2449.0	0.24	0.18	2380.0	0.19	0.13	2287.0
6	0.29	0.22		0.26	0.24	2261.0	0.31	0.20	2742.5	0.03	0.02	2310.0	0.12	0.12	2192.0	0.27	0.22	2464.5	0.30	0.22	2401.0	0.20	0.14	2314.0
7	0.38	0.29		0.30	0.27	2279.5	0.28	0.18	2767.5	0.23	0.15	2323.0	0.16	0.16	2209.0	0.27	0.21	2482.5	0.12	0.09	2411.0	0.20	0.13	2339.0
8	0.37	0.27		0.27	0.24	2302.5	0.40	0.26	2791.0	0.21	0.14	2341.5	0.20	0.20	2231.0	0.41	0.32	2505.5	0.26	0.19	2424.0	0.13	0.09	2346.0
9	0.32	0.23		0.27	0.24	2329.5	0.22	0.13	2800.0	0.26	0.17	2361.5	0.20	0.20	2251.0	0.33	0.25	2537.5	0.23	0.16	2439.0	0.16	0.10	2357.0
10	0.23	0.16		0.25	0.22	2351.5	0.24	0.15	2811.0	0.22	0.14	2380.5	0.27	0.27	2275.0	0.20	0.15	2553.5	0.16	0.11	2451.0	0.03	0.02	2364.0
11	0.27	0.19		0.15	0.13	2363.0	0.15	0.09	2830.0	0.26	0.16	2397.5	0.14	0.14	2285.0	0.29	0.22	2567.5	0.08	0.05	2462.0	0.01	0.01	2374.0
12	0.30	0.21		0.09	0.07	2366.0	0.24	0.14	2848.0	0.27	0.16	2417.0	0.06	0.06	2287.0	0.19	0.14	2574.5	0.22	0.14	2484.0	0.03	0.02	2383.0
13	0.23	0.15		0.17	0.14	2370.0	0.19	0.11	2858.0	0.24	0.14	2436.5	0.06	0.06	2289.0	0.19	0.14	2580.5	0.17	0.11	2494.0	0.05	0.03	2387.0
14	0.16	0.11		0.21	0.18	2374.0	0.17	0.09	2871.0	0.24	0.14	2448.5	0.04	0.04	2289.0	0.09	0.06	2583.5	0.09	0.06	2499.0	0.02	0.01	2391.0
15	0.21	0.14		0.19	0.16	2387.0	0.36	0.19	2886.0	0.11	0.06	2450.5	0.07	0.07	2289.0	0.24	0.16	2596.5	0.18	0.11	2501.0	0.08	0.04	2401.0
16				0.26	0.21	2403.0	0.10	0.05	2886.0										0.15	0.09	2502.0			
17				0.28	0.22	2422.0	0.27	0.14	2902.0															
18				0.21	0.16	2433.0	0.21	0.10	2916.0															
19				0.27	0.20	2446.0	0.24	0.12	2937.5															
20				0.22	0.17	2453.0	0.15	0.07	2948.5															
21							0.30	0.14	2963.5															
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	3.91	2.88	0	4.95	4.32	342.0	5.12	3.09	341.0	2.95	1.94	220.5	2.39	2.43	217.5	3.91	3.08	282.5	3.1	2.21	199.0	1.9	1.32	230.5

EVAPO-TRANSPIRATION DATA ST. PAUL WEATHER STATION Lower Loup Natural Resources District

MAY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1												23.0			0.0			0.0						9.0
2												41.5			7.5			0.0						17.0
3												55.5			23.5			4.0						29.5
4												58.5			43.5			6.0						44.5
5												60.0			43.5			16.5						59.0
6												63.5			46.0			24.0						69.5
7												63.5			50.0			30.0						83.0
8												67.5			58.5			30.0						100.5
9												67.5			76.0			41.5						123.0
10												68.5			95.5			45.5						147.0
11												73.0			101.5			49.5						166.0
12												76.5			109.5			54.5						177.0
13												76.5			119.5			59.5						177.0
14												83.0			123.5			59.5						178.0
15												87.0			128.5			61.0			82.5			184.0
16												88.5			135.5			62.5			104.5			192.0
17												88.5			139.0			64.5			115.5			200.0
18										0.09	0.02	88.5			153.0			64.5			131.0			209.5
19										0.20	0.04	90.5			170.0			65.5			148.0			224.0
20							0.20	0.04	143.5	0.34	0.07	97.5			179.5			75.0			166.0			236.0
21							0.26	0.06	159.0			108.0			185.0			86.5			184.0			249.0
22							0.30	0.07	174.0			126.5			192.5			101.5			202.0			262.5
23							0.28	0.07	187.5			134.0			201.0			115.0			217.0			282.5
24							0.32	0.09	208.0			146.5			211.0			132.0			232.0			299.5
25							0.39	0.11	237.5			159.0	0.05	0.01	217.5			154.5			241.0			317.0
26							0.30	0.09	261.5	0.14	0.04	172.0	0.08	0.02	229.0			163.5			246.0			337.0
27							0.40	0.12	280.5	0.14	0.04	189.5	0.13	0.04	242.0			193.0			263.0			352.5
28							0.33	0.10	301.5	0.17	0.05	207.0	0.16	0.05	255.5			214.0			268.0			371.5
29							0.42	0.14	323.0	0.30	0.08	223.5	0.11	0.04	270.5			219.0			275.0			395.5
30							0.27	0.09	332.0	0.28	0.08	238.0	0.17	0.06	283.0			224.0			286.0			408.0
31							0.12	0.04	338.5	0.38	0.12	257.5	0.22	0.08	289.0			225.0			302.5			418.0
	0.00	0.00	0.0	0.00	0.00	0.0	3.59	1.02	338.5	2.04	0.54	257.5	0.92	0.30	289.00	0.00	0.00	225.0	0.00	0.00	302.5	0.00	0.00	418.0

EVAPO-TRANSPIRATION DATA ST. PAUL WEATHER STATION Lower Loup Natural Resources District

JUNE	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.11	0.05					0.26	0.10	352.5	0.27	0.08	280.0	0.23	0.08	292.5			227.0	0.27	0.06	312.0	0.32	0.07	432.5
2	0.17	0.09					0.25	0.10	371.5	0.28	0.09	296.0	0.15	0.06	299.5			236.0	0.31	0.08	326.0	0.22	0.06	442.5
3	0.20	0.11					0.22	0.09	391.5	0.25	0.09	313.5	0.05	0.02	300.5	0.26	0.06	252.5	0.25	0.07	341.0	0.17	0.05	463.5
4	0.19	0.11		0.30	0.09	272.0	0.25	0.10	419.5	0.27	0.10	337.5	0.15	0.06	310.0	0.25	0.06	260.5	0.25	0.07	364.0	0.15	0.04	487.0
5	0.18	0.11		0.27	0.08	295.0	0.33	0.14	450.5	0.29	0.11	361.5	0.15	0.06	320.5	0.16	0.04	265.0	0.34	0.10	389.5	0.20	0.05	507.0
6	0.12	0.05		0.34	0.11	320.5	0.25	0.11	476.5	0.40	0.15	389.0	0.34	0.15	345.5	0.24	0.06	271.5	0.30	0.06	413.5	0.20	0.06	529.5
7	0.16	0.07		0.22	0.07	355.5	0.30	0.14	490.0	0.36	0.14	416.5	0.20	0.09	360.0	0.24	0.07	284.5	0.22	0.05	430.5	0.31	0.11	562.0
8	0.20	0.09		0.22	0.07	366.5	0.23	0.11	507.0	0.29	0.12	445.0	0.18	0.09	269.0	0.13	0.04	296.0	0.34	0.07	448.0	0.38	0.15	598.0
9	0.24	0.11		0.08	0.03	372.0	0.27	0.13	526.0	0.25	0.11	462.0	0.15	0.07	379.0	0.30	0.09	318.0	0.26	0.06	466.0	0.35	0.14	629.0
10	0.44	0.21		0.05	0.04	373.0	0.27	0.14	548.0	0.26	0.11	483.0	0.28	0.14	388.0	0.10	0.03	336.0	0.25	0.06	480.0	0.19	0.07	652.0
11	0.42	0.21		0.20	0.08	390.0	0.40	0.21	574.0	0.19	0.09	506.0	0.21	0.11	403.0	0.19	0.06	355.0	0.22	0.05	495.0	0.23	0.08	661.0
12	0.41	0.21		0.26	0.11	419.0	0.19	0.10	602.0	0.26	0.12	537.5	0.19	0.10	418.0	0.03	0.01	372.5	0.21	0.05	513.0	0.20	0.08	667.5
13	0.30	0.16		0.32	0.13	448.0	0.26	0.15	632.5	0.36	0.18	569.5	0.24	0.13	435.5	0.08	0.03	384.5	0.20	0.05	538.0	0.33	0.03	689.5
14	0.46	0.26		0.46	0.20	481.5	0.31	0.18	662.5	0.12	0.06	580.5	0.26	0.15	457.5	0.28	0.10	400.5	0.27	0.07	563.5	0.23	0.09	710.5
15	0.44	0.24		0.26	0.11	504.5	0.18	0.11	681.0	0.19	0.10	590.0	0.15	0.09	471.5	0.18	0.07	413.0	0.24	0.07	586.5	0.34	0.15	737.5
16	0.40	0.24		0.32	0.14	523.5	0.21	0.13	694.0	0.28	0.15	606.5	0.23	0.12	481.0	0.15	0.06	428.5	0.23	0.07	611.5	0.27	0.12	762.0
17	0.31	0.19		0.07	0.03	532.5	0.19	0.12	713.5	0.33	0.18	630.0	0.25	0.14	498.5	0.09	0.04	446.5	0.25	0.08	636.0	0.37	0.17	781.5
18	0.32	0.20		0.11	0.05	553.0	0.29	0.19	739.5	0.14	0.08	641.0	0.15	0.08	511.0	0.16	0.07	466.0	0.28	0.09	657.0	0.37	0.18	803.5
19	0.36	0.24		0.48	0.22	574.5	0.13	0.08	751.0	0.33	0.19	666.0	0.17	0.10	522.5	0.15	0.07	489.0	0.26	0.08	679.0	0.29	0.14	823.0
20	0.29	0.19		0.34	0.16	595.0	0.25	0.17	769.5	0.27	0.16	691.0	0.28	0.17	539.0	0.22	0.10	517.0	0.26	0.09	704.5	0.50	0.25	858.0
21	0.25	0.17		0.31	0.15	622.5	0.22	0.15	789.5	0.26	0.16	710.0	0.21	0.13	557.5	0.37	0.18	547.0	0.24	0.08	730.0	0.33	0.17	885.5
22	0.37	0.26		0.16	0.08	643.0	0.20	0.14	810.0	0.29	0.19	733.5	0.18	0.11	575.5	0.23	0.11	576.0	0.30	0.11	754.0	0.37	0.20	913.0
23	0.14	0.10		0.15	0.08	659.0	0.27	0.20	835.0	0.38	0.25	764.0	0.23	0.15	595.5	0.29	0.15	605.5	0.30	0.11	769.5	0.41	0.23	943.0
24	0.24	0.16		0.12	0.07	675.5	0.18	0.13	864.5	0.36	0.24	787.0	0.24	0.16	619.0	0.33	0.17	630.5	0.32	0.13	795.0	0.49	0.28	977.0
25	0.26	0.20		0.27	0.15	695.0	0.21	0.16	896.0	0.30	0.21	813.0	0.20	0.13	636.0	0.26	0.14	655.0	0.28	0.12	821.5	0.46	0.27	1003.0
26	0.27	0.21		0.28	0.16	725.5	0.35	0.27	930.5	0.22	0.16	836.5	0.22	0.15	652.0	0.16	0.09	678.0	0.31	0.13	849.0	0.14	0.08	1006.0
27	0.30	0.24		0.21	0.13	748.0	0.45	0.35	961.0	0.39	0.28	874.0	0.15	0.10	668.5	0.12	0.07	698.5	0.27	0.12	871.0	0.26	0.16	1019.5
28	0.29	0.24		0.28	0.17	772.5	0.32	0.26	986.0	0.34	0.25	907.0	0.22	0.16	692.5	0.08	0.05	718.5	0.33	0.15	899.0	0.30	0.19	1035.0
29	0.26	0.22		0.27	0.17	796.5	0.31	0.25	1010.5	0.25	0.19	926.5	0.24	0.17	716.0	0.18	0.11	739.0	0.33	0.16	921.0	0.31	0.20	1054.0
30	0.37	0.31		0.27	0.18	819.5	0.32	0.26	1042.0	0.27	0.21	948.5	0.22	0.15	735.5	0.26	0.16	765.0	0.34	0.17	943.5	0.24	0.16	1074.0
31																								
	8.47	5.25	0.0	6.62	3.06	577.5	7.87	4.77	703.5	8.45	4.55	691.0	6.12	3.42	446.5	5.49	2.29	540.0	8.23	2.66	641.0	8.93	4.03	656.0

EVAPO-TRANSPIRATION DATA ST. PAUL WEATHER STATION Lower Loup Natural Resources District

JULY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.36	0.31		0.25	0.17	847.0	0.34	0.28	1064.0	0.27	0.21	973.5	0.14	0.10	754.5	0.31	0.20	793.5	0.12	0.06	964.0	0.27	0.19	1099.0
2	0.33	0.29		0.11	0.08	870.5	0.19	0.16	1083.0	0.04	0.03	995.0	0.14	0.10	777.5	0.35	0.23	823.5	0.30	0.16	990.5	0.26	0.18	1124.5
3	0.35	0.31		0.26	0.18	900.5	0.23	0.21	1111.5	0.10	0.08	1015.0	0.21	0.16	804.5	0.23	0.15	843.0	0.33	0.18	1018.0	0.44	0.32	1156.5
4	0.40	0.36		0.09	0.06	917.5	0.23	0.21	1143.0	0.24	0.20	1038.5	0.26	0.20	835.0	0.28	0.19	859.5	0.24	0.13	1039.5	0.37	0.27	1179.0
5	0.45	0.41		0.07	0.05	925.5	0.31	0.29	1176.5	0.26	0.22	1065.0	0.36	0.28	866.0	0.27	0.19	877.5	0.29	0.17	1063.0	0.32	0.24	1199.5
6	0.42	0.39		0.06	0.04	934.0	0.41	0.38	1214.0	0.29	0.25	1091.0	0.24	0.19	888.5	0.34	0.25	899.5	0.26	0.15	1080.0	0.37	0.28	1222.0
7	0.21	0.20		0.08	0.06	951.0	0.38	0.33	1249.5	0.27	0.23	1118.5	0.29	0.23	909.5	0.33	0.24	924.5	0.28	0.17	1104.0	0.32	0.25	1253.0
8	0.29	0.27		0.19	0.15	974.0	0.38	0.34	1282.0	0.29	0.25	1141.0	0.27	0.22	935.5	0.37	0.28	951.0	0.29	0.18	1136.0	0.27	0.23	1283.5
9	0.23	0.22		0.17	0.12	998.5	0.27	0.24	1319.5	0.29	0.26	1166.0	0.26	0.21	963.0	0.34	0.26	983.0	0.22	0.14	1165.5	0.34	0.30	1313.5
10	0.27	0.26		0.23	0.16	1025.5	0.23	0.21	1355.0	0.28	0.25	1200.0	0.22	0.18	982.5	0.29	0.23	1013.5	0.26	0.17	1187.0	0.38	0.31	1342.5
11	0.28	0.24		0.29	0.21	1054.0	0.34	0.31	1391.5	0.27	0.24	1235.0	0.23	0.19	1003.5	0.26	0.21	1034.5	0.29	0.20	1211.5	0.37	0.31	1375.0
12	0.25	0.22		0.25	0.18	1082.5	0.29	0.27	1418.0	0.25	0.23	1269.5	0.25	0.21	1027.0	0.24	0.19	1056.0	0.34	0.23	1239.0	0.23	0.21	1406.0
13	0.33	0.29		0.36	0.27	1113.0	0.36	0.34	1453.5	0.39	0.36	1303.0	0.22	0.19	1052.5	0.31	0.26	1081.0	0.31	0.22	1268.5	0.33	0.30	1438.5
14	0.25	0.22		0.30	0.22	1137.5	0.36	0.33	1488.0	0.21	0.20	1333.0	0.22	0.19	1077.0	0.32	0.27	1110.0	0.24	0.17	1295.5	0.25	0.23	1463.5
15	0.27	0.25		0.29	0.22	1159.5	0.29	0.27	1518.5	0.25	0.24	1360.0	0.23	0.20	1104.5	0.37	0.31	1140.5	0.29	0.21	1328.0	0.28	0.26	1486.0
16	0.30	0.28		0.20	0.16	1178.5	0.30	0.29	1546.0	0.29	0.27	1388.0	0.28	0.25	1135.0	0.20	0.17	1168.0	0.31	0.26	1353.5	0.44	0.39	1512.0
17	0.29	0.27		0.20	0.16	1197.5	0.22	0.20	1575.0	0.22	0.21	1418.0	0.29	0.26	1156.0	0.35	0.30	1204.0	0.30	0.25	1377.5	0.40	0.38	1542.5
18	0.34	0.32		0.19	0.15	1215.5	0.29	0.28	1604.5	0.12	0.11	1445.0	0.26	0.24	1178.5	0.31	0.27	1239.0	0.29	0.26	1407.5	0.14	0.13	1568.5
19	0.23	0.22		0.23	0.19	1237.5	0.34	0.33	1639.5	0.21	0.19	1473.5	0.24	0.22	1207.0	0.37	0.33	1275.0	0.31	0.28	1440.0	0.16	0.15	1589.5
20	0.29	0.28		0.25	0.21	1262.0	0.26	0.25	1663.5	0.30	0.28	1504.5	0.26	0.24	1238.0	0.43	0.39	1310.5	0.25	0.23	1468.5	0.26	0.24	1608.5
21	0.22	0.21		0.24	0.20	1290.0	0.27	0.26	1684.5	0.19	0.18	1526.0	0.25	0.23	1261.0	0.36	0.33	1346.5	0.32	0.29	1500.5	0.07	0.07	1634.0
22	0.15	0.14		0.25	0.21	1317.0	0.25	0.24	1708.0	0.20	0.19	1548.5	0.24	0.22	1286.5	0.38	0.35	1382.5	0.34	0.32	1536.0	0.20	0.19	1658.0
23	0.18	0.17		0.21	0.18	1340.5	0.28	0.28	1733.0	0.23	0.22	1573.5	0.25	0.24	1313.5	0.22	0.21	1409.5	0.31	0.29	1567.0	0.30	0.29	1683.5
24	0.19	0.18		0.17	0.15	1364.0	0.31	0.30	1761.5	0.20	0.19	1601.0	0.29	0.28	1340.5	0.17	0.16	1431.0	0.29	0.27	1593.5	0.20	0.19	1705.5
25	0.26	0.25		0.23	0.21	1385.5	0.10	0.10	1781.0	0.13	0.13	1627.0	0.31	0.30	1368.0	0.29	0.27	1462.0	0.24	0.23	1620.0	0.28	0.27	1724.5
26	0.29	0.28		0.22	0.20	1409.5	0.22	0.22	1803.5	0.07	0.07	1637.5	0.31	0.34	1398.5	0.33	0.31	1492.0	0.20	0.18	1639.0	0.28	0.27	1745.5
27	0.29	0.28		0.23	0.20	1437.5	0.24	0.24	1828.0	0.05	0.05	1647.0	0.23	0.25	1425.5	0.22	0.21	1524.0	0.24	0.22	1658.5	0.21	0.21	1767.5
28	0.27	0.26		0.18	0.16	1415.0	0.30	0.30	1858.0	0.07	0.07	1659.0	0.29	0.32	1452.5	0.17	0.16	1550.5	0.26	0.24	1680.5	0.16	0.16	1788.5
29	0.29	0.28		0.26	0.24	1493.5	0.37	0.37	1898.5	0.02	0.02	1677.5	0.28	0.31	1478.5	0.28	0.26	1579.5	0.27	0.26	1705.5	0.08	0.08	1804.5
30	0.23	0.23		0.23	0.21	1517.5	0.21	0.21	1916.5	0.11	0.11	1702.5	0.28	0.30	1501.0	0.17	0.16	1609.0	0.30	0.29	1734.0	0.07	0.07	1821.5
31	0.23	0.23		0.19	0.18	1536.0	0.24	0.24	1942.0	0.18	0.18	1735.0	0.30	0.33	1529.5	0.27	0.26	1641.5	0.23	0.22	1765.0	0.11	0.11	1836.5
	8.74	8.12	0.0	6.48	5.18	716.5	8.81	8.28	900.0	6.29	5.72	786.5	7.90	7.18	794.0	9.13	7.60	876.5	8.52	6.63	821.5	8.16	7.08	762.5

EVAPO-TRANSPIRATION DATA ST PAUL WEATHER STATION Lower Loup Natural Resources District

AUGUST	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.14	0.14		0.19	0.18	1558.0	0.27	0.27	1972.0	0.13	0.13	1761.5	0.23	0.25	1560.0	0.27	0.26	1674.5	0.24	0.24	1795.0	0.08	0.08	1851.5
2	0.22	0.22		0.21	0.20	1585.5	0.28	0.28	2000.0	0.23	0.23	1791.5	0.31	0.34	1594.0	0.30	0.29	1710.5	0.23	0.23	1826.0	0.12	0.12	1870.0
3	0.19	0.19		0.25	0.24	1614.0	0.39	0.39	2027.5	0.21	0.21	1820.0	0.29	0.32	1630.0	0.30	0.29	1746.5	0.19	0.19	1857.0	0.19	0.19	1893.5
4	0.24	0.24		0.29	0.28	1643.0	0.29	0.29	2048.5	0.23	0.23	1847.0	0.18	0.20	1661.0	0.29	0.28	1782.5	0.27	0.28	1889.0	0.28	0.28	1922.0
5	0.19	0.19		0.25	0.24	1673.0	0.26	0.26	2071.5	0.19	0.19	1872.5	0.12	0.13	1687.0	0.16	0.16	1815.0	0.28	0.29	1919.0	0.25	0.25	1950.5
6	0.20	0.20		0.31	0.29	1705.0	0.33	0.32	2105.0	0.20	0.20	1895.0	0.18	0.20	1712.0	0.24	0.24	1844.5	0.25	0.26	1955.0	0.17	0.17	1971.5
7	0.21	0.21		0.29	0.26	1737.5	0.37	0.36	2141.0	0.27	0.27	1916.0	0.21	0.23	1738.0	0.26	0.26	1873.5	0.18	0.19	1983.5	0.31	0.31	1998.0
8	0.29	0.29		0.30	0.28	1769.5	0.16	0.15	2168.0	0.26	0.26	1940.5	0.23	0.25	1765.0	0.27	0.27	1906.0	0.27	0.27	2016.5	0.31	0.31	2025.0
9	0.23	0.23		0.22	0.21	1796.5	0.30	0.29	2201.0	0.17	0.17	1959.0	0.20	0.22	1781.5	0.31	0.31	1940.0	0.29	0.29	2046.5	0.24	0.24	2034.0
10	0.19	0.19		0.23	0.22	1818.5	0.25	0.24	2225.0	0.24	0.23	1978.0	0.13	0.14	1791.0	0.37	0.37	1974.5	0.27	0.27	2075.0	0.30	0.29	2049.0
11	0.25	0.25		0.27	0.26	1838.0	0.25	0.24	2248.0	0.27	0.26	2000.5	0.10	0.11	1803.5	0.29	0.29	1998.5	0.26	0.26	2106.0	0.19	0.18	2073.0
12	0.23	0.23		0.29	0.28	1861.5	0.25	0.24	2275.0	0.27	0.26	2023.0	0.10	0.11	1819.5	0.28	0.28	2029.0	0.27	0.27	2137.5	0.29	0.28	2094.0
13	0.22	0.22		0.25	0.24	1878.5	0.21	0.21	2298.5	0.06	0.06	2046.0	0.04	0.04	1845.5	0.22	0.22	2056.5	0.28	0.28	2167.0	0.25	0.24	2115.5
14	0.27	0.26		0.12	0.12	1887.0	0.17	0.16	2316.5	0.19	0.18	2073.0	0.17	0.18	1866.0	0.22	0.22	2087.5	0.33	0.33	2198.5	0.29	0.28	2129.0
15	0.17	0.17		0.11	0.11	1895.5	0.02	0.02	2332.0	0.17	0.16	2098.0	0.07	0.08	1888.0	0.28	0.28	2123.5	0.22	0.22	2232.0	0.29	0.27	2148.5
16	0.20	0.19		0.13	0.13	1910.5	0.21	0.19	2355.5	0.18	0.17	2115.5	0.08	0.09	1911.5	0.35	0.35	2159.5	0.36	0.35	2266.0	0.22	0.21	2171.5
17	0.26	0.25		0.21	0.20	1941.0	0.21	0.19	2379.0	0.16	0.15	2129.5	0.10	0.11	1935.0	0.32	0.32	2195.5	0.32	0.31	2294.5	0.23	0.21	2185.0
18	0.25	0.24		0.19	0.19	1965.0	0.19	0.17	2408.0	0.16	0.15	2144.0	0.20	0.22	1962.0	0.43	0.42	2231.5	0.28	0.27	2322.5	0.23	0.21	2204.5
19	0.23	0.22		0.18	0.18	1989.5	0.26	0.23	2438.5	0.18	0.16	2161.5	0.28	0.30	1992.0	0.30	0.29	2267.5	0.35	0.34	2351.5	0.27	0.25	2223.0
20	0.23	0.22		0.17	0.17	2010.0	0.36	0.31	2461.5	0.20	0.18	2181.0	0.15	0.16	2013.5	0.22	0.21	2294.5	0.16	0.15	2380.0	0.13	0.12	2239.5
21	0.22	0.20		0.16	0.16	2031.0	0.28	0.24	2484.5	0.24	0.21	2204.5	0.13	0.14	2034.5	0.30	0.29	2330.5	0.23	0.22	2403.0	0.15	0.13	2262.0
22	0.27	0.25		0.25	0.25	2052.5	0.17	0.14	2506.5	0.15	0.13	2229.0	0.19	0.21	2061.0	0.20	0.19	2357.5	0.24	0.23	2421.5	0.32	0.28	2288.0
23	0.31	0.28		0.23	0.23	2071.5	0.31	0.26	2537.0	0.14	0.12	2248.0	0.22	0.24	2086.5	0.22	0.21	2386.0	0.23	0.22	2441.5	0.30	0.26	2307.5
24	0.22	0.20		0.14	0.14	2090.5	0.30	0.25	2573.0	0.14	0.12	2268.0	0.19	0.21	2105.0	0.25	0.24	2420.0	0.26	0.24	2464.5	0.25	0.21	2320.0
25	0.27	0.24		0.06	0.06	2105.5	0.27	0.22	2600.0	0.14	0.12	2287.5	0.20	0.22	2120.5	0.31	0.29	2456.0	0.20	0.19	2486.0	0.26	0.22	2334.5
26	0.21	0.18		0.18	0.18	2125.5	0.07	0.06	2609.0	0.19	0.16	2307.5	0.19	0.20	2143.0	0.24	0.22	2490.0	0.26	0.24	2509.0	0.28	0.23	2355.0
27	0.22	0.19		0.15	0.15	2144.5	0.10	0.08	2622.0	0.18	0.15	2326.5	0.18	0.19	2152.0	0.14	0.13	2517.0	0.23	0.21	2540.0	0.27	0.22	2376.5
28	0.21	0.18		0.15	0.15	2167.5	0.18	0.14	2645.0	0.10	0.08	2343.0	0.09	0.10	2170.0	0.26	0.24	2547.0	0.25	0.22	2574.0	0.24	0.19	2403.5
29	0.20	0.17		0.20	0.20	2192.0	0.20	0.15	2670.0	0.15	0.12	2369.5	0.11	0.12	2194.0	0.29	0.26	2579.0	0.27	0.24	2598.5	0.27	0.21	2429.5
30	0.17	0.14		0.22	0.21	2221.5	0.17	0.13	2688.0	0.17	0.13	2397.0	0.12	0.13	2217.5	0.21	0.19	2604.0	0.26	0.23	2620.5	0.23	0.18	2456.5
31	0.19	0.16		0.21	0.20	2250.5	0.19	0.14	2712.0	0.16	0.12	2406.5	0.13	0.14	2243.5	0.22	0.19	2627.5	0.36	0.31	2656.5	0.24	0.18	2490.5
	6.90	6.54	0.0	6.41	6.21	714.5	7.27	6.62	770.0	5.73	5.31	671.5	5.12	5.58	714.0	8.32	8.06	986.0	8.09	7.84	891.5	7.45	6.80	654.0

EVAPO-TRANSPIRATION DATA ST. PAUL WEATHER STATION Lower Loup Natural Resources District

SEPT.	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
											0.12	2406.5												
1	0.30	0.24		0.27	0.26	2273.5	0.21	0.15	2729.0	0.19	0.14	2416.0	0.19	0.21	2269.5	0.25	0.22	2653.0	0.19	0.16	2683.0	0.29	0.22	2517.0
2	0.21	0.17		0.22	0.21	2302.0	0.24	0.17	2750.5	0.21	0.16	2436.0	0.22	0.23	2291.5	0.32	0.27	2686.5	0.25	0.24	2701.0	0.29	0.21	2549.5
3	0.21	0.16		0.23	0.22	2329.5	0.30	0.21	2774.5	0.06	0.04	2445.0	0.22	0.23	2312.5	0.28	0.24	2720.5	0.25	0.21	2719.0	0.18	0.13	2576.0
4	0.21	0.16		0.25	0.23	2357.0	0.19	0.13	2791.0	0.12	0.09	2465.0	0.29	0.29	2336.5	0.21	0.17	2748.0	0.28	0.23	2732.0	0.12	0.09	2598.5
5	0.21	0.16		0.25	0.23	2383.0	0.19	0.12	2814.0	0.19	0.13	2492.0	0.12	0.12	2361.0	0.30	0.25	2772.5	0.24	0.19	2748.5	0.22	0.15	2622.5
6	0.24	0.18		0.23	0.21	2403.0	0.24	0.15	2845.0	0.07	0.05	2508.5	0.03	0.03	2378.0	0.24	0.19	2789.0	0.34	0.27	2774.5	0.17	0.12	2651.5
7	0.28	0.21		0.24	0.22	2422.0	0.22	0.14	2875.5	0.21	0.14	2522.5	0.12	0.12	2397.0	0.30	0.24	2821.5	0.12	0.09	2791.5	0.18	0.12	2675.5
8	0.30	0.22		0.23	0.21	2446.0	0.32	0.20	2900.5	0.19	0.13	2540.5	0.12	0.12	2420.0	0.43	0.34	2857.5	0.21	0.16	2807.5	0.14	0.09	2686.0
9	0.27	0.19		0.21	0.19	2471.0	0.13	0.08	2907.0	0.24	0.15	2561.0	0.18	0.18	2445.0	0.34	0.26	2890.5	0.28	0.21	2831.5	0.21	0.13	2702.5
10	0.25	0.17		0.24	0.21	2498.0	0.18	0.11	2918.5	0.19	0.12	2581.0	0.22	0.22	2470.0	0.20	0.15	2902.0	0.20	0.15	2847.5	0.05	0.03	2713.5
11	0.26	0.17		0.08	0.07	2509.5	0.13	0.07	2938.5	0.19	0.12	2600.5	0.10	0.10	2490.5	0.32	0.24	2922.5	0.12	0.09	2866.5	0.01	0.01	2725.5
12	0.29	0.19		0.09	0.07	2514.0	0.21	0.12	2959.5	0.17	0.10	2623.5	0.07	0.07	2498.5	0.20	0.15	2928.5	0.24	0.17	2897.5	0.02	0.01	2734.0
13	0.25	0.16		0.17	0.14	2520.0	0.17	0.09	2973.0	0.18	0.11	2648.0	0.08	0.08	2506.0	0.16	0.11	2941.0	0.19	0.13	2910.0	0.06	0.03	2740.0
14	0.11	0.07		0.16	0.13	2525.0	0.13	0.07	2986.5	0.17	0.10	2661.0	0.06	0.06	2512.0	0.11	0.08	2954.0	0.15	0.10	2917.5	0.04	0.02	2746.0
15	0.20	0.13		0.16	0.13	2538.5	0.26	0.13	3005.5	0.09	0.05	2663.5	0.07	0.07	2515.0	0.19	0.13	2963.0	0.24	0.16	2928.0	0.10	0.06	2765.5
16				0.21	0.17	2551.5	0.03	0.01	3005.5										0.16	0.10	2934.5			
17				0.20	0.16	2570.0	0.23	0.11	3017.0															
18				0.19	0.15	2582.0	0.18	0.08	3034.0															
19				0.19	0.15	2594.5	0.24	0.11	3049.0															
20				0.20	0.15	2602.0	0.12	0.05	3058.5															
21							0.25	0.11	3077.0															
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	3.59	2.58	0.0	4.02	3.51	351.5	4.17	2.41	365.0	2.47	1.63	257.0	2.09	2.13	271.5	3.85	3.04	335.5	3.46	2.66	278.0	2.08	1.42	275.0

EVAPO-TRANSPIRATION DATA ST. EDWARD WEATHER STATION Lower Loup Natural Resources District

MAY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1												11.0			7.5			0.0			0.0			10.0
2												33.0			18.5			6.5			0.0			17.0
3												45.0			32.5			11.5			2.0			28.0
4												52.5			43.5			25.5			9.0			41.0
5												63.0			53.5			41.0			11.0			52.0
6												70.0			58.0			50.0			15.0			60.0
7												72.0			62.5			58.0			15.0			73.0
8												83.0			69.5			59.5			15.0			87.0
9												83.0			85.5			82.5			15.0			104.0
10												84.5			102.5			97.5			26.0			126.0
11												89.5			113.5			111.5			43.0			146.0
12												93.5			130.5			115.0			62.0			157.0
13												98.5			137.0			115.0			81.0			157.0
14												109.0			149.5			115.0			95.0			161.5
15												125.5			160.5			117.0			113.0			166.0
16												132.5			176.5			117.0			135.5			175.0
17												134.5			188.5			117.0			155.5			182.0
18												134.5			208.0			118.0			174.0			187.0
19												141.5			228.0			122.0			194.0			200.5
20							0.18	0.04	199.5			150.5			239.0			122.0			208.0			213.5
21							0.25	0.06	204.5			161.5			252.0			125.0			227.0			223.5
22							0.29	0.07	215.0			180.5			267.0			129.0			240.0			237.0
23							0.23	0.06	230.5			195.5			277.5			131.0			254.5			254.0
24							0.29	0.07	253.5			207.5			289.0			136.5			271.5			272.0
25							0.24	0.06	283.0			222.5			307.0			143.0			282.5			290.0
26							0.36	0.10	312.0			236.0			326.5			151.0			291.5			303.0
27	0.19	0.07					0.35	0.10	334.0	0.05	0.02	259.0			335.0			155.0			297.5			324.0
28	0.11	0.03					0.25	0.07	356.5	0.19	0.07	275.5			345.0			166.0			300.5			341.0
29	0.18	0.06					0.36	0.11	380.5	0.32	0.12	292.0			365.5			169.5			305.5			358.0
30	0.09	0.03					0.29	0.09	394.0	0.27	0.10	305.0			378.5			178.0			326.5			379.0
31	0.25	0.10					0.12	0.04	406.5	0.43	0.17	326.0			379.5			181.0			347.5			394.0
	0.82	0.29	0	0	0	0	3.21	0.87	406.5	1.26	0.48	326.0	0	0	379.5	0	0	181.0	0	0	347.5	0	0	394.0

EVAPO-TRANSPIRATION DATA ST. EDWARD WEATHER STATION Lower Loup Natural Resources District

JUNE	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.09	0.04					0.27	0.09	426.0	0.16	0.07	346.0	0.15	0.06	386.5			185.0	0.24	0.06	356.5	0.30	0.07	412.0
2	0.09	0.04					0.36	0.13	447.0	0.22	0.09	360.0	0.11	0.04	388.5	0.13	0.03	199.0	0.29	0.07	366.5	0.27	0.07	420.0
3	0.21	0.10					0.27	0.10	473.5	0.26	0.11	375.5	0.08	0.03	390.5	0.28	0.07	211.0	0.28	0.07	380.5	0.24	0.06	432.0
4	0.23	0.12		0.30	0.09	297.5	0.23	0.09	504.5	0.27	0.12	394.0	0.24	0.10	400.5	0.30	0.07	220.0	0.21	0.06	400.5	0.08	0.02	439.0
5	0.20	0.11		0.44	0.13	326.5	0.34	0.14	534.5	0.36	0.17	417.0	0.15	0.06	415.5	0.18	0.05	227.0	0.31	0.09	426.5	0.12	0.03	449.0
6	0.18	0.06		0.43	0.14	356.0	0.28	0.15	561.5	0.40	0.20	448.0	0.38	0.17	432.0	0.26	0.07	228.0	0.29	0.07	451.5	0.13	0.04	466.0
7	0.17	0.06		0.37	0.12	370.5	0.32	0.13	571.0	0.38	0.19	480.0	0.35	0.16	445.0	0.23	0.06	237.0	0.26	0.06	476.5	0.22	0.07	492.0
8	0.28	0.11		0.11	0.04	374.0	0.23	0.10	582.0	0.36	0.19	509.5	0.13	0.06	451.5	0.30	0.09	256.5	0.23	0.06	493.5	0.37	0.12	525.0
9	0.25	0.10		0.05	0.02	374.0	0.28	0.13	592.5	0.25	0.13	525.5	0.22	0.11	454.5	0.32	0.10	276.5	0.21	0.05	509.5	0.29	0.10	545.0
10	0.44	0.18		0.26	0.10	387.5	0.26	0.12	615.0	0.34	0.19	550.0	0.22	0.11	468.5	0.22	0.07	294.5	0.25	0.06	521.5	0.27	0.10	561.0
11	0.52	0.23		0.31	0.12	409.5	0.28	0.14	646.0	0.27	0.15	576.5	0.24	0.13	481.0	0.14	0.05	311.0	0.07	0.02	539.5	0.26	0.10	572.0
12	0.36	0.16		0.31	0.12	432.5	0.23	0.12	677.5	0.35	0.21	609.5	0.23	0.12	493.0	0.04	0.01	329.0	0.17	0.05	559.5	0.23	0.09	581.5
13	0.32	0.15		0.35	0.14	454.5	0.32	0.17	706.0	0.49	0.30	644.5	0.21	0.12	510.5	0.08	0.03	339.0	0.18	0.05	579.5	0.23	0.09	591.5
14	0.39	0.19		0.52	0.21	489.5	0.22	0.12	732.5	0.17	0.11	660.0	0.09	0.05	527.5	0.25	0.09	353.0	0.23	0.07	605.5	0.14	0.06	612.5
15	0.33	0.17		0.23	0.09	514.5	0.28	0.16	751.5	0.33	0.21	671.5	0.18	0.11	533.0	0.28	0.11	368.0	0.16	0.05	629.5	0.28	0.12	632.5
16	0.34	0.18		0.34	0.14	530.5	0.27	0.15	766.0	0.39	0.26	693.5	0.24	0.13	548.0	0.24	0.10	387.0	0.21	0.07	657.0	0.45	0.20	657.5
17	0.33	0.18		0.08	0.04	538.5	0.25	0.15	783.5	0.47	0.32	686.0	0.21	0.11	564.0	0.09	0.04	404.0	0.24	0.08	681.5	0.52	0.24	675.5
18	0.32	0.18		0.08	0.04	555.5	0.26	0.16	807.0	0.23	0.16	695.0	0.20	0.11	570.5	0.19	0.08	421.0	0.29	0.10	703.5	0.24	0.11	690.0
19	0.31	0.18		0.40	0.19	577.5	0.14	0.09	816.5	0.33	0.23	715.5	0.25	0.14	583.5	0.15	0.07	443.0	0.30	0.11	726.5	0.28	0.14	704.5
20	0.32	0.19		0.44	0.21	595.5	0.22	0.14	834.5	0.28	0.20	737.5	0.26	0.15	596.0	0.15	0.07	467.5	0.23	0.09	750.5	0.30	0.15	730.0
21	0.23	0.15		0.31	0.15	622.0	0.25	0.16	859.5	0.23	0.17	756.5	0.21	0.13	612.5	0.33	0.16	497.5	0.24	0.10	775.5	0.27	0.14	757.0
22	0.26	0.17		0.10	0.05	638.5	0.13	0.09	873.5	0.26	0.20	779.5	0.23	0.14	628.5	0.24	0.12	527.5	0.37	0.15	803.5	0.39	0.21	777.0
23	0.10	0.07		0.19	0.10	651.0	0.24	0.17	898.0	0.47	0.36	814.0	0.31	0.20	652.5	0.31	0.16	561.5	0.24	0.10	822.5	0.24	0.13	804.0
24	0.15	0.10		0.10	0.06	663.0	0.27	0.19	925.0	0.39	0.30	833.5	0.28	0.18	675.0	0.30	0.16	588.5	0.26	0.11	839.5	0.29	0.17	831.0
25	0.22	0.16		0.25	0.14	684.0	0.22	0.16	958.0	0.32	0.25	856.5	0.22	0.15	686.0	0.33	0.18	617.5	0.28	0.13	866.0	0.29	0.17	861.0
26	0.25	0.18		0.28	0.16	711.0	0.44	0.32	995.0	0.28	0.23	884.5	0.26	0.18	706.5	0.16	0.09	644.0	0.32	0.15	895.0	0.08	0.05	866.0
27	0.30	0.22		0.20	0.12	727.0	0.40	0.30	1022.5	0.42	0.35	923.5	0.22	0.15	724.5	0.14	0.08	667.0	0.28	0.14	912.0	0.26	0.16	878.5
28	0.34	0.26		0.28	0.17	748.0	0.35	0.27	1043.0	0.37	0.31	9545.0	0.26	0.18	749.5	0.12	0.07	686.5	0.30	0.15	936.0	0.24	0.15	891.5
29	0.22	0.17		0.29	0.18	767.0	0.33	0.26	1069.5	0.28	0.24	974.5	0.26	0.19	773.0	0.18	0.11	708.0	0.29	0.14	960.0	0.26	0.17	908.5
30	0.30	0.24		0.28	0.18	791.0	0.33	0.26	1102.5	0.31	0.27	996.0	0.09	0.07	787.5	0.26	0.16	734.0	0.29	0.15	979.0	0.21	0.14	929.0
31																								
	8.05	4.45		7.3	3.25	538.5	8.27	4.76	696.0	9.64	6.29	670.0	6.48	3.64	408.0	6.2	2.55	723.0	7.52	2.66	631.5	7.75	3.47	535.0

EVAPO-TRANSPIRATION DATA ST. EDWARD WEATHER STATION Lower Loup Natural Resources District

JULY	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.33	0.27		0.24	0.16	814.0	0.37	0.30	1126.5	0.29	0.25	1023.5	0.21	0.16	810.0	0.22	0.14	760.0	0.17	0.09	997.0	0.20	0.14	941.0
2	0.28	0.23		0.11	0.08	835.5	0.22	0.18	1143.5	0.05	0.04	1046.5	0.16	0.12	831.5	0.30	0.20	792.5	0.27	0.15	1020.0	0.22	0.16	960.0
3	0.29	0.25		0.29	0.20	871.5	0.22	0.21	1168.5	0.11	0.10	1067.0	0.27	0.21	860.5	0.33	0.22	823.5	0.25	0.15	1045.0	0.31	0.22	984.5
4	0.32	0.28		0.08	0.06	890.0	0.25	0.24	1198.0	0.26	0.24	1091.0	0.38	0.30	894.5	0.28	0.19	837.5	0.20	0.12	1067.0	0.31	0.23	1011.0
5	0.42	0.37		0.09	0.07	897.0	0.28	0.27	1230.5	0.25	0.23	1115.5	0.29	0.23	920.5	0.28	0.20	856.0	0.23	0.14	1088.0	0.27	0.20	1029.0
6	0.34	0.30		0.08	0.06	906.0	0.36	0.35	1268.5	0.32	0.30	1144.0	0.25	0.20	934.5	0.36	0.26	879.0	0.30	0.19	1103.0	0.29	0.22	1049.0
7	0.16	0.15		0.09	0.07	920.0	0.37	0.32	1304.0	0.32	0.30	1175.0	0.27	0.22	958.0	0.32	0.24	906.0	0.22	0.14	1121.0	0.25	0.20	1080.0
8	0.30	0.28		0.11	0.08	939.0	0.35	0.30	1334.0	0.32	0.30	1196.5	0.25	0.21	981.5	0.34	0.26	935.0	0.22	0.15	1151.0	0.21	0.18	1101.0
9	0.15	0.14		0.18	0.12	961.0	0.30	0.26	1367.0	0.32	0.30	1223.0	0.25	0.21	1004.0	0.33	0.25	964.0	0.12	0.08	1175.0	0.29	0.25	1128.0
10	0.24	0.23		0.25	0.17	989.5	0.30	0.27	1404.5	0.35	0.33	1258.0	0.17	0.15	1024.5	0.36	0.28	993.5	0.16	0.11	1200.0	0.28	0.23	1152.5
11	0.22	0.19		0.31	0.22	1018.5	0.30	0.27	1440.0	0.35	0.34	1294.0	0.22	0.19	1044.0	0.29	0.23	1014.5	0.24	0.17	1221.0	0.26	0.22	1177.5
12	0.21	0.18		0.24	0.17	1048.0	0.30	0.27	1466.0	0.33	0.31	1330.0	0.24	0.21	1066.0	0.24	0.19	1034.5	0.35	0.26	1242.0	0.29	0.26	1210.5
13	0.25	0.22		0.33	0.24	1076.5	0.36	0.33	1503.0	0.34	0.32	1362.0	0.20	0.18	1089.5	0.32	0.26	1065.5	0.27	0.20	1271.0	0.13	0.12	1243.5
14	0.24	0.21		0.32	0.24	1101.0	0.33	0.30	1537.0	0.18	0.17	1393.5	0.20	0.18	1112.5	0.31	0.26	1094.5	0.22	0.17	1298.0	0.25	0.23	1268.5
15	0.19	0.17		0.26	0.20	1124.0	0.21	0.19	1563.0	0.26	0.25	1419.0	0.22	0.20	1139.5	0.29	0.25	1122.5	0.27	0.21	1321.0	0.26	0.24	1289.5
16	0.26	0.24		0.27	0.16	1143.5	0.27	0.25	1588.0	0.21	0.20	1448.0	0.29	0.26	1165.5	0.18	0.16	1147.5	0.28	0.24	1345.5	0.25	0.24	1312.0
17	0.22	0.20		0.21	0.16	1158.0	0.27	0.26	1619.0	0.23	0.21	1477.0	0.24	0.22	1183.0	0.22	0.19	1176.0	0.28	0.25	1363.5	0.27	0.26	1340.0
18	0.28	0.26		0.23	0.18	1174.5	0.31	0.29	1649.0	0.15	0.14	1502.0	0.25	0.23	1208.0	0.23	0.20	1206.0	0.25	0.22	1382.5	0.07	0.06	1366.0
19	0.19	0.18		0.23	0.19	1198.0	0.32	0.30	1682.5	0.15	0.14	1528.5	0.23	0.22	1236.0	0.27	0.24	1239.0	0.25	0.23	1408.5	0.19	0.18	1399.0
20	0.24	0.23		0.25	0.21	1220.5	0.27	0.26	1705.5	0.26	0.25	1555.5	0.24	0.23	1262.0	0.31	0.28	1270.5	0.24	0.22	1435.5	0.17	0.16	1416.5
21	0.15	0.14		0.23	0.19	1247.5	0.31	0.30	1721.0	0.20	0.19	1578.5	0.23	0.22	1287.0	0.26	0.24	1303.5	0.32	0.30	1465.5	0.18	0.17	1440.0
22	0.10	0.10		0.28	0.24	1273.0	0.28	0.27	1742.0	0.22	0.21	1605.5	0.27	0.26	1311.0	0.29	0.27	1334.5	0.31	0.29	1498.5	0.17	0.16	1462.0
23	0.19	0.18		0.22	0.19	1298.0	0.28	0.27	1766.0	0.22	0.21	1633.0	0.26	0.25	1335.0	0.16	0.15	1357.0	0.28	0.26	1527.5	0.24	0.23	1488.0
24	0.19	0.18		0.17	0.15	1320.5	0.31	0.30	1795.0	0.19	0.19	1660.5	0.24	0.22	1360.0	0.14	0.13	1378.0	0.23	0.22	1551.5	0.21	0.20	1513.5
25	0.20	0.19		0.21	0.19	1341.5	0.13	0.13	1815.0	0.16	0.16	1680.5	0.25	0.23	1385.5	0.25	0.24	1396.5	0.11	0.10	1572.5	0.24	0.23	1533.0
26	0.27	0.26		0.19	0.17	1361.5	0.26	0.26	1831.5	0.12	0.12	1692.5	0.18	0.20	1411.0	0.26	0.25	1421.0	0.20	0.19	1594.5	0.29	0.28	1552.0
27	0.28	0.27		0.21	0.19	1399.0	0.22	0.27	1853.0	0.08	0.08	1703.0	0.13	0.14	1429.0	0.16	0.15	1449.5	0.22	0.21	1613.0	0.27	0.27	1575.0
28	0.24	0.23		0.16	0.14	1413.5	0.39	0.39	1883.5	0.09	0.09	1717.5	0.17	0.19	1451.0	0.15	0.14	1476.5	0.24	0.23	1632.0	0.11	0.11	1595.0
29	0.30	0.29		0.12	0.11	1437.0	0.34	0.34	1918.5	0.08	0.08	1737.5	0.21	0.23	1468.0	0.24	0.22	1503.5	0.26	0.25	1655.0	0.08	0.08	1619.0
30	0.21	0.21		0.22	0.20	1458.0	0.22	0.22	1942.0	0.20	0.20	1761.5	0.23	0.25	1486.0	0.18	0.17	1532.5	0.23	0.22	1679.0	0.13	0.13	1637.0
31	0.17	0.17		0.19	0.18	1471.5	0.24	0.24	1963.5	0.15	0.15	1791.5	0.23	0.25	1508.5	0.23	0.22	1560.0	0.22	0.22	1706.0	0.10	0.10	1657.5
	7.43	6.80	0.0	6.37	4.99	680.5	8.94	8.41	861.0	6.76	6.40	795.5	7.23	6.57	721.0	8.10	6.68	826.0	7.41	5.98	727.0	6.79	5.96	728.5

EVAPO-TRANSPIRATION DATA ST. EDWARD WEATHER STATION Lower Loup Natural Resources District

AUGUST	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.13	0.13		0.20	0.19	1493.0	0.28	0.28	1993.5	0.13	0.13	1817.0	0.20	0.22	1534.5	0.19	0.18	1586.0	0.17	0.17	1735.0	0.09	0.09	1675.5
2	0.19	0.19		0.22	0.21	1515.0	0.28	0.28	2018.0	0.17	0.17	1843.0	0.22	0.24	1562.5	0.28	0.27	1616.5	0.24	0.24	1764.0	0.09	0.09	1698.5
3	0.23	0.23		0.28	0.26	1544.0	0.40	0.40	2045.0	0.22	0.22	1873.5	0.23	0.25	1592.0	0.10	0.10	1644.5	0.14	0.14	1794.0	0.09	0.09	1719.5
4	0.21	0.21		0.28	0.27	1570.0	0.29	0.29	2062.0	0.22	0.22	1901.0	0.11	0.12	1616.5	0.20	0.20	1675.5	0.23	0.24	1824.0	0.22	0.22	1748.0
5	0.22	0.22		0.18	0.17	1598.5	0.27	0.27	2091.0	0.21	0.21	1927.5	0.17	0.18	1639.5	0.11	0.11	1703.5	0.24	0.25	1854.0	0.24	0.24	1774.0
6	0.20	0.20		0.27	0.26	1629.5	0.30	0.30	2126.0	0.22	0.22	1948.5	0.19	0.21	1659.5	0.16	0.16	1731.5	0.25	0.26	1883.5	0.18	0.18	1796.5
7	0.20	0.20		0.30	0.28	1661.5	0.37	0.36	2161.0	0.25	0.25	1965.5	0.19	0.21	1680.0	0.22	0.22	1758.5	0.17	0.18	1912.5	0.24	0.24	1820.5
8	0.19	0.19		0.29	0.27	1692.0	0.16	0.15	2188.0	0.23	0.23	1986.0	0.19	0.21	1698.5	0.24	0.24	1784.5	0.25	0.25	1942.0	0.20	0.20	1849.0
9	0.22	0.22		0.23	0.22	1718.0	0.25	0.24	2218.5	0.15	0.15	2001.0	0.07	0.08	1712.0	0.23	0.23	1810.5	0.28	0.28	1968.0	0.21	0.21	1870.0
10	0.21	0.21		0.24	0.23	1728.0	0.25	0.24	2245.0	0.18	0.17	20147.0	0.13	0.14	1722.5	0.31	0.31	1841.0	0.24	0.24	1989.5	0.21	0.20	1881.5
11	0.18	0.18		0.26	0.25	1747.0	0.24	0.23	2266.0	0.20	0.19	2038.5	0.20	0.22	1736.5	0.23	0.23	1861.5	0.27	0.27	2013.5	0.14	0.14	1898.0
12	0.23	0.23		0.22	0.21	1767.5	0.25	0.24	2293.0	0.16	0.15	2064.0	0.05	0.05	1754.5	0.24	0.24	1882.5	0.24	0.24	2039.5	0.15	0.14	1923.0
13	0.21	0.21		0.25	0.24	1782.5	0.22	0.21	2318.5	0.10	0.09	2088.0	0.12	0.13	1776.5	0.09	0.09	1906.0	0.25	0.25	2065.0	0.12	0.11	1942.5
14	0.17	0.17		0.15	0.15	1791.5	0.18	0.17	2339.5	0.22	0.21	2114.5	0.09	0.10	1793.5	0.19	0.19	1933.5	0.26	0.26	2089.0	0.18	0.17	1958.5
15	0.19	0.19		0.09	0.09	1799.0	0.18	0.17	2356.0	0.19	0.18	2136.5	0.06	0.06	1811.5	0.24	0.24	1964.5	0.14	0.14	2119.0	0.17	0.16	1972.5
16	0.19	0.18		0.05	0.05	1811.5	0.13	0.12	2377.0	0.15	0.14	2151.5	0.11	0.12	1830.5	0.24	0.24	1999.5	0.21	0.21	2150.0	0.14	0.13	1996.0
17	0.23	0.22		0.18	0.18	1840.5	0.20	0.18	2401.0	0.17	0.15	2165.5	0.16	0.17	1852.0	0.24	0.24	2031.5	0.25	0.24	2177.0	0.18	0.17	2015.5
18	0.28	0.27		0.14	0.14	1865.0	0.22	0.20	2429.0	0.16	0.14	2181.0	0.17	0.18	1875.0	0.32	0.31	2065.5	0.27	0.26	2204.0	0.17	0.16	2028.5
19	0.20	0.19		0.17	0.17	1886.5	0.25	0.22	2460.0	0.18	0.16	2202.5	0.18	0.19	1903.0	0.25	0.24	2095.0	0.27	0.26	2229.0	0.16	0.15	2050.0
20	0.19	0.18		0.17	0.17	1908.5	0.26	0.23	2479.5	0.19	0.17	2221.5	0.16	0.17	1915.0	0.17	0.17	2121.0	0.15	0.14	2252.5	0.13	0.12	2069.0
21	0.19	0.18		0.17	0.17	1930.0	0.23	0.20	2501.0	0.20	0.17	2243.0	0.15	0.16	1933.0	0.23	0.22	2151.0	0.21	0.20	2278.0	0.04	0.04	2089.0
22	0.17	0.16		0.20	0.20	1948.0	0.26	0.20	2523.5	0.19	0.16	2267.5	0.16	0.17	1951.0	0.14	0.13	2177.0	0.24	0.23	2294.0	0.17	0.15	2117.0
23	0.22	0.20		0.22	0.22	1958.0	0.31	0.26	2554.0	0.11	0.09	2286.5	0.20	0.22	1972.5	0.16	0.15	2203.0	0.21	0.20	2308.0	0.21	0.18	2141.0
24	0.19	0.17		0.21	0.21	1974.5	0.20	0.16	2587.0	0.12	0.10	2305.5	0.16	0.17	1980.5	0.19	0.18	2233.5	0.23	0.21	2327.0	0.18	0.15	2154.0
25	0.15	0.14		0.17	0.17	1993.5	0.25	0.21	2615.5	0.13	0.11	2327.5	0.15	0.16	1996.5	0.23	0.22	2267.5	0.19	0.17	2348.0	0.17	0.14	2168.5
26	0.17	0.15		0.08	0.08	2007.0	0.10	0.08	2626.5	0.16	0.13	2347.0	0.12	0.13	2008.5	0.23	0.21	2300.5	0.24	0.22	2374.0	0.16	0.13	2184.0
27	0.10	0.09		0.15	0.15	2027.0	0.10	0.08	2645.0	0.14	0.11	2365.5	0.13	0.14	2017.0	0.11	0.10	2325.5	0.21	0.19	2401.5	0.19	0.16	2206.5
28	0.17	0.15		0.13	0.13	2042.0	0.17	0.16	2669.0	0.09	0.07	2378.0	0.10	0.11	2038.0	0.21	0.19	2352.5	0.23	0.20	2429.0	0.12	0.10	2233.0
29	0.19	0.16		0.23	0.22	2065.0	0.16	0.12	2694.5	0.13	0.10	2402.0	0.04	0.05	2059.0	0.18	0.16	2380.5	0.25	0.22	2452.0	0.17	0.13	2259.5
30	0.18	0.15		0.17	0.17	2095.0	0.16	0.12	2713.5	0.15	0.11	2427.0	0.09	0.10	2079.0	0.21	0.19	2407.5	0.23	0.20	2468.0	0.18	0.14	2286.0
31	0.16	0.13		0.21	0.20	2121.0	0.14	0.10	2734.0	0.16	0.12	2437.0	0.14	0.15	2099.5	0.21	0.18	2430.0	0.26	0.22	2490.0	0.12	0.09	2319.5
	5.96	5.70	0.0	6.11	5.93	649.5	7.06	6.47	770.5	5.28	4.82	645.5	4.44	4.81	591.0	6.35	6.14	870.0	7.02	6.78	784.0	5.02	4.62	662.0

EVAPO-TRANSPIRATION DATA ST. EDWARD WEATHER STATION Lower Loup Natural Resources District

SEPT.	1978			1979			1980			1981			1982			1983			1984			1985		
DATE:	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.	ETp ALF.:	ETpc CORN:	G.D.D.
1	0.18	0.15		0.24	0.23	2139.0	0.20	0.14	2748.5	0.16	0.12	2447.0	0.17	0.18	2115.0	0.21	0.18	2455.5	0.20	0.17	2519.0	0.35	0.26	2347.0
2	0.17	0.14		0.24	0.23	2161.0	0.24	0.17	2774.5	0.15	0.11	2464.0	0.18	0.19	2127.5	0.26	0.22	2482.5	0.21	0.17	2536.0	0.25	0.19	2381.0
3	0.17	0.14		0.23	0.22	2188.0	0.29	0.20	2798.0	0.11	0.08	2476.0	0.20	0.21	2146.0	0.18	0.15	2512.5	0.19	0.15	2549.0	0.19	0.14	2410.0
4	0.20	0.16		0.25	0.23	2215.0	0.24	0.16	2810.0	0.10	0.07	2494.0	0.15	0.15	2167.0	0.18	0.15	2538.0	0.23	0.18	2563.0	0.15	0.11	2436.0
5	0.16	0.12		0.26	0.24	2239.5	0.21	0.14	2835.0	0.15	0.10	2419.5	0.12	0.12	2187.5	0.25	0.21	2562.0	0.20	0.15	2573.0	0.20	0.14	2464.0
6	0.20	0.15		0.21	0.19	2255.5	0.15	0.10	2863.5	0.07	0.05	2535.5	0.00	0.00	2201.0	0.26	0.21	2578.5	0.27	0.20	2592.5	0.19	0.13	2492.0
7	0.23	0.17		0.20	0.18	2273.0	0.20	0.13	2892.5	0.19	0.12	2549.0	0.07	0.07	2216.5	0.23	0.18	2593.0	0.09	0.07	2607.0	0.18	0.12	2521.5
8	0.23	0.17		0.23	0.21	2295.0	0.39	0.24	2924.5	0.21	0.13	2566.5	0.11	0.11	2237.0	0.26	0.20	2619.5	0.23	0.23	2623.0	0.14	0.09	2534.5
9	0.24	0.17		0.14	0.12	2317.5	0.19	0.12	2928.0	0.17	0.10	2583.5	0.14	0.14	2253.5	0.23	0.18	2644.5	0.20	0.20	2639.0	0.17	0.11	2548.5
10	0.21	0.15		0.12	0.10	2343.0	0.20	0.12	2934.5	0.18	0.11	2603.0	0.14	0.14	2275.5	0.26	0.20	2668.5	0.12	0.08	2654.0	0.06	0.04	2563.5
11	0.20	0.14		0.12	0.10	2355.0	0.17	0.10	2956.5	0.26	0.15	2617.5	0.12	0.12	2293.0	0.25	0.19	2676.5	0.09	0.06	2669.0	0.02	0.01	2577.5
12	0.22	0.15		0.16	0.14	2362.5	0.21	0.12	2977.5	0.21	0.12	2638.5	0.11	0.11	2299.0	0.22	0.16	2696.0	0.21	0.14	2697.5	0.04	0.02	2587.5
13	0.19	0.13		0.19	0.16	2632.5	0.19	0.11	2986.5	0.21	0.12	2659.5	0.06	0.06	2302.5	0.14	0.10	2701.5	0.16	0.10	2717.5	0.04	0.02	2591.5
14	0.12	0.08		0.19	0.16	2643.5	0.14	0.08	2996.5	0.23	0.12	2672.5	0.04	0.04	2303.0	0.12	0.08	2711.5	0.14	0.09	2727.0	0.03	0.02	2600.0
15	0.13	0.08		0.22	0.18	2657.5	0.28	0.15	3015.0	0.09	0.05	2676.5	0.07	0.07	2305.0	0.17	0.12	2724.5	0.20	0.12	2727.0	0.09	0.05	2620.0
16				0.19	0.15	2671.5	0.09	0.05	3015.0										0.11	0.07	2727.0			
17				0.16	0.13	2676.0	0.19	0.09	3025.0															
18				0.17	0.13	2686.5	0.16	0.08	3034.0															
19				0.20	0.15	2689.0	0.27	0.13	3057.0															
20							0.14	0.06	3066.5															
21							0.28	0.12	3081.0															
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	2.85	2.10	0.0	3.72	3.25	568.0	4.43	2.61	247.0	2.49	1.55	239.5	1.68	1.71	205.5	3.22	2.53	294.5	2.85	2.18	237.0	2.10	1.45	300.5