

**WATER PERMIT NO. 7293-3**

Name of Applicant: Jeffery Gatzke

Address: 39334 187<sup>th</sup> St, Hitchcock SD 57348 Phone: 605 266-2574

Amount of Water Claimed: 1.78 cfs Total Acres: 160 acres

Source of Water Supply: groundwater (one well)

Water to be used for: irrigation County: Spink

Type of Waste Disposal System:

Location: 4 miles north of Hitchcock

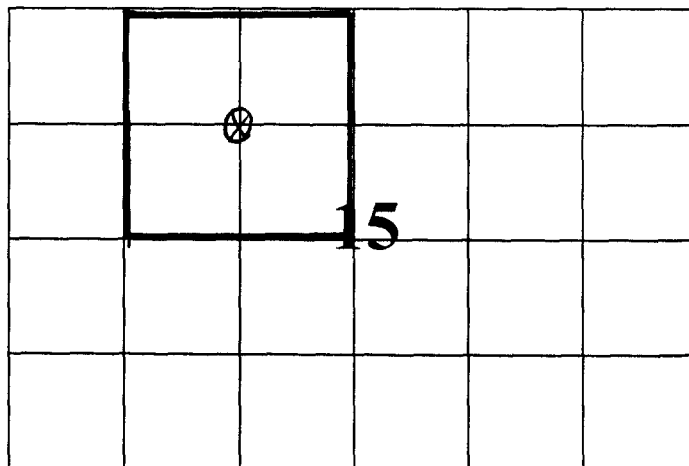
PRIORITY Date Received: 12-15-11 Application/License Fee: \$ 1,050

Corrected Application Received: Period of Annual Use: May 1 – September 30

Remarks:

Diversion Point: center of NW ¼ Sec 15-T114N-  
R63W

Land to be Irrigated: NW ¼ Sec 15-T114N-R63W



Depth of Well: 60 feet deep

Well Driller:

Remarks:

Type of Map: aerial

Prepared by: Eric Gronlund

Reviewed and the Number Assigned on: 12-19-11

By: Karen Schlaak

Notice of Hearing - date to intervene: \_\_\_\_\_

FORM 2: Application for irrigation in South Dakota  
(type or print)

|                                                                                                                 |                                            |                                 |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------|
| Mail to:<br>PMB 2020<br>DENR - Water Rights<br>523 E Capitol Ave<br>Pierre, SD 57501-3182<br>ph. (605) 773-3352 | No. <u>7293-3</u> (office use only)        | Hydrologic Unit <u>10160006</u> |
|                                                                                                                 | Basin <u>James River</u>                   |                                 |
|                                                                                                                 | Newspaper <u>Redfield Press PO Box 440</u> |                                 |
|                                                                                                                 | <u>605-472-0822</u> <u>Redfield 57469</u>  |                                 |

RECEIVED  
DEC 15 2011  
WATER RIGHTS  
PROGRAM

## Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. \_\_\_\_\_

(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

1. Name of Applicant Jeffery Gatzke Phone 605-266-2374  
(check one) ☒ Owner ☐ Tenant/lessee  
Mailing Address 39334 187<sup>th</sup> Street Hitchcock SD 57348  
(Address) (City) (State) (Zip Code)
2. Amount of water claimed 1.78 \*CFS or 800 \*\*GPM \*\*\*AF Total Acreage 135  
(\*Cubic Feet per Second) (\*\*Gallons per Minute) (\*\*\*)Acre Feet - storage capacity of dam/dugout or annual use if applicable,
3. Source of water supply ground water - new well
4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Spink  
1 well in center NW 1/4 Section 15  
T-114N - R63W
5. County or counties where water will be used Spink
6. Annual period during which water is to be used May 1 - September 30
7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.  
(Attach sheet if more space is needed)

| Land Description                | Acres      | Land Description | Acres |
|---------------------------------|------------|------------------|-------|
| <u>NW 1/4 - Sec 15</u>          |            |                  |       |
| <u>T-114N - R63W</u>            | <u>135</u> |                  |       |
| <u>NE 1/4 - NW 1/4 - Sec 15</u> |            |                  |       |
| <u>T-114N - R63W</u>            |            |                  |       |

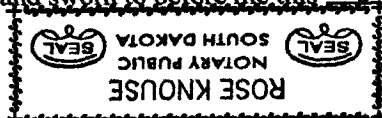
8. Give a description of the project. (Attach sheet if more space is needed)

STATE OF SOUTH DAKOTA )

County of \_\_\_\_\_ ) SS

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

I, Jeffery Gatzke, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature [Signature]Subscribed and sworn to before me this 8<sup>th</sup> day of December 20 11Notary Public signature [Signature]Comm Expires: 12-24-2015

**SOUTH DAKOTA**  
**WATER PERMIT NO. 7293-3 FOR IRRIGATION**

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Date of first receipt of application December 15, 2011.

The Water Management Board approved Water Permit No. 7293-3 on July 11, 2012 for Jeffery Gatzke, 39334 187<sup>th</sup> St, Hitchcock SD 57348 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 7293-3 appropriates 1.78 cubic feet of water per second from one well to be completed into the Tulare:Hitchcock Aquifer (60 feet deep) located in the center of the NW 1/4 Section 15 for irrigation of 135 acres located in the NW 1/4 Section 15; all in T114N-R63W.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is December 15, 2011.
4. One-fifth of the construction is to be completed on or before January 11, 2015.
5. All construction is to be completed on or before July 11, 2017.
6. Water is to be put to beneficial use on or before July 11, 2021.
7. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

**QUALIFICATIONS**

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7293-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

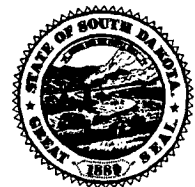
**WATER MANAGEMENT BOARD**

By: Garland Erbele

Garland Erbele, Chief Engineer  
Water Rights Program  
Department of Environment and Natural Resources

AUG 28 2012

date



## Supplemental Information

(type or print in ink)

### 1. Well Information - Proposed Construction

- a) Drill Hole Diameter \_\_\_\_\_ Depth 60'
- b) Casing Type \_\_\_\_\_ Diameter 16 Thickness \_\_\_\_\_
- c) Screen Type \_\_\_\_\_ Diameter 16 Thickness \_\_\_\_\_
- d) Gravel Pack \_\_\_\_\_ Length of Gravel Pack \_\_\_\_\_
- e) Depth to Top of Water Bearing Material \_\_\_\_\_
- f) Depth to Water (ground surface to water level) \_\_\_\_\_
- g) Distance to nearest existing domestic well:
- On applicants property \_\_\_\_\_ On property owned by others \_\_\_\_\_

### 2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) \_\_\_\_\_
- b) System Capacity (gallons) \_\_\_\_\_ Year Constructed \_\_\_\_\_
- c) Connected to the City of \_\_\_\_\_ Sanitary System \_\_\_\_\_

### 3. Dugout Information

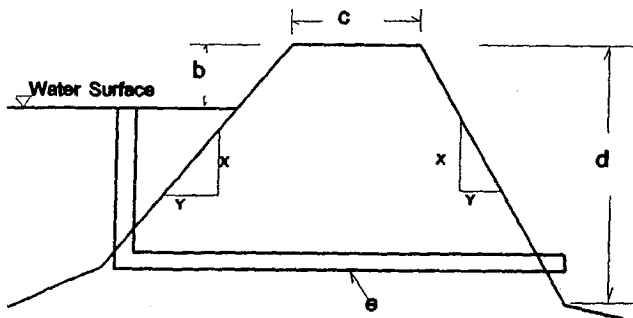
- a) Surface Dimensions \_\_\_\_\_ Depth \_\_\_\_\_
- b) Depth to water (ground surface to water level) \_\_\_\_\_

### 4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



- b) Freeboard \_\_\_\_\_
- c) Crest Width \_\_\_\_\_  
Crest Length \_\_\_\_\_
- d) Height \_\_\_\_\_
- e) Primary Outlet Capacity \_\_\_\_\_  
If pipe, diameter \_\_\_\_\_
- f) Secondary Spillway Capacity \_\_\_\_\_  
Spillway Width \_\_\_\_\_
- g) X & Y Slope \_\_\_\_\_  
Upstream \_\_\_\_\_  
Downstream \_\_\_\_\_
- h) Surface Area of Impoundment \_\_\_\_\_
- i) Storage \_\_\_\_\_ Acre Feet
- j) Drainage Area Above Dam \_\_\_\_\_ Acres

WATER PERMIT APPLICATION FOR JEFFERY GATZKE



1,000 500 0 1,000 Feet

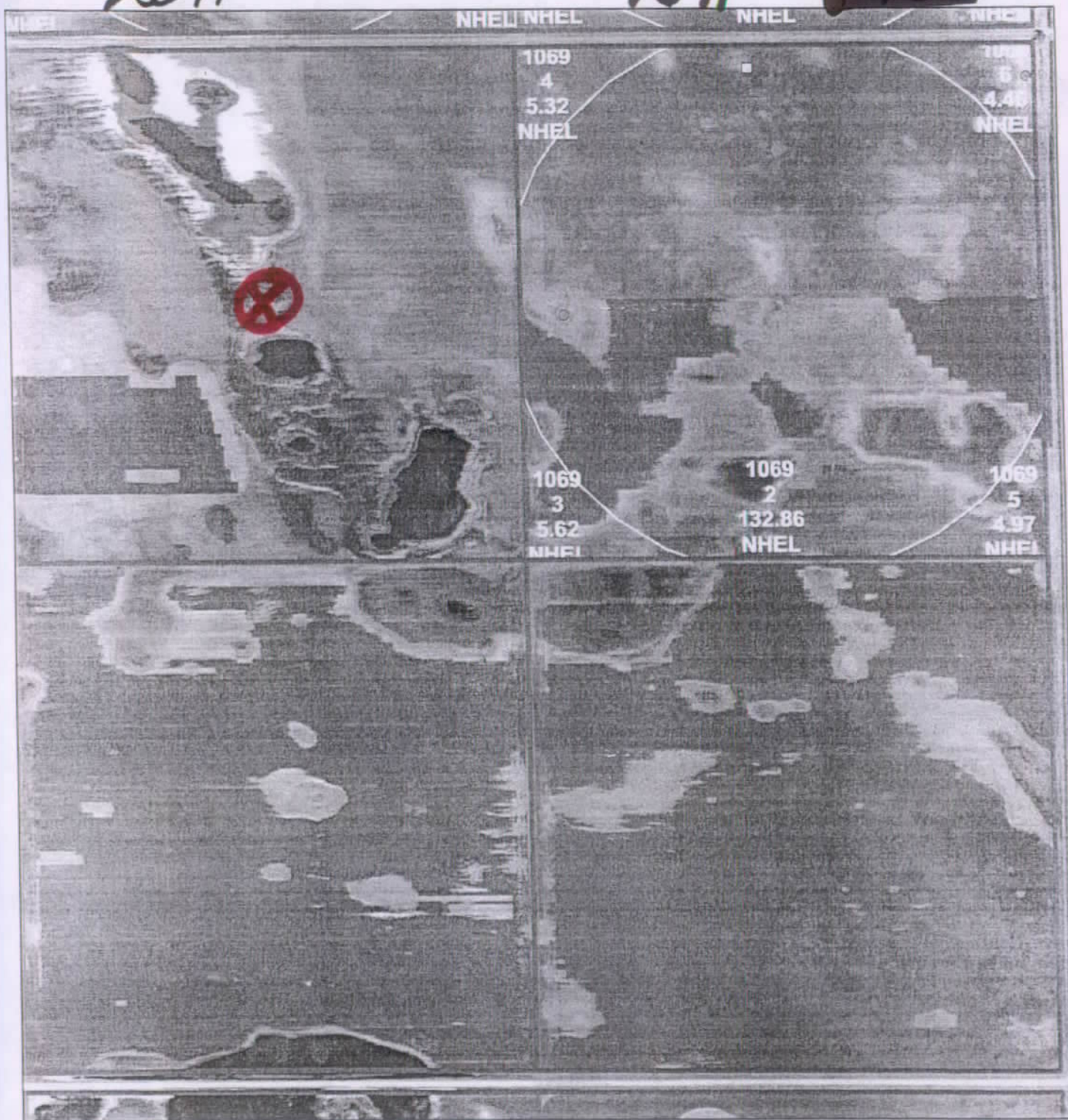


*Eric Gronlund*  
Eric Gronlund  
Water Rights Program, DENR  
as represented by applicant

2011

7611

2433



United States Department of Agriculture  
Farm Service Agency

March 21, 2011

PLSS: 15\_114N\_63W

Farm: 7611

**Spink County, SD**

1:8,068



**Wetland Determination Identifiers**

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conservation Compliance Provisions

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.

Common Land Units  
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**DEC 15 2011**

**WATER RIGHTS  
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*Jeffery Gatzke*

2010 Ortho-Photography - Not to Scale

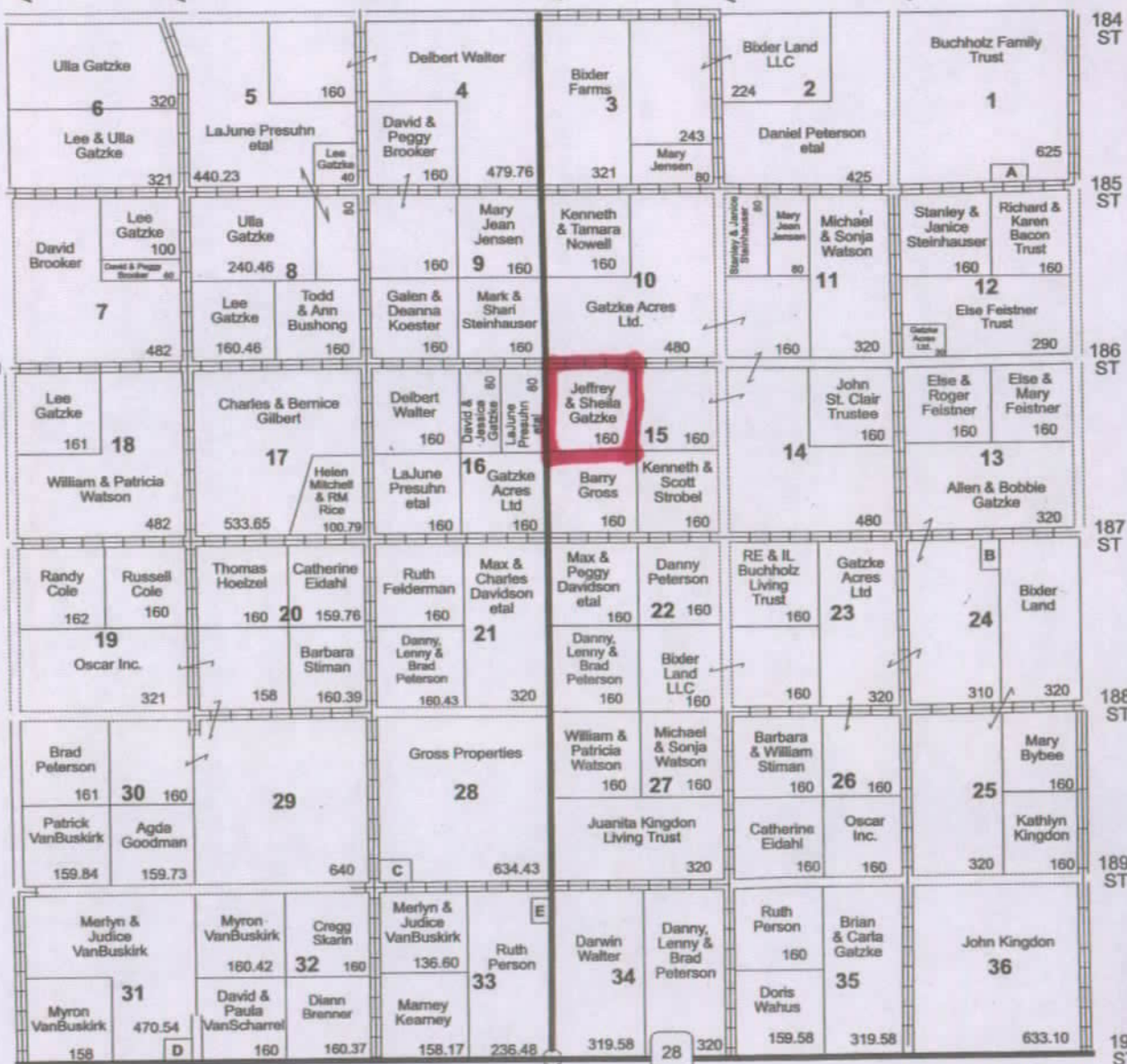
Jeffery Gatzke

**R 63 W**  
JOINS CRANDON TWP

394  
AVE

JOINS CORNWALL TV

## LAND OWNER & RURAL RESIDENT MAPS



JOINS BEADLE COUNTY, SD

[illegible]

Section 1 A Todd Cole - 20  
Section 21 B A&B Feedlot Inc. - 10  
Section 28 C Janice Peterson Living Trust - 5  
Section 31 D Roger Larson & Beverly Day - 8.53  
Section 33 E Aaron Gilbert - 20.41

## WATER RIGHTS PROGRAM

# RECEIPT

## WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 12/15, 20 11

RECEIVED OF Jeffery Gatzke 39334 187th St Hitchcock Sd 57348

The following amount in fees for services rendered as provided for by law:

|                                                                                                                        |       |         |
|------------------------------------------------------------------------------------------------------------------------|-------|---------|
| Fee for Application for Permit No. <u>7293-3</u> to Appropriate Water, to construct and to put water to beneficial use | 850   | 00      |
| Fee for Application for Permit No. _____ to Appropriate Water for Future use                                           |       |         |
| Fee to retain Future Use Permit No. _____ after period of seven years.                                                 |       |         |
| Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>7293-3</u>            | 200   | 00      |
| Fee for Filing Transfer Form _____                                                                                     |       |         |
| Fee for _____                                                                                                          |       |         |
| Fee for Issuing New Well Driller's License No. _____ for C.Y. _____                                                    |       |         |
| Fee for Renewal of Well Driller's License No. _____ for C.Y. _____                                                     |       |         |
| Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____                                                 |       |         |
| Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____                                              |       |         |
| (Any Other Work Provided by Law)                                                                                       | TOTAL | 1050 00 |

No. 05134

By

David Schulte  
Chief Engineer



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT  
APPLICATION NO. 7293-3, Jeffery Gatzke**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 7293-3, Jeffery Gatzke, 39334 187<sup>th</sup> Street, Hitchcock SD 57348.

The Chief Engineer is recommending DENIAL of Application No. 7293-3 because 1) SDCL 46-6-3.1 states that the annual withdrawal of groundwater shall not exceed the average estimated annual recharge to the aquifer; 2) the Water Management Board adopted finding of fact, conclusions of law and a final decision on March 11, 2008 that the Western Spink and Hitchcock Management Units of the Tulare Aquifer are fully appropriated; 3) since the 2008 Board decision, there has not been a change in the appropriative status of water rights/permit within the aquifer; 4) it is not in the public interest to permit additional groundwater withdrawals in excess of the average annual recharge of the Tulare:Hitchcock Aquifer.

See report on application for additional information.

Garland Erbele, Chief Engineer  
February 2, 2012

REPORT ON WATER PERMIT NOS. 7288-3 AND 7289-3 FOR BIXLER FARMS

NOS. 7290-3 AND 7291-3 FOR LEE GATZKE

NO. 7293-3 FOR JEFFREY GATZKE

And NO. 7292-3 FOR ALLEN GATZKE

January 28, 2012

Application No. 7288-3 proposes to appropriate 2.22 cfs from one well approximately 60 feet deep located in the center of the NW  $\frac{1}{4}$  of section 3 for irrigation of 160 acres located in the NW  $\frac{1}{4}$  of section 3; all in T114N R63W.

Application No. 7289-3 proposes to appropriate 4.44 cfs from two wells approximately 75 feet deep located in the centers of the SE  $\frac{1}{4}$  and SW  $\frac{1}{4}$  of section 36 to irrigate 352 acres located in the S  $\frac{1}{2}$ , S  $\frac{1}{2}$  NW  $\frac{1}{4}$  of section 36; all in T115N R63W.

Application No. 7290-3 proposes to appropriate 1.78 cfs from one well approximately 60 feet deep located in the center of the NE  $\frac{1}{4}$  of section 6 for irrigation of 160 acres located in the NE  $\frac{1}{4}$  of section 6; all in T114N R63W.

Application No. 7291-3 proposes to appropriate 1.78 cfs from one well approximately 75 feet deep located in the center of the NW  $\frac{1}{4}$  of section 18 for irrigation of 160 acres located in the NW  $\frac{1}{4}$  of section 18; all in T114N R63W.

Application No. 7292-3 proposes to appropriate 1.78 cfs from one well approximately 76 feet deep located in the center of the NW  $\frac{1}{4}$  of section 14 for irrigation of 160 acres located in the N  $\frac{1}{2}$  NW  $\frac{1}{4}$ , S  $\frac{1}{2}$  SW  $\frac{1}{4}$  of section 14; all in T114N R63W. The applicant intends to combine with Water Right No. 6339B-3 which authorizes irrigation of the S  $\frac{1}{2}$  NW  $\frac{1}{4}$  and the N  $\frac{1}{2}$  SW  $\frac{1}{4}$  of section 14 to allow for two center pivots in the W  $\frac{1}{2}$  of section 14; T114N R63W.

Application No. 7293-3 proposes to appropriate 1.78 cfs from one well approximately 60 feet deep located in the center of the NW  $\frac{1}{4}$  of section 15 for irrigation of 160 acres located in the NW  $\frac{1}{4}$  of section 15; all in T114N R63W and all in Spink County.

AQUIFERS – TULARE HITCHCOCK (T-H) AND TULARE WESTERN SPINK (T-WS)

The water source for application Nos. 7288-3, 7289-3, 7292-3 and 7293-3 is the Tulare Hitchcock aquifer and the water source for application Nos. 7290-3 and 7291-3 is the Tulare Western Spink aquifer.

The Tulare Hitchcock aquifer is a surficial outwash (sand and gravel) under predominantly water table conditions. The aquifer underlies portions of south central Spink County and north central Beadle County. The Tulare Western Spink aquifer is a mostly buried outwash (sand and gravel) under predominantly artesian conditions. These two aquifers (management units of the Tulare) blend together in south central Spink County. These applications are all within a few

miles of each other and lie in one management unit or the other. The Water Management Board has determined that the Tulare Hitchcock and the Tulare Western Spink aquifers are one and the same for appropriation purposes.

The Water Management Board concluded at the December 6, 2007 Water Management Board Hearing that the Tulare Hitchcock and Tulare Western Spink aquifers are fully appropriated. The Board adopted a final decision on March 11, 2008 titled "In the Matter of Water Permit Applications from the Tulare Aquifer, Findings of Fact, Conclusions of Law and Final Decision" and a copy of this decision is included with this report. Nothing factual has changed since that original report to the board (Goodman, 2007) that would affect the water availability status of these aquifers. A copy of the original Goodman report is also included with this report. The aquifers are still considered fully appropriated based upon use.

These application all request new lands and additional water for irrigation purposes. The total requests amount to an increase in diversion rate of 13.78 cfs and irrigation of 1,152 acres. Using the criteria developed in the 2007 report this would equate to an additional water use of about 1,075 acre feet annually (this was calculated based upon acreage and an estimated water use of 11.2 inches per year).

The 2007 Goodman report relied heavily of the time period of 2002 through 2006 (a five year period) that was assumed to be representative for the aquifer. The actual water use during the 2007 through 2010 time period reflects wetter climatic conditions and much less water use (see reported pumpage chart included with report). This chart was made available to the applicants for their review.

The Water Rights Program monitors six observation wells located within the immediate area of these applications. These are SP-78C and SP-77X completed into the Tulare Western Spink aquifer and SP-80B, SP-80D, SP-78B and SP-77H completed into the Tulare Hitchcock aquifer. The water level record is very good for this area and hydrographs for these wells are included with this report (Water Rights, 2012). Note that the water level record indicates the aquifer does recharge, that existing high capacity wells have very little effect on the water levels (interference potential is minimal) and that water levels have been trending up probably because of wet climatic conditions. In fact, the recharge has been sufficient to cause rises in overall water levels for the aquifer to at or near the highest ever recorded. Water level records for these aquifers do extend as far back as 1952. This scenario creates an interesting dilemma.

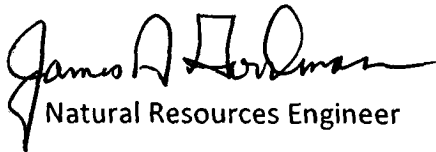
#### REVIEW OF EXISTING WATER PERMITS/RIGHTS

These six applications are located within an already irrigated area. Existing wells would be located within one mile or closer of these proposed wells. Interference is not a concern. The concern is water availability base upon water use.

## CONCLUSIONS

1. Water is not available from either the Tulare Hitchcock or Tulare Western Spink aquifer. These two aquifers are considered the same source for regulatory purposes.
2. The Water Management Board determined the aquifers were fully appropriated at the December 7, 2007 board hearing.
3. These requests are for an additional 1,152 acres of irrigation and would increase water use by an estimated 1,075 acre-feet annually.
4. Since the 2007 hearing there have been no additional permits granted for additional water from these aquifers and there have been no cancellations of existing water permits/rights that would leave water available for appropriation.
5. The water level record presents an interesting scenario. It is obvious by studying the observation well hydrographs that there is more water in storage in these aquifers now than there was prior to 2006. This is probably a reflection of both less pumping from the aquifer and increased recharge to the aquifer. More precipitation would necessarily mean less pumping and this is an established relationship that makes perfect sense.
6. Just because less water was used during the last four to five years does not mean additional water is now available for appropriation. The appropriation limit is established based upon irrigated acreage, water use, average annual recharge and historical water level records. This recent period of time does clearly not represent the aquifer historically. At this time the evidence does not indicate additional water is available for appropriation but does pose interesting questions.
7. The 2007 Goodman report used the time period of 2002 through 2006 as representative water use for these aquifers. That analysis included looking at reported water use, estimated potential water use of unreported permits and precipitation. The water levels of the aquifers for this time period indicated a relatively stable period with little change in aquifer development. This was thought to be a reasonable period of time to use to make projections.

James A Goodman



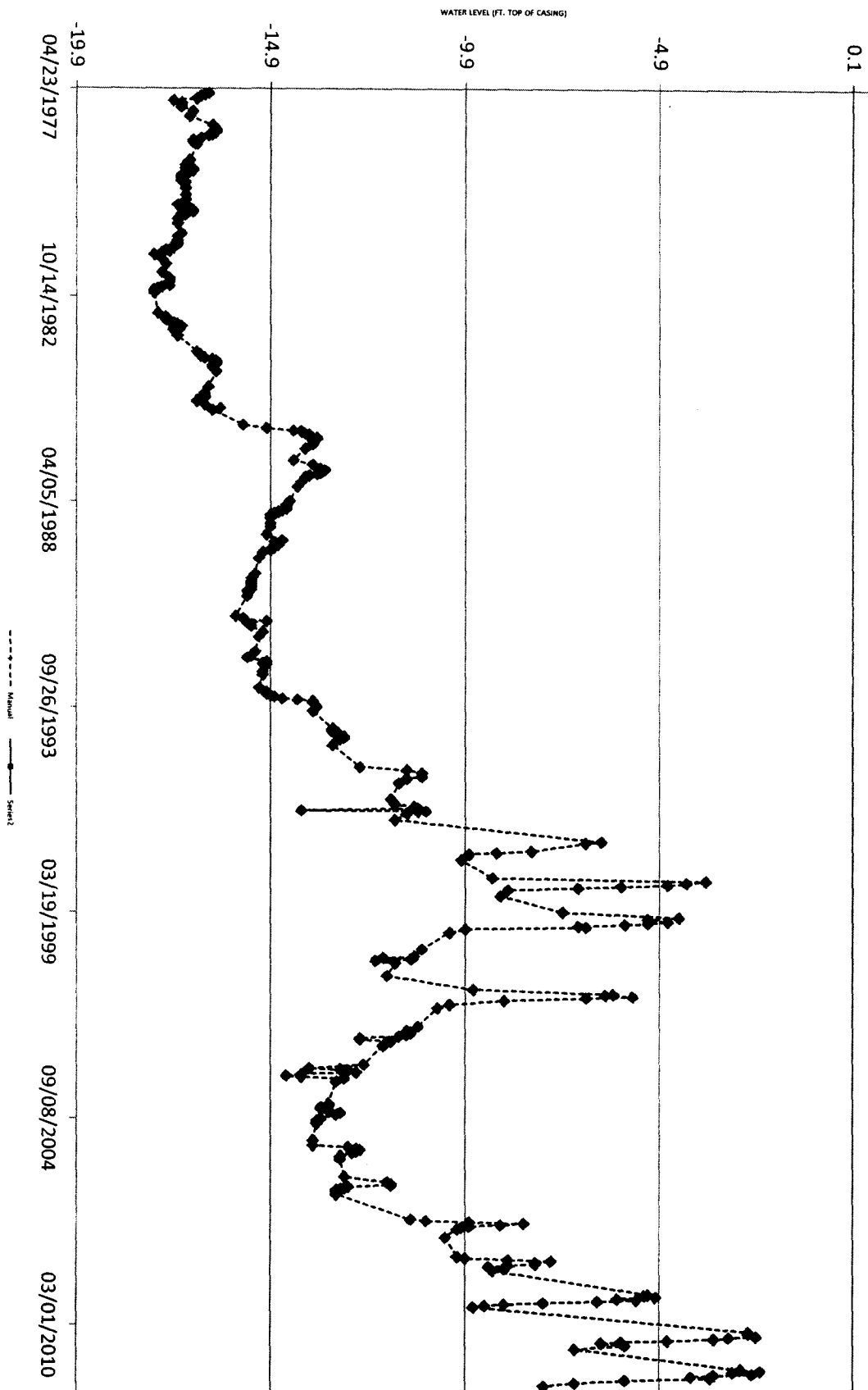
Natural Resources Engineer

## BIBLIOGRAPHY

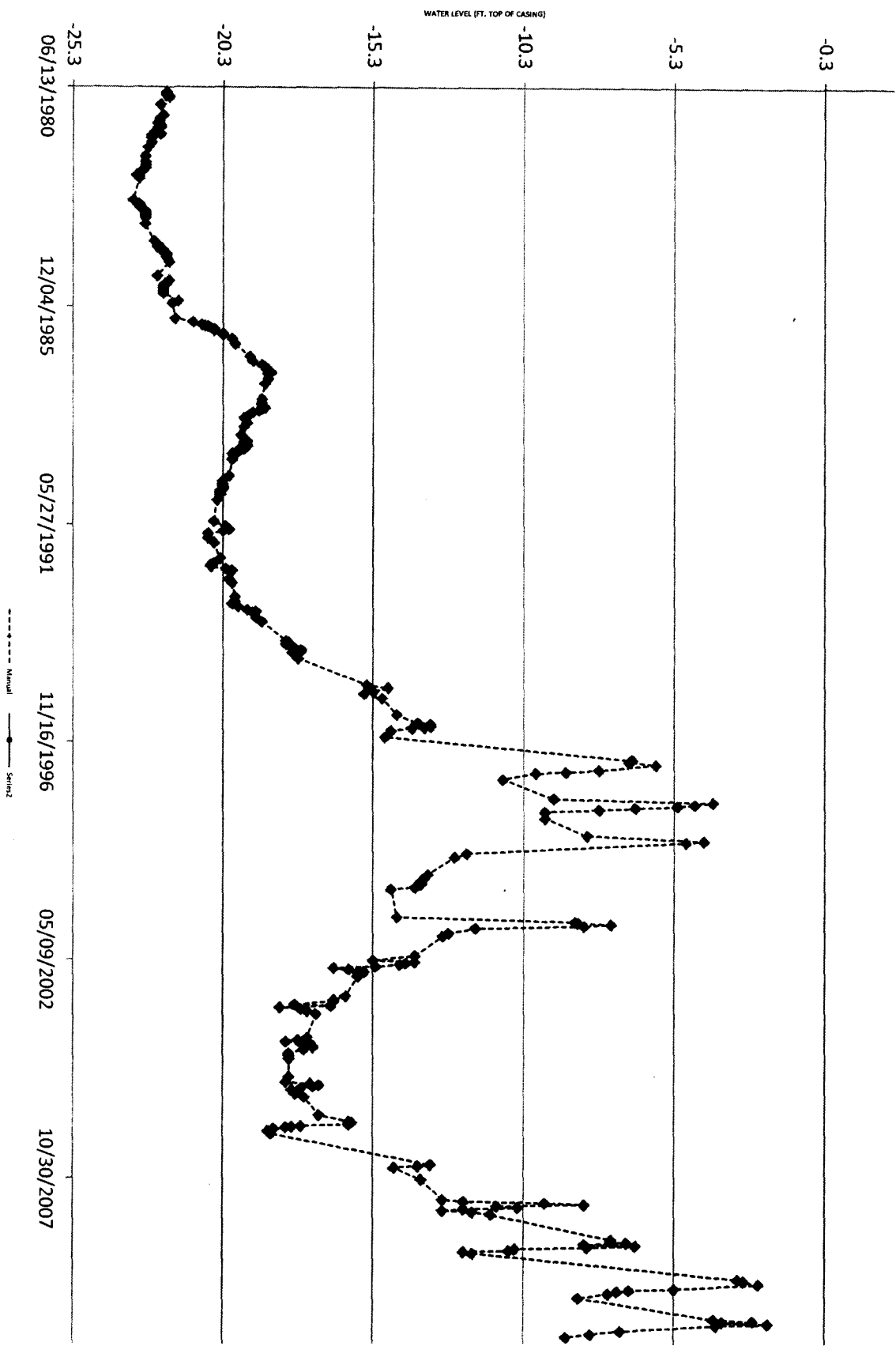
Goodman, J.A., 2007, Report on Deferred Water Permit Applications from the Tulare Hitchcock and Tulare Western Spink Aquifers in Spink, Hand and Beadle Counties, SD DENR, DES, Water Rights Program, Pierre, SD, 57501.

Water Rights, 2012. Unpublished Observation Well Data for the Tulare Hitchcock and Tulare Western Spink Aquifers in Spink County, SD DENR, DES, Water Rights Program, Pierre, SD, 57501.

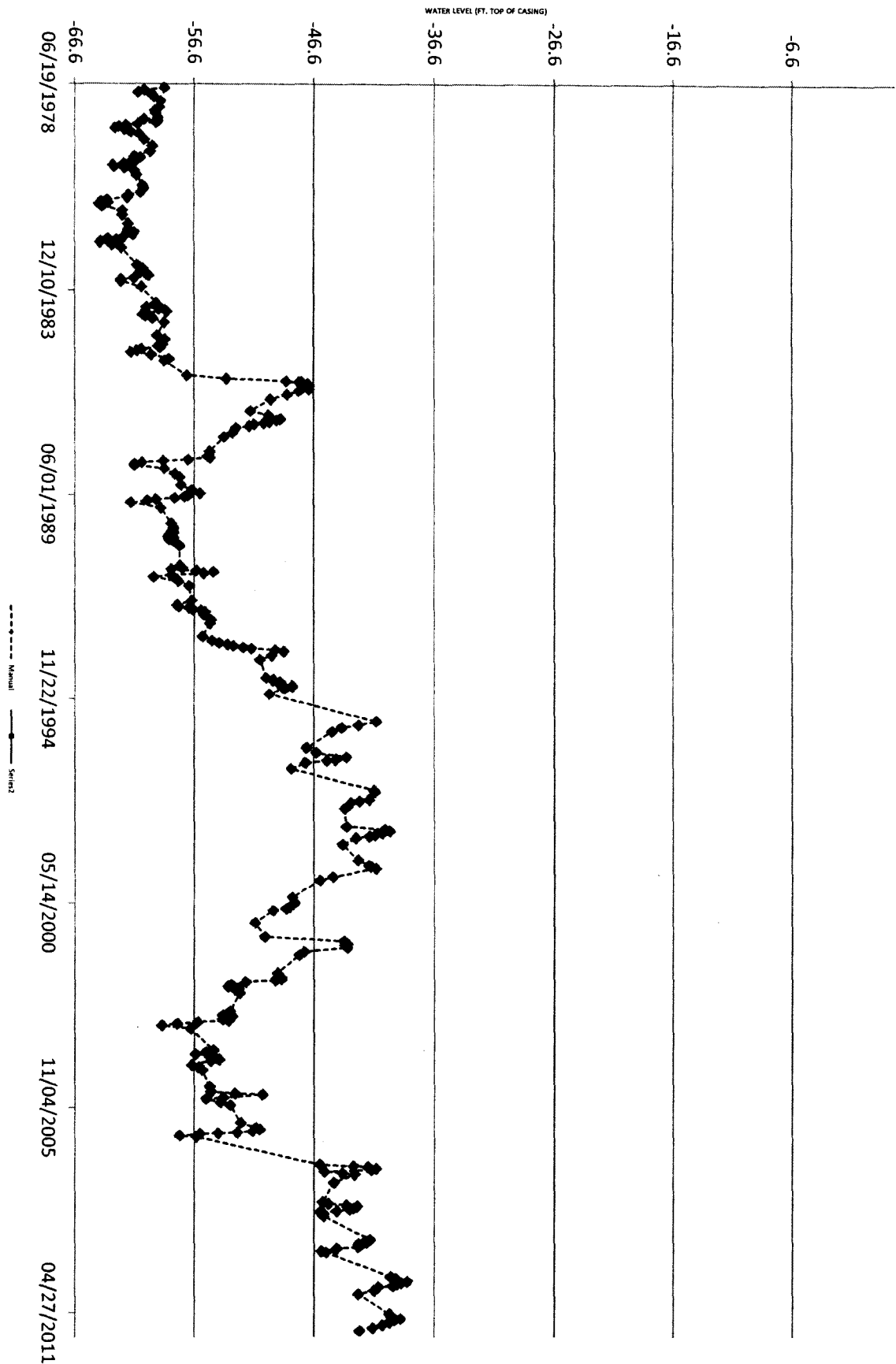
# WATER RIGHTS' OBSERVATION WELL SP-77H



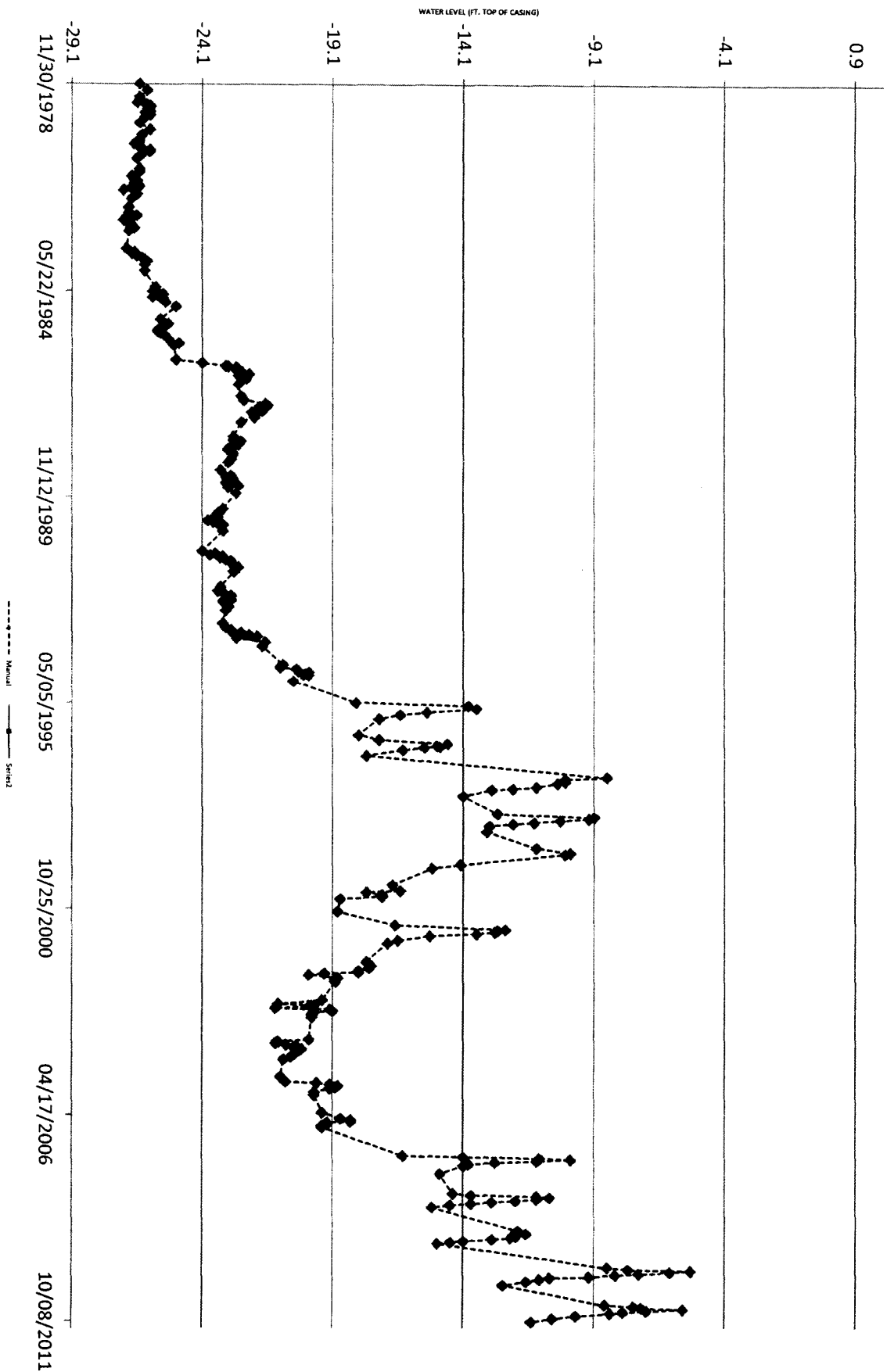
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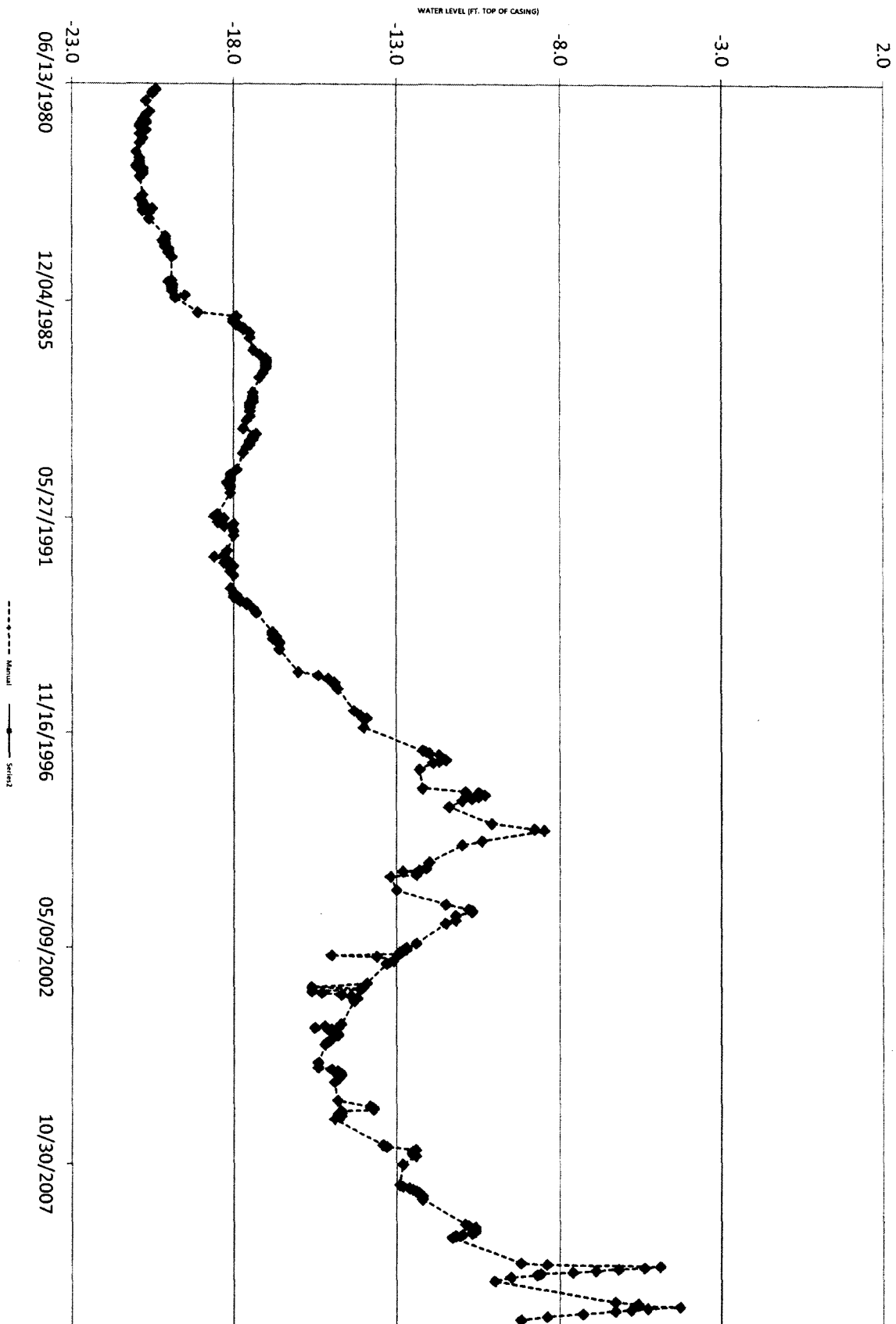
# WATER RIGHTS' OBSERVATION WELL SP-77X



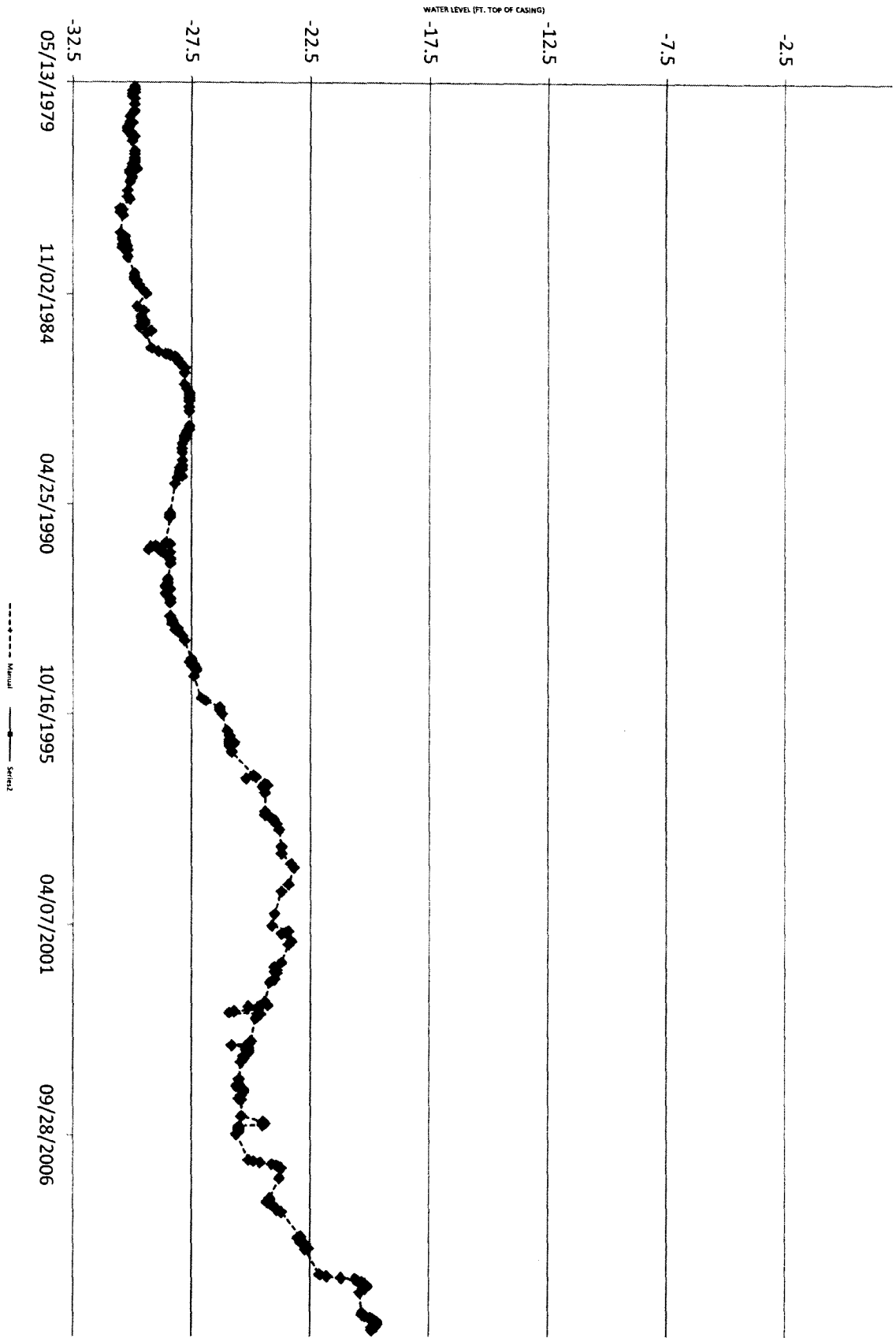
# WATER RIGHTS' OBSERVATION WELL SP-78C



# WATER RIGHTS' OBSERVATION WELL SP-80B



# WATER RIGHTS' OBSERVATION WELL SP-78B



REPORTED PUMPAGE FROM THE TULARE:HITCHCOCK TULARE:WESTERN SPINK AQUIFER

| YEAR | Tulare:Hitchcock | Tulare:Western Spink | TOTAL        |
|------|------------------|----------------------|--------------|
| 2006 | 12,937 ac-ft     | 5,636 ac-ft          | 18,573 ac-ft |
| 2007 | 9,405 ac-ft      | 3,148 ac-ft          | 12,553 ac-ft |
| 2008 | 7,185 ac-ft      | 2,470 ac-ft          | 9,655 ac-ft  |
| 2009 | 5,873 ac-ft      | 2,389 ac-ft          | 8,262 ac-ft  |
| 2010 | 2,049 ac-ft      | 910 ac-ft            | 2,959 ac-ft  |

REPORT ON DEFERRED WATER PERMIT APPLICATION FROM THE TULARE  
HITCHCOCK AND TULARE WESTERN SPINK AQUIFERS IN SPINK, HAND AND  
BEADLE COUNTIES

November 8, 2007

INTRODUCTION

There are 33 deferred Water Permit application Nos. 6344-3, 6345-3, 6346-3, 6347-3, 6352-3, 6353-3, 6359-3, 6360-3, 6374-3, 6407-3, 6460-3, 6461-3, 6462-3, 6463-3, 6594-3, 6660-3, 6661-3, 6668-3, 6669-3, 6670-3, 6671-3, 6687-3, 6688-3, 6689-3, 6693-3, 6694-3, 6695-3, 6776-3, 6777-3, 6829-3, 6830-3, 6841-3, and 6842-3 and four Water Permit application Nos. 6863-3, 6864-3, 6865-3 and 6866-3 for water from the Tulare Hitchcock and Tulare Western Spink aquifers. These 37 permit applications request a total diversion rate of 85.84 cfs for irrigation of 6,527 acres.

AQUIFERS – TULARE HITCHCOCK (T-H) AND TULARE WESTERN SPINK (T-WS)

The Tulare Hitchcock aquifer is a mostly surficial outwash (sand and gravel) that is under water table conditions in this area. The aquifer underlies 149,800 acres and contains an estimated 693,000 acre feet of recoverable water in storage in Spink and Beadle Counties (Hedges, 1982). Recharge to the aquifer has been estimated at approximately 0.83 inches per year (Kuiper, 1984). This equates to an annual recharge volume of about 10,360 acre-feet for the Tulare Hitchcock aquifer. The Tulare Western Spink consists of a mostly buried outwash (sand and gravel) that is under predominantly artesian conditions. The Tulare Western Spink underlies 138,900 acres and contains an estimated 519,330 acre feet of recoverable water in storage in Beadle, Spink and Hand Counties. Annual recharge to the Tulare Western Spink aquifer would be about 9,600 acre-feet. The Tulare Western Spink aquifer is hydraulically connected to the Tulare Hitchcock aquifer to the east. Ground water movement is from southwest to northeast in general over Spink County although locally the direction of water movement can be different (Hamilton, 1996). The total amount of water in storage is 1.212 million acre-feet in these three counties and the aquifers underlie 288,700 acres. Average annual recharge to the aquifers would be estimated at 19,960 acre-feet. Hedges reported a range of recharge rates for the Tulare Western Spink and Tulare Hitchcock aquifers of 0.41 inches to 1.66 inches (9,860 acre-feet to 39,940 acre-feet annually) (Hedges, 1983).

For all practical purposes the Water Management Board has linked the Tulare Western Spink and the Tulare Hitchcock aquifers together. At the December 2002 Water Management Board Hearing the Board determined that these two aquifers would be combined for Water Permit/Water Right management purposes (Goodman, 2002). The Board at that hearing deferred a group of permits from the aquifers for a five year period ending in December of 2007. The Board was concerned that the aquifers may be fully appropriated based upon projected use from the aquifers. In December of 2007, the Board will determine if additional water is available for those deferred applications.

Test well data is limited for these applications. However, there is sufficient information available from the county study, observation wells and other wells in this area to evaluate these applications. The aquifer should be present under these sites but test holes are needed to determine the thickness

of the aquifer for well design purposes. There is a good chance that the sand and gravel thickness may not be sufficient to develop a single irrigation well at some of these sites and may require two or three wells to obtain enough water to operate a standard center pivot.

The Water Rights Program monitors 24 observation wells completed into the Tulare Hitchcock aquifer and 26 observation wells completed into the Tulare Western Spink aquifer all in Spink and Beadle Counties. Hydrographs for selected observation wells (SP-66G, SP-53B, BD-77A and BD-66A) are included with this report. Water levels rise during wet years (recharge) and gradually decline during dry years. Also the effects of pumping are obvious where the aquifer is under artesian conditions. In general, the water level record indicates the aquifer is capable of sustaining existing withdrawals (Water Rights, 2007).

#### WATER USE (ACRE-FEET)

| <u>YEAR</u> | <u>TULARE WESTERN SPINK (T-WS) AQUIFER</u> |               |             |              |
|-------------|--------------------------------------------|---------------|-------------|--------------|
|             | <u>SPINK</u>                               | <u>BEADLE</u> | <u>HAND</u> | <u>TOTAL</u> |
| 2006        | 5,186                                      | 341           | 109         | 5,636        |
| 2005        | 4,917                                      | 400           | 104         | 5,421        |
| 2004        | 4,464                                      | 282           | 93          | 4,839        |
| 2003        | 5,937                                      | 519           | 115         | 6,571        |
| 2002        | 5,222                                      | 507           | 124         | 5,853        |

| <u>YEAR</u> | <u>TULARE HITCHCOCK (T-H) AQUIFER</u> |               |              |
|-------------|---------------------------------------|---------------|--------------|
|             | <u>SPINK</u>                          | <u>BEADLE</u> | <u>TOTAL</u> |
| 2006        | 7,781                                 | 5,156         | 12,937       |
| 2005        | 6,993                                 | 3,255         | 10,248       |
| 2004        | 6,427                                 | 3,921         | 10,348       |
| 2003        | 7,361                                 | 5,465         | 12,826       |
| 2002        | 7,135                                 | 5,661         | 12,796       |

| <u>YEAR</u> | <u>REPORTED IRRIGATED<br/>ACREAGE</u> |             | <u>REPORTED NO<br/>IRRIGATION<br/>ACRES</u> | <u>WATER USE<br/>INCHES</u> |                      |
|-------------|---------------------------------------|-------------|---------------------------------------------|-----------------------------|----------------------|
|             | <u>T-H</u>                            | <u>T-WS</u> |                                             | <u>T-H</u>                  | <u>T-WS</u>          |
| 2006        | 13,432                                | 6,114       | 1,793                                       | 11.6                        | 11.1                 |
| 2005        | 12,926                                | 6,314       | 2,436                                       | 9.5                         | 10.3                 |
| 2004        | 13,084                                | 5,777       | 2,825                                       | 9.5                         | 10.0                 |
| 2003        | 13,059                                | 6,045       | 2,913                                       | 11.8                        | 13.0                 |
| 2002        | 11,315                                | 5,681       | 2,895                                       | 13.6 <sub>11.2</sub>        | 12.3 <sub>11.3</sub> |

The combined water use for both aquifers for 2006 is 18,573 acre-feet, for 2005 is 15,669 acre-feet, for 2004 is 15,187 acre feet, for 2003 is 19,397 acre-feet and for 2002 is 18,649 acre-feet. Five years of water use records are available since the initial report (Goodman, 2002). In that report water use records were reported from 1979 through 2001. The best water use data available

to evaluate these deferred applications should be the last five years. This is a good period of record where development of the aquifer has been held relatively steady.

The table below is a record of precipitation data for stations located near the aquifers. Redfield is just a four to five miles to the northwest, Raymond is about 20 miles northeast and Huron is about five miles to the south of the aquifers. These three sites surround the area of the aquifer. The long term record for Raymond indicates an average of 20.23 inches per year, for Huron the long term average is 20.90 inches per year and the Redfield site does not have sufficient data for a good long term average. The average precipitation totals for 2005 and 2004 are greater than the normal and less than normal for 2006, 2003 and 2002. The water use records are also greater in those drier years (inches per year). Overall this data indicates that precipitation for this five year period was average to slightly below the long term average. This would mean that the water use figures reported should also be average.

#### PRECIPITATION RECORDS (2006 – 2002) (TOTAL INCHES PER YEAR)

| <u>YEAR</u> | <u>RAYMOND 3 NE</u> | <u>HURON REGIONAL<br/>AIRPORT</u> | <u>REDFIELD</u> |
|-------------|---------------------|-----------------------------------|-----------------|
| 2006        | 16.93 inches        | 17.53 inches                      | 14.18 inches    |
| 2005        | 20.67 inches        | 25.78 inches                      | 25.69 inches    |
| 2004        | 27.21 inches        | 29.71 inches                      | 25.01 inches    |
| 2003        | 18.40 inches        | 16.42 inches                      | 17.96 inches    |
| 2002        | 15.32 inches        | 14.88 inches                      | n/a             |

#### SUMMARY OF DATA

Recharge to the aquifers has been estimated to be 19,960 acre-feet annually. The reported water use from the aquifers for the last five years has been 87,475 acre-feet or an average of 17,495 acre-feet per year. In 2002 the Water Management Board approved permits totaling 35.33 cfs for irrigation of 2,654.4 acres. At that time, there were approved permits authorizing a diversion of 247.67 cfs for irrigation of 20,681 acres from these aquifers. The analysis in 2002 calculated water available in the range of 3,400 acre-feet annually. The acre-feet volume was then turned into irrigated acres by assuming a water use of 16 inches per year thus arriving at an acreage potential of about 2,550 acres. It is obvious that based upon the five year average of water use there is additional water remaining available for appropriation. However, there is also a factor of either not reported or undeveloped acreage for the 2006 through 2002 time period. This was accounted for by using the estimated water use in inches per year (average of two aquifers) and simply assuming that amount of water would be used on the not reported or undeveloped acreages. Using this rational, the water use increased by 1,696 acre feet in 2006 to 20,269 acre-feet, increased by 2,010 acre-feet in 2005 to 17,679 acre-feet, increased by 2,307 acre-feet in 2004 to 17,494 acre-feet, increased by 3,010 acre-feet in 2003 to 22,407 acre-feet and increased by 3,136 acre-feet to 21,785 acre-feet in 2002. The total water use would then have been 99,634 acre-feet or an average of 19,927 acre-feet per year. Assuming these estimates to be reasonable and correct, there would be 33 acre-feet annually available for appropriation. This calculation is simply the recharge

(19,960 acre-feet per year) minus average calculated use (19,927 acre-feet per year). It appears that the aquifers in the instance are nearly fully appropriated.

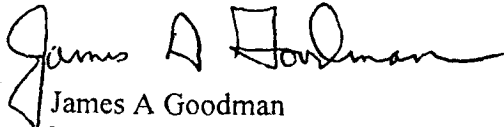
## REVIEW OF EXISTING WATER PERMITS/RIGHTS

There are 138 water permits/rights from the Tulare Western Spink and Tulare Hitchcock aquifers for irrigation of 21,339 acres located in Spink, Hand and Beadle counties. Interference has not been a concern in the area of the Tulare Hitchcock aquifer. This aquifer is under water table conditions significant drawdown does not extend very far from the production well. However, where the aquifer is confined in the Tulare Western Spink area of the aquifer drawdown does occur and does cause interference. At this point in time this interference has not been adverse. For documentation see the observation well hydrographs. The water level record is very good and development appears to have had very little overall impact on the aquifer (Water Rights, 2007).

## CONCLUSIONS

1. The water sources for these applications are the Tulare Hitchcock and Tulare Western Spink aquifers.
2. The water Management Board has considered the Tulare Hitchcock and Tulare Western Spink aquifers the same source for appropriation purposes.
3. The water use and development history of the aquifer indicate that the aquifers are very close to being fully appropriated based upon water use.
4. Using the water use reports for the last five years there appears to be about 33 acre-feet of water available for appropriation from the aquifers.
5. Any wells authorized by approval of these applications must be constructed in accordance with SD Well Construction Standards.
6. The precipitation data indicates that the five year period of record was about average or slightly below average for precipitation during the 2002 through 2006 time period. The water use during that time period would be expected to also represent an average.
7. The water level records for these aquifers are excellent. Those records indicate the aquifers are capable of sustaining existing withdrawals. Obviously some areas of the aquifer recharge more than other areas. This has to be considered when issuing permits for transferring acres or drilling additional wells. Well spacing may be more of an issue in those areas of artesian conditions or in those areas where saturated thickness is thin.
8. There is domestic use from these aquifers but that use is not estimated. That amount is assumed to be relatively small compared to the irrigation use.
9. The total appropriation request of these 37 applications is for an additional 6,527 acres of irrigation. There is not enough water available to satisfy this request or for that matter even the first permit application request on the list.
10. These applications should be denied. The applicants may wish to maintain their priority but there is no provision in the statutes to allow this. Water will become available someday if and or when some the existing irrigation is abandoned or forfeited and would be made available for appropriation.
11. The recharge to the aquifers is estimated to be a rate of 0.83 inches per year (19,960 acre-feet). The recharge rate is the critical issue in this equation. Although the rate appears to

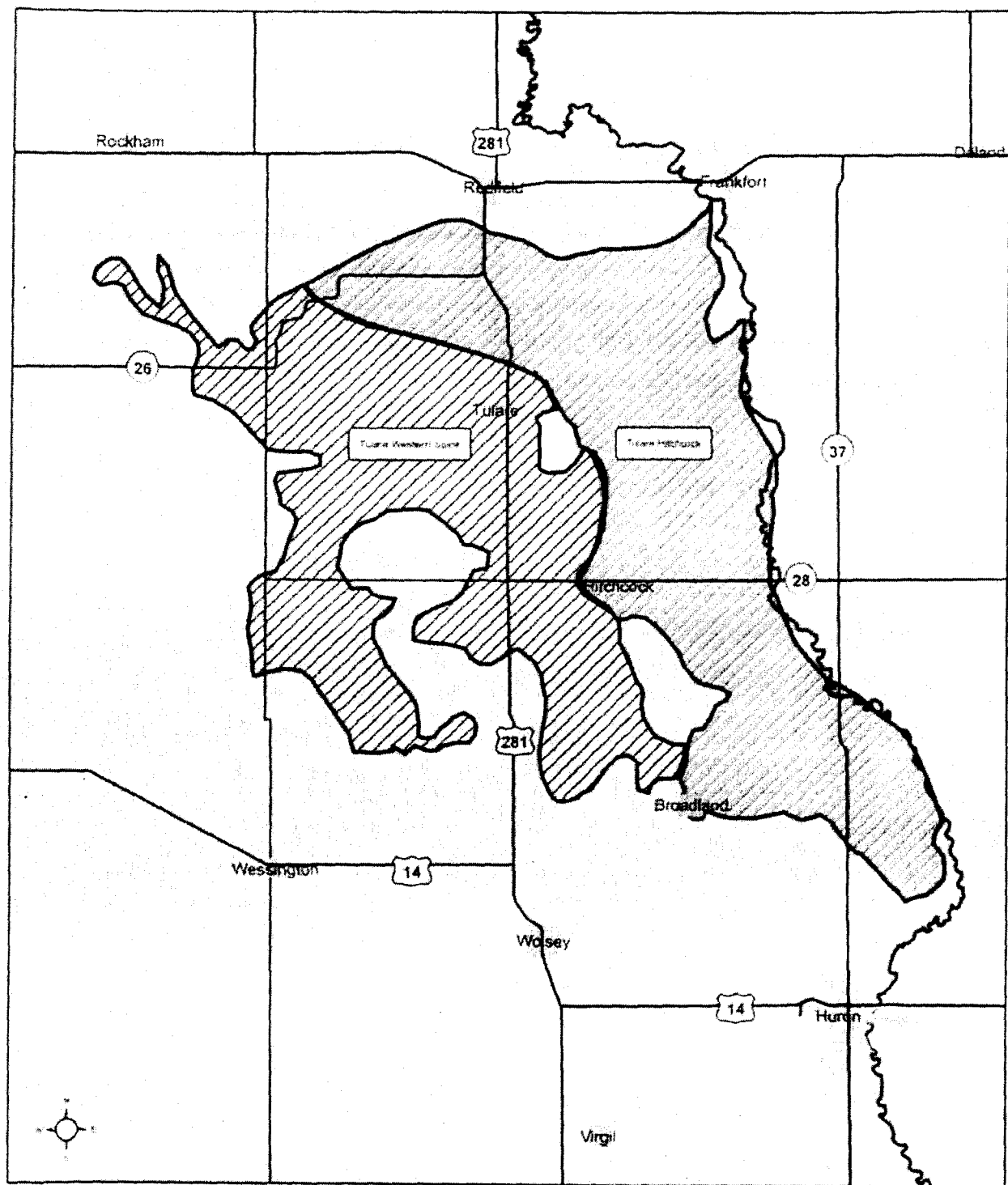
be reasonable additional studies may refine this estimate. From a water permit issue this is the best number available.

  
James A Goodman  
Natural Resources Engineer

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# Western Spink and Hitchcock Management Units of the Tulare Aquifer



James A Goodman, P.E.  
December 6, 2007

STATE OF SOUTH DAKOTA  
WATER MANAGEMENT BOARD

IN THE MATTER OF WATER PERMIT )  
APPLICATION FROM THE )  
TULARE AQUIFER )

FINDINGS OF FACT,  
CONCLUSIONS OF LAW  
AND FINAL DECISION

FINDINGS OF FACT

1. With one exception, the water permit applications at issue request permits for irrigation over 6,000 acres from the Tulare Aquifer, Western Spink and Hitchcock Management Units. The name of each applicant, requested diversion rate, management unit involved, legal description, and date filed is as follows:

| Appl.<br>No. | Applicant       | Div.<br>Rate<br>cfs | Acres | Source | Approx.<br>Legal Location                | Date<br>Filed                   |
|--------------|-----------------|---------------------|-------|--------|------------------------------------------|---------------------------------|
| 6344-<br>3   | Oscar, Inc.     | 2.28                | 160   | T:H    | NE¼ Sec 32,<br>T115N, R63W               | 7/26/02                         |
| 6345-<br>3   | Oscar, Inc.     | 3.42                | 240   | T:H    | SW¼ & S¼ N¼<br>Sec 24, T115N,<br>R64W    | 7/26/02                         |
| 6346-<br>3   | Oscar, Inc.     | 4.57                | 320   | T:H    | S¼ Sec 25,<br>T115N, R64W                | 7/26/02                         |
| 6347-<br>3   | Oscar, Inc.     | 9.14                | 640   | T:WS   | S¼ Sec 19 & N¼<br>Sec 30, T114N,<br>R63W | 7/26/02                         |
| 6348-<br>3   | Allen<br>Gatzke | 1.78                | 130   | T:H    | NW¼ Sec 19,<br>T114N, R62W               | 7/29/02<br>(later<br>withdrawn) |

|        |                                  |      |     |      |                                              |           |
|--------|----------------------------------|------|-----|------|----------------------------------------------|-----------|
| 6352-3 | Lee Gatzke                       | 2.28 | 160 | T:WS | NW¼ Sec 18,<br>T114N, R63W                   | 8/8/02    |
| 6353-3 | Lee Gatzke                       | 2.28 | 160 | T:H  | NE¼ Sec 6,<br>T114N, R63W                    | 8/8/02    |
| 6359-3 | Darin,<br>Brett &<br>Chad Binger | 2.0  | 160 | T:WS | SW¼ Sec 6,<br>T114N, R64W                    | 9/19/02   |
| 6360-3 | Darin,<br>Brett &<br>Chad Binger | 2.0  | 160 | T:WS | NW¼ Sec 5,<br>T114N, R64W                    | 9/19/02   |
| 6374-3 | Bixler<br>Farms                  | 3.56 | 360 | T:H  | S¼, S¼ NW¼<br>Sec 36, T115N,<br>R63W         | 12/5/02   |
| 6460-3 | Gary<br>Marshall                 | 1.78 | 132 | T:WS | NE¼ Sec 25,<br>T114N, R64W                   | 1/20/04   |
| 6461-3 | Gary<br>Marshall                 | 1.78 | 132 | T:WS | SE¼ Sec 25,<br>T114N, R64W                   | 1/20/04   |
| 6462-3 | Gary<br>Marshall                 | 1.56 | 132 | T:WS | SW¼ Sec 34,<br>T114N, R64W                   | 1/20/04   |
| 6463-3 | Gary<br>Marshall                 | 1.56 | 132 | T:WS | NE¼ Sec 35,<br>T114N, R64W                   | 1/20/04   |
| 6594-3 | Riverside<br>Colony              | 3.56 | 264 | T:H  | N¼ Sec 29,<br>T112N, R61W                    | 2/14/2005 |
| 6660-3 | Lee Gatzke                       | 1.89 | 136 | T:H  | E¼ NW¼ and W¼<br>NE¼ Sec 8,<br>T114N, R63W   | 9/12/05   |
| 6661-3 | Lee Gatzke                       | 1.89 | 136 | T:H  | NW¼ Sec 6,<br>T114N, R63W                    | 9/12/05   |
| 6668-3 | Bixler<br>Farms                  | 1.78 | 160 | T:H  | SW¼ Sec 25,<br>T115N, R63W                   | 11/7/05   |
| 6669-3 | Bixler<br>Farms                  | 1.78 | 160 | T:H  | SW¼ Sec 24,<br>T115N, R63W                   | 11/7/05   |
| 6670-3 | Bixler<br>Farms                  | 1.22 | 100 | T:H  | W¼, W¼ NE¼, W¼<br>SE¼ Sec. 6,<br>T114N, R62W | 11/7/05   |

|        |                     |      |     |      |                                        |            |
|--------|---------------------|------|-----|------|----------------------------------------|------------|
| 6671-3 | Bixler Farms        | 3.56 | 320 | T:H  | SE¼ Sec 22 and SW¼ Sec 23, T114N, R63W | 11/7/05    |
| 6687-3 | William Watson      | 2.0  | 140 | T:H  | NW¼ Sec 27, T114N, R63W                | 1/27/06    |
| 6688-3 | William Watson      | 2.0  | 140 | T:H  | SE¼ Sec 11, T114N, R63W                | 1/27/06    |
| 6689-3 | Michael Watson      | 2.0  | 140 | T:H  | SW¼ Sec 18, T114N, R62W                | 1/27/06    |
| 6693-3 | Lee Gatzke          | 1.89 | 136 | T:WS | NE¼ Sec 13, T114N, R64W                | 2/9/06     |
| 6694-3 | Lee Gatzke          | 1.89 | 136 | T:WS | SW¼ Sec 23, T114N, R64W                | 2/9/06     |
| 6695-3 | Lee Gatzke          | 1.89 | 136 | T:WS | NW¼ Sec 26, T114N, R64W                | 2/9/06     |
| 6776-3 | Allen Gatzke        | 1.78 | 160 | T:H  | N½ NW¼, S½ SW¼ Sec 14, T114N, R63W     | 11/13/2006 |
| 6777-3 | Jeffery Gatzke      | 1.78 | 160 | T:H  | NW¼ Sec 15, T114N, R63W                | 11/13/2006 |
| 6829-3 | Patrick Van Buskirk | 1.78 | 135 | T:WS | SW¼ Sec 30, T114N, R63W                | 2/27/2007  |
| 6830-3 | Matthew Van Buskirk | 1.78 | 135 | T:WS | NE¼ Sec 36, T114N, R64W                | 2/27/2007  |
| 6841-3 | Merlyn Van Buskirk  | 3.56 | 270 | T:WS | SE¼, NW¼ Sec 31, T114N, R63W           | 2/27/2007  |
| 6842-3 | Merlyn Van Buskirk  | 1.78 | 135 | T:H  | SE¼ Sec 4, T113N, R63W                 | 2/27/2007  |

2. In addition, one application seeks authority to use water for commercial purposes for a feedlot. That applicant is Marshall Brothers, who filed Permit Application No. 6407-3 for 0.28 cfs from

the Tulare Western Spink Aquifer. The Marshall Brothers' application was filed on December 3, 2003.

3. Department of Environment and Natural Resources expert James Goodman testified regarding the characteristics of the aquifer at issue. Goodman, a geological engineer, has studied groundwater issues and testified before the Board in various groundwater cases for 32 years. He participated in studies published in 1982 (Hedges), 1983 (Hedges), and 1984 (Kuiper) which evaluated the area and recharge rate of the aquifer at issue here. Goodman also relied on a later study completed by L.J. Hamilton for USGS in 1996. He further relied on observation well information, water use data filed with the DENR, and his own knowledge and background.

4. The Hitchcock Management Unit of the Tulare Aquifer is a mostly surficial outwash (sand and gravel) aquifer that is under water table conditions (not artesian) and lies in Spink and Beadle Counties. The Western Spink Management Unit of the Tulare Aquifer consists of a mostly buried outwash (sand and gravel) that is under predominantly artesian conditions and lies in Beadle, Spink, and Hand Counties. The two management units are in one aquifer and are connected hydraulically. The distinguishing factor is that one is under artesian conditions and the other is not. The Tulare Hitchcock portion is adjacent and east of the Western Spink portion.

5. The two management units are properly combined for purposes of water administration because they are hydraulically connected and were formed at the same time. The water use from one management unit would need to be considered to determine the effect on the other.

6. Groundwater movement for the aquifer is generally from southwest to northeast in general over Spink County, the area subject to consideration in this proceeding.

7. The Tulare Hitchcock Management Unit underlies 149,800 acres and contains an estimated 693,000 acre feet of recoverable water in storage in Spink and Beadle Counties.

8. The Tulare Western Spink Management Unit underlies 138,900 acres and contains an estimated 519,330 acre feet of recoverable water in storage in Beadle, Spink and Hand Counties. The total volume of water in storage for the Tulare Aquifer is 1.212 million acre feet in Beadle, Hand and Spink Counties and the aquifer underlies 288,700 acres. The total acreage is based on the Goodman testimony and on a study published in 1982 by the South Dakota Geological Survey and authored by Lynn Hedges.

9. The Board also heard evidence on recharge rates. The Hedges report included a range of recharge rates for the Tulare Aquifer of 0.41 inches at a minimum and 1.66 inches at a maximum.

Under this study, this range would result in calculated recharge somewhere between 9,860 acre feet to 39,940 acre feet annually.

10. In the Kuiper study, recharge to the Tulare Hitchcock Aquifer was estimated at 0.83 inches per acre per year. Using the 0.83 number as a recharge rate, the annual recharge volume of the Tulare Hitchcock Aquifer would be about 10,360 acre feet (0.83 inches applied over 149,800 acres). Applying the same 0.83 inch number to the 138,900 acres overlying the Western Spink Management Unit, Goodman calculated a recharge volume of 9,600 acre feet for that aquifer.

11. Witness Goodman examined the two studies and used the 0.83 number from the Kuiper study for his calculation of average annual recharge. The 0.83 rate is also within the range reported by Hedges. Using the 0.83 recharge rate, Goodman estimates the average annual recharge to the two management units of the aquifer at 19,960 acre feet (0.83 applied to 288,700 total acres).

12. Applicant Bixler pointed out that the Kuiper report listed the acreage overlying the aquifer as 337,000 acres, rather than the 288,700 acres given by Goodman (and as reported in the Hedges study). Applicant Bixler asserted that under the 337,000 scenario there would be an additional 6,000 acre feet of water available, assuming the same recharge rate as that used by Goodman. Bixler further asserted that this additional volume would accommodate

irrigation of 7,000 acres of land and would allow for all the water permit applications in this proceeding to be granted. Assuming the 337,000 should be adopted, however, the additional acre feet of recharge would be 3,440 AF and not 6,000 AF. More specifically, the additional acreage would be 48,300 acres (337,000 acres minus 288,700 acres). The 48,300 acres would produce 40,089 inches of recharge water using the rate of 0.83 inches per acre. The 40,089 inches of water is 3340.75 acre feet of recharge. This number would only accommodate irrigation of 3556 acres based on the average application reported by irrigators for this aquifer in the last five years, 11.27 inches.

13. Regardless of the foregoing, however, the 288,700 number rather than the 337,000 number should be used. First, it is undisputed that the Tulare Aquifer is mostly outwash (water infiltrating sand and gravel deposits). The groundwater is mapped based on test holes and expert calculations based on the test hole data and geology of the area. The Board recognizes that the calculated area overlying an aquifer may vary as to the extent of fringe areas and as to whether there are areas within the mapped exterior boundaries of the aquifer that do not exhibit aquifer characteristics (i.e. pockets or lineal areas where wells would be unable to produce groundwater). Second, the number used by Goodman was the known and conservative number. The Board credits the

testimony of Goodman, who participated in both studies. Goodman is an expert with 32 years of experience and no other expert testified in this proceeding.

14. Prior to December 2002, permits were authorized from these management units for a total combined diversion rate of 247.67 cfs for irrigation of 20,681 acres. In December 2002, the Board conducted a hearing on several new applications. After hearing the evidence, the Board granted eleven of the additional permit applications and continued or deferred the rest. The permits that were granted in 2002 totaled 35.33 cfs for irrigation of 2,654.4 acres.

15. DENR expert James Goodman testified at the 2002 hearing. He testified that the water still available from the two management units was in the range of 3,400 acre feet annually. The 3,400 acre feet volume was then considered in light of the volume necessary for irrigation on a per acre basis. In 2002 the average per acre volume used for irrigation in this area was 16 inches per year. Using 16 inches per year per acre as the criteria, the Board held that the 3,400 acre feet of available water could be beneficially used for irrigation of about 2,550 acres. New permits were granted accordingly.

16. The eleven new permits that were granted at the December 2002 hearing were granted in order of the date of application. The

remaining eleven applications, filed later than the ones that were granted, could not be granted at that time.

17. The Board recognized that the actual usage for the successful applicants in the 2002 round of applicants could not be calculated with certainty until those irrigators developed their proposed facilities. Further, the Board had recently granted a number of other permits for the same aquifer. The actual use from those permits was unknown in 2002 due to the fact they had recently been granted and actual water use had not been reported. Based on this situation, the Board delayed consideration of the remaining water permits for five years, a period that the Board held would be appropriate for making a final determination on water availability for the remainder of the applications. Due to the Board's action in 2002, eleven water permit applications were delayed for five years.

18. Nine of those eleven applications are the first applications at issue in the above list. Two of the eleven applications at issue in 2002 were later withdrawn and are not at issue here (Application 6351-13 (Randy Puffer) and Application 6361-3 (Darin, Brett, and Chad Binger)).

19. Additional water permit applications were filed during the period from 2002 to 2007, all of which were continued by the Board for the same reason and constitute the remaining applications in the above list. All were heard by the Board in December 2007.

20. In the meantime, one of the successful 2002 applicants, Allen Gatzke, filed a request to transfer a permit he had obtained as a result of the 2002 decision (Water Permit No. 6339-3) to other acreage that had been the subject of one of the unsuccessful applications at the same 2002 hearing (Water Permit Application No. 6348-3). In doing so, Gatzke sought to "flip flop" the new permit for an application that had been deferred. The Board granted the transfer of Water Permit No. 6339-3 from the land originally permitted, allowing for use of the water on the acreage requested by Gatzke. The Board determined, however, that the land from which the water permit had been transferred could not be then placed on the deferred list as a pending application. Gatzke did not appeal. Gatzke later took exception to this resolution and, in early 2007, sought an additional permit (Application No. 6776-3) for the land in question and requested that the application be considered as though it was filed in 2002. The Board ruled that the matter should be continued to December 2007 and considered at that time. See Water Management Board Findings of Fact and Conclusions of Law dated May 9, 2007.

21. If Allen Gatzke was successful in his request for consideration of the 2007 application as though it was a 2002 application, the application would have been much higher on the list of deferred or continued applications and arguably would have been

more likely to be granted under a "first in time, first in right" theory. Based on the Board's Findings of Fact and Conclusions of Law herein, none of the acreage at any place on the pending list should be granted. Accordingly, there is no need to consider what the proper priority date would be for this Allen Gatzke application since it would be denied in any event.

22. Test well data is limited for these applications. However, there is sufficient information available from the Hedges, Kuiper, and Hamilton studies, the observation wells, and other wells in this area to evaluate these applications. The aquifer should be present under these sites but test holes would be needed to determine the thickness of the aquifer for well design purposes. There is a good chance that the sand and gravel thickness may not be sufficient to develop a single irrigation well at some of these sites and may require two or three wells to obtain enough water to operate a standard center pivot.

23. The Water Rights Program monitors 24 observation wells completed into the Tulare Hitchcock Management Unit and 26 observation wells completed into the Tulare Western Spink Management Unit, all in Spink and Beadle Counties. The Board examined hydrographs for selected observation wells (SP-66G, SP-53B, BD-77A and BD-66A) which were included in the report filed by the Water Rights Program. According to the hydrographs (and DENR expert

witness James Goodman), water levels in both areas rise during wet years (recharge) and gradually decline during dry years. Also, the effects of pumping are obvious where the aquifer is under artesian conditions.

24. The combined water use for both areas of the aquifer was examined. Actual use was based on use reported by irrigators on an annual basis. Although domestic use and some commercial use exists for this aquifer, those uses are not reported annually. The vast majority of the use is for irrigation. The DENR presented irrigation water use for the period 1979 through 2001 in its initial report presented in 2002. As stated above, the Board determined that the historical water use would not reflect the actual use of the water starting in 2002 due to anticipated new construction for irrigation.

25. The period 2002 to 2006 was examined in the second report presented in 2007 and the reported actual irrigation use was for following:

|         |                  |
|---------|------------------|
| 2006 -- | 18,573 acre feet |
| 2005 -- | 15,669 acre feet |
| 2004 -- | 15,187 acre feet |
| 2003 -- | 19,397 acre feet |
| 2002 -- | 18,649 acre feet |

26. Based on the expert testimony of DENR expert Goodman, the five years listed above is a good period of record where development of the aquifer has been held relatively steady. This testimony was undisputed.

27. The Board also heard testimony regarding precipitation data for nearby weather stations. Redfield is just a four to five miles to the northwest, Raymond is about 20 miles northeast, and Huron is about five miles to the south. These three sites surround the area of the aquifer. The long-term record for Raymond indicates an average of 20.23 inches per year, for Huron the long-term average is 20.90 inches per year, and the Redfield site does not have sufficient data for a good long-term average. The precipitation totals for 2005 and 2004 are greater than the normal and less than normal for 2006, 2003, and 2002. The water use records are also greater in those drier years (inches per year). Overall this data indicates that precipitation for this five-year period was average to slightly below the long-term average. Based on the expert testimony, when precipitation is average, water use should also be average. This conclusion was not disputed at hearing.

28. The reported water use for irrigation from these management units for the last five years has been a total cumulative use of 87,475 acre feet or an average of 17,495 acre feet for each year.

29. Recharge to the management units in question has been estimated to be 19,960 acre feet annually.

30. Based on the five-year average of water use, the recharge of 19,960 feet annually is more than the average annual water use of 17,495 feet annually. However, the total water availability must be adjusted to factor in water that was authorized but unreported (failure of landowner to report irrigation annually per DENR rule) or not yet developed (waterworks not yet constructed or put to beneficial use). Although the five-year period was useful to analyze newly permitted construction and use, a small number of the permits had not yet applied water to beneficial use.

31. The adjustment was made by calculating the average inches of water used per acre for those irrigators that actually irrigated and reported their use during the five-year period. The adjustment then assumes that the same volume (average number of inches of water applied per acre) would be used on the unreported or undeveloped acreages. This assumption is based on the fact that the same geographic location and same precipitation data would result in the same number of inches per acre. The vast majority of the water use was reported, so the expectation that the remainder would use the same quantity is well-grounded. Using this rationale, the total water use for the two management units would be adjusted upwards as follows:

1,696 AF added to 18,573 AF in 2006 for a total of 20,269 AF  
2,010 AF added to 15,669 AF in 2005 for a total of 17,679 AF  
2,307 AF added to 15,187 AF in 2004 for a total of 17,494 AF  
3,010 AF added to 19,397 AF in 2003 for a total of 22,407 AF  
3,136 AF added to 18,649 AF in 2002 for a total of 21,785 AF

32. After making the foregoing adjustments to each year's water use for unreported or undeveloped water not used for that year, the total cumulative water use for the period would then have been 99,634 acre feet or an average of 19,927 acre feet per year.

33. The water use of 19,927 acre feet per year total was considered in determining whether water was available for the permits in question. Water availability is calculated by subtracting the average calculated use per year (19,927 acre feet per year) from the recharge (19,960 acre feet per year). The sum is 33 acre feet.

34. The 33 acre feet would be insufficient to grant any of the applications at issue in this proceeding. The irrigation application that was filed first in time among the applications considered here (6344-3) sought to irrigate 160 acres, clearly needing well in excess of 33 acre feet. In fact, of all the irrigation applications in this proceeding, the one seeking to irrigate the smallest area of land was application 6670-3 which sought to irrigate 100 acres. Given the acreage involved and the

small quantity of water available, the Chief Engineer recommended that no new water permits be granted for irrigation. The Board agrees with the recommendation. The amount of water would also be insufficient for a livestock feedlot as requested by Marshall Brothers. Granting a small, clearly inadequate quantity of water for irrigation would result in use of water that is not beneficial for irrigation.

35. The foregoing findings are based on recent average annual water use for irrigation as reported by irrigators (as adjusted). The water use is not calculated by simply calculating the total water use stated on all water permits for irrigation, which would result in a larger number. Using the maximum water use stated on the permits would not be representative of actual use because the permits are for the maximum diversion rate or peak use for each permit. Using the reported acreage reflects the varying actual water use. Use of actual calculated water use is correct for the purpose of examining water availability.

36. In addition to the availability of water, this Board is also required to consider whether use of the water for irrigation, as proposed, would adversely impair existing water rights. There are a total of 138 water permits/rights from the Tulare Western Spink and Tulare Hitchcock Management Units for irrigation of 21,339 acres located in Spink, Hand, and Beadle Counties. Interference has

not been a concern in the area of the Tulare Hitchcock Aquifer. This aquifer is under water table conditions and significant drawdown does not extend very far from the production well. However, where the aquifer is confined in the Tulare Western Spink area of the aquifer, drawdown does occur and does cause interference. At this point in time this interference has not been adverse. The water level record is very good and development appears to have had very little overall impact on the aquifer.

37. The precipitation data indicates that the five-year period of record was about average or slightly below average for precipitation during the 2002 through 2006 time period. The water use during that time period would be expected to also represent an average.

38. Some areas of the aquifer recharge more than other areas. This has to be considered when issuing permits for transferring acres or drilling additional wells. Well spacing may be more of an issue in those areas of artesian conditions or in those areas where saturated thickness is thin.

39. There is domestic use from these management units but that use is not estimated. That amount is assumed to be relatively small compared to the irrigation use.

40. Because this Board finds that there is a lack of availability of water and has determined that the applications

should be denied, it need not consider whether the water use for irrigation would be in the public interest or whether the water use would be a beneficial use. Although irrigation is generally considered to be a beneficial use, using 33 AF for any of the applications at issue in this proceeding would be inefficient and would not result in a beneficial use.

41. These applications should be denied and the aquifer deemed fully appropriated. The applicants wish to maintain a priority date based on the date they filed their applications, but there is no provision in the statutes to allow this.

#### CONCLUSIONS OF LAW

1. The Board has jurisdiction of this matter.
2. In order for the Board to grant permits to the applicants, the applicants have the burden of proof and must show that they meet the criteria for obtaining the permits.
3. The standard for determining whether the water permits at issue here should be granted is governed by SDCL 46-2A-9 and SDCL 46-6-3.1.
4. SDCL 46-2A-9 requires that the Board determine whether there is a reasonable probability that there is unappropriated water available for the Applicants' proposed use. Because the water permits at issue here are groundwater applications, the Board must consider SDCL 46-6-3.1 when determining availability.

5. When considering the standard in SDCL 46-6-3.1, there are two numbers at issue: (a) the quantity of water withdrawn annually and (b) the quantity of the average estimated recharge of water. As of 2002, the water use and development history of the aquifer indicated that these management units were very close to being fully appropriated based on SDCL 46-6-3.1. Accordingly, the Board delayed hearing on the foregoing applications because it was unable to determine whether issuance of permits, as requested, would be consistent with SDCL 46-6-3.1

6. In analyzing these two numbers, the average estimated recharge is at issue, not the maximum or minimum recharge rate. Accordingly, the 0.83 rate per acre that was used in the Goodman analysis is the proper rate.

7. The average actual water use was properly calculated for the period over the last five years. Average use for earlier years did not reflect as many permits as were in existence during the last five years. Earlier data would not be representative of average use when considering that a number of new permits were issued allowing the average to increase. Further, the actual use over the five-year period was properly adjusted to account for undeveloped and unreported permitted acreage when it is assumed that the actual use of undeveloped and unreported permitted acreage will be consistent with the actual use of other reported acreage.

8. Because the actual average use of water essentially equals the average recharge rate, SDCL 46-6-3.1 constrains the Board from granting the applications.

9. Given the foregoing analysis of SDCL 46-6-3.1, there is not a reasonable probability that there is unappropriated water available for the Applicants' proposed use as contemplated by SDCL 46-2A-9. Although expert Goodman testified as to the possibility that 33 AF may be available for a water appropriation from the aquifer, this figure is extremely small when considering the scale of irrigation involved. For all practical purposes, any appropriation at all would be inconsistent with SDCL 46-6-3.1.

10. Although the applicants assert that the area of the aquifer is larger than the DENR witness asserts, they have not presented sufficient evidence to demonstrate that such quantity of water is actually available.

11. Under SDCL 46-2A-9, the Board must also consider three other factors in addition to whether there is unappropriated water available. Those three factors are: (a) whether the proposed diversion can be developed without unlawful impairment of existing rights, (b) whether the proposed use is a beneficial use and (c) whether the proposed use is in the public interest. Because the Board cannot grant any of the permits requested due to the

unavailability of water and the application of SDCL 46-6-3.1, there is no need to consider the remaining criteria.

12. The Board recognizes that it is possible that some or all of the proposed diversions could be developed without unlawful impairment of nearby existing rights. To analyze this issue for each of the water rights would require individual consideration of nearby competing wells. The Board need not consider this factor, however, because it has already determined that there is not water available from the water in general.

13. This Board did not consider the public interest criteria and no evidence was entered on that aspect. However, due to the determination that no water is available, the public interest issue need not be considered.

14. Beneficial use is the final criteria in SDCL 46-2A-9. SDCL 46-1-4 requires that South Dakota's water resources be put to beneficial use to the fullest extent of which they are capable. Further, the "beneficial use" criteria for consideration of the water permit in this case requires consideration of the best utilization of the water supply. These legal requirements cannot be met here for two reasons. First the Legislature has determined, as a statutory matter, that mining water from aquifers is not a beneficial use of the water source. SDCL 46-6-3.1. Second in the event that 33 AF is available, the use of such a small quantity of

water would not be beneficial to the applicant irrigators or to Marshall Brothers for its confined animal feeding operation. With respect to irrigation, the Board notes that SDCL 46-5-6 generally provides for a maximum annual volume of water of up to 2 acre feet per acre delivered to the land for irrigation. More particularly, in the geographic area in question here, the average actual volume applied per acre runs from 10-13 inches in average years. The 33 acre feet is wholly inadequate for any of the applications here (all of which involve land of at least 100 acres) and would not be beneficial for any of the applications here. The Chief Engineer recommended that the 33 AF should not be appropriated for any irrigator. None of the applicants took issue at hearing with the Chief Engineer's conclusion that if there are only 33 AF available, that amount need not be appropriated.

15. This proceeding involves applications that were deferred by the Board (or in legal parlance "continued") for consideration after additional evidence. Each application was placed on a list for additional consideration. The list was procedural and did not grant a right of any kind to a water permit or a priority date.

16. When applications are pending consideration by the Board or permits have been granted for water use, the applicable priority date relates back to the date of water permit application. SDCL 46-2A-15. The "relation back" statute does not, however, operate to

allow priority dates to remain in place once water permit applications have been fully considered and denied.

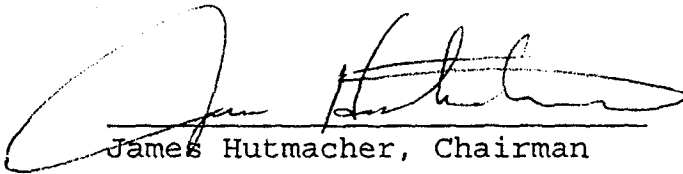
17. The Allen Gatzke request for placement of the 2007 permit on the deferred list as a 2002 application need not be considered insofar as the question is moot.

#### FINAL DECISION

The water permit applications listed above are hereby denied for the foregoing reasons. In particular, the Western Spink and Hitchcock Management Units of the Tulare Aquifer are fully appropriated.

Dated this 11 day of March, 2008.

BY THE BOARD:



James Hutmacher, Chairman

pId303\_jph(dh)

**WILES & RYLANCE**

**ATTORNEYS AT LAW**

3 East Kemp - Suite 200  
P. O. Box 227  
Watertown, South Dakota 57201-0227  
(605) 886-5881

**FACSIMILE**  
(605) 886-3934

**E-MAIL:**  
[rdr@wilesandrylance.com](mailto:rdr@wilesandrylance.com)

**RECEIVED**

**FEB 21 2012**

**WATER RIGHTS  
PROGRAM**

John C. Wiles, P.C.  
Raymond D. Rylance, P.C.  
Rebecca L. Morlock Reeves

February 16, 2012

Department of Environment  
And Natural Resources  
Attn: Eric Gronlund  
PMB 2020  
Joe Foss Building  
523 E Capitol  
Pierre, SD 57501-3182

Re: Water Permit Application No. 7293-3  
Jeffrey Gatzke

Dear Eric:

Our office has been retained by Jeffrey Gatzke to represent him concerning the water permit applications referred to above. By this letter, Jeffrey Gatzke intends to oppose the recommendations of the Chief Engineer in his letter dated February 3, 2012. Due to the timing of this matter, it would appear that we are going to have to request a delay in the hearing date as I am unable to meet the scheduled March 7, 2012. It would appear that the May meeting date would probably work. I have a trial on May 4<sup>th</sup> so I would like to do this no later than May 2 or after May 4.

Very truly yours,

**WILES & RYLANCE**



Raymond D. Rylance

RDR:bjs  
cc. Jeffrey Gatzke



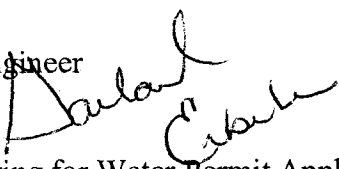
**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov

February 28, 2012

**NOTICE**

TO: Raymond D. Rylance  
Wiles & Rylance  
PO Box 227  
Watertown SD 57204-0227

FROM: Garland Erbele, Chief Engineer  
Water Rights Program 

SUBJECT: Automatic Delay of Hearing for Water Permit Application Nos. 7288-3, 7289-3,  
7290-3, 7291-3, 7292-3 and 7293-3

The Water Rights Program received the petitions you filed opposing the Chief Engineer's recommendation in the matter of Water Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3. The petitions also request postponement of the scheduled March 7, 2012 hearing on these water permit applications. Therefore, the hearing on Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 are automatically delayed pursuant to SDCL 46-2A-4 and 46-2A-5 and will not be held on March 7, 2012.

The Water Management Board will consider Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 beginning at 1:00 PM on Wednesday, May 2, 2012 in the Floyd Matthew Training Center, Joe Foss Building, 523 E. Capitol Avenue, Pierre SD. Future notice will be provided if there is a change to the hearing time or date.

Please contact Eric Gronlund at (605) 773-3352, if you have any questions.

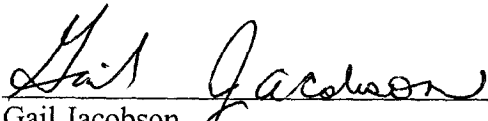
c: Diane Best, Assistant Attorney General

CERTIFICATION

I hereby certify that on February 28, 2012, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated February 28, 2012, regarding automatic delay of hearing on Water Right Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 and schedule a new hearing date, as addressed below:

Raymond D. Rylance  
Wiles & Rylance  
PO Box 227  
Watertown SD 57204-0227

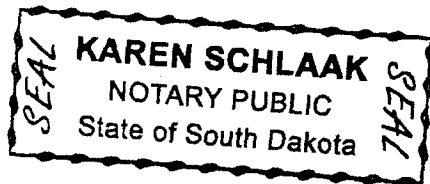
Diane Best, Assistant Attorney General  
317 N. Main  
Sioux Falls SD 57104

  
\_\_\_\_\_  
Gail Jacobson  
Water Rights Program, DENR

STATE OF SOUTH DAKOTA       )  
                                          ) SS  
COUNTY OF HUGHES        )

Sworn to, before me, this 28<sup>th</sup> day of February, 2012.

  
\_\_\_\_\_  
Karen Schlaak  
Notary Public  
My Commission expires April 1, 2013





**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov

April 3, 2012

**NOTICE**

TO: Raymond D. Rylance  
Wiles & Rylance  
PO Box 227  
Watertown SD 57204-0227

FROM: Garland Erbele, Chief Engineer  
Water Rights Program

SUBJECT: Water Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3

Water Permit Application Nos. 7288-3 and 7289-3 (Bixler Farms), 7290-3 and 7291-3 (Lee Gatzke), 7292-3 (Allen Gatzke) and 7293-3 (Jeffery Gatzke) were public noticed February 8 and 15, 2012 in the Redfield Press. You filed a letter for each applicant opposing the Chief Engineer's recommendation and to request delay of the March 7, 2012 hearing date before the Water Management Board.

The Water Management Board will conduct a hearing to consider the above referenced applications at 1:00 PM (CDT) on Wednesday, May 2, 2012 in the Floyd Matthew Training Center, Joe Foss Building, 523 E. Capitol Avenue, Pierre SD. The afternoon of May 2<sup>nd</sup> is reserved for consideration of these applications. Pursuant to SDCL 46-2-9, 46-2-11, and 46-2A-23, the Board has legal authority and jurisdiction to conduct this hearing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends Denial of Water Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 because 1) SDCL 46-6-3.1 states that the annual withdrawal of groundwater shall not exceed the average estimated annual recharge to the aquifer; 2) the Water Management Board adopted finding of fact, conclusions of law and a final decision on March 11, 2008 that the Western Spink and Hitchcock Management Units of the Tulare Aquifer are fully appropriated; 3) since the 2008 Board decision, there has not been a change in the appropriative status of water rights/permit within the aquifer; 4) it is not in the public interest to permit additional groundwater withdrawals in excess of the average annual recharge of the Tulare:Hitchcock or Tulare:Western SpinkAquifer.

The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny the applications based on the evidence presented at the public hearing.

This hearing may be an adversarial proceeding. Any party of record and/or the applicants have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

Enclosed are a copy of the report, recommendations, affidavits of publication and applicant letters in opposition to the Chief Engineer's recommendation in the matter of the water permit applications. State law directs the Chief Engineer to provide Water Management Board members with a copy of all pleadings including petitions for each proceeding. This same information will be sent to the Board members in advance of the hearing. In addition, enclosed are two documents intended to acquaint parties with the hearing process entitled "Procedure for Hearings before the Water Management Board" and "Summary of South Dakota Water Laws and Rules". You are encouraged to review these documents prior to the hearing.

These applications are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-23; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Questions regarding the hearing process may be directed to Diane Best, Assistant Attorney General at (605) 367-5880 ext 105. In addition, please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing.

c: Diane Best, Assistant Attorney General

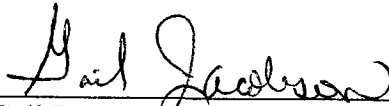
NOTE: Since this matter does not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case need not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by April 23, 2012.

CERTIFICATION

I hereby certify that on April 3, 2012, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated April 3, 2012, regarding the Water Management Board hearing on Water Right Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 and schedule a new hearing date, as addressed below:

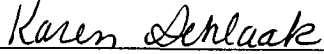
Raymond D. Rylance  
Wiles & Rylance  
PO Box 227  
Watertown SD 57204-0227

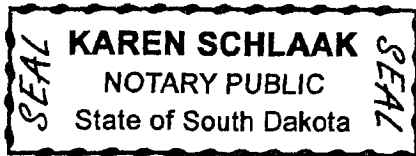
Diane Best, Assistant Attorney General  
317 N. Main  
Sioux Falls SD 57104

  
\_\_\_\_\_  
Gail Jacobson  
Water Rights Program, DENR

STATE OF SOUTH DAKOTA     )  
                                          ) SS  
COUNTY OF HUGHES         )

Sworn to, before me, this 3<sup>rd</sup> day of April, 2012.

  
\_\_\_\_\_  
Karen Schlaak  
Notary Public  
My Commission expires April 1, 2013



RECEIVED

APR 27 2012

WATER RIGHTS  
PROGRAM

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF WATER       )  
PERMIT APPLICATION Nos.        )  
7288-3, 7289-3, 7290-3,        )  
7291-3, and 7293-3            )

STIPULATION

This Stipulation is entered into by Lee Gatzke, Jeffery Gatzke, Allen Gatzke, and Bixler Farms ("Applicants") and Chief Engineer Garland Erbele. The parties agree:

1. All of the above applications were filed simultaneously on December 15, 2011. On February 2, 2012 the DENR Chief Engineer recommended denial of the applications and the matter was duly published pursuant to SDCL 46-2A-4. The Applicants subsequently filed their opposition to the recommendation and hearing was scheduled for May 2, 2012.

2. In preparation for hearing the Chief Engineer's staff reevaluated the current availability of water in the Tulare: Hitchcock Aquifer in light of the historic record, recent irrigation reports including reports from 1979-2011, and past and recent USGS reports. The Chief Engineer determined he could recommend approval of 810 acres from the Tulare: Hitchcock Aquifer.

3. The parties agree that based on the best information reasonably available, it is probable that the quantity of water withdrawn annually from the Tulare: Hitchcock Aquifer would not exceed the quantity of average estimated annual recharge of water to

the Tulare: Hitchcock Aquifer if the permits were granted as set forth below for the 810 acres. This meets the standard under SDCL 46-6-3.1.

4. Following the Chief Engineer's review and determination that water for irrigation of 810 acres from this aquifer would be available, the Chief Engineer notified the Applicants. The Applicants have conferred and hereby request that the Chief Engineer recommend approval of the 810 acres of irrigation as follows, all with the priority date of December 15, 2011:

7289-3 Bixler Farms 270 acres SW 1/4 and SE 1/4 of Sec 36-115-63  
7290-3 Lee Gatzke 135 acres NE1/4 Sec 6-114-63  
7291-3 Lee Gatzke 135 acres NW 1/4 Sec 18-114-63  
7292-3 Allen Gatzke 135 acres W 1/2 Sec 14-114-63  
7293-3 Jeff Gatzke 135 acres NW 1/4 Sec 15-114-63

5. Although Applicants' original applications sought 160 acres for each of the quarter section parcels in question, they have subsequently contacted the DENR and decreased the request to 132<sup>15</sup><sub>TRB</sub> acres for each parcel. They waive their claims to the full 160 acres for these parcels.

6. By signature below Bixler Farms withdraws its Water Permit Application 7288-3. The parties agree that this withdrawal is without prejudice to Bixler Farms' ability to file an application in the future. This agreement does not bind the Chief Engineer as to any recommendation in such future application.

7. The Chief Engineer will recommend that the permits be granted for the acreage and locations as stated above. Based on statute, this

recommendation is not binding on the South Dakota Water Management Board who may grant, deny, or defer the applications in whole or in part.

8. The parties agree that due to the change in the Chief Engineer's recommendation this matter will be published again under SDCL 46-2A-4 for a July 11 hearing date. The Applicants waive any due process or procedural claims arising from delaying the hearing to afford for publication, possible intervention by interested parties, and delay directly arising from such publication under SDCL 46-2A-4. The publication will be prepared by and paid for by the DENR.

IT IS SO STIPULATED AND AGREED:

Bixler Farms by Reed Bixler  
Bixler Farms, Inc. ~~by its~~ Partnership  
Date: 4/25/12

[Signature]  
Lee Gatzke  
Date: 4-25-12

[Signature]  
Jeffrey Gatzke  
Date: 4-25-12

[Signature]  
Allen Gatzke  
Date: 4-25-12

[Signature]  
Garland Erbele  
Chief Engineer  
Department of Environment and Natural Resources  
Date: 4/30/2012



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov

**REVISED RECOMMENDATION OF CHIEF ENGINEER FOR WATER  
PERMIT APPLICATION NO. 7293-3, Jeffery Gatzke**

Pursuant to SDCL 46-2A-2, the following is the revised recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 7293-3, Jeffery Gatzke, 39334 187<sup>th</sup> St. Hitchcock SD 57348.

The Chief Engineer is recommending APPROVAL of Application No. 7293-3 because 1) the Water Rights Program has reevaluated the current availability of water in the aquifer and determined that unappropriated water is available for 810 additional acres of irrigation from the aquifer, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest to put water resources of the state to the fullest extent of which they are capable with the following qualifications:

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7293-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Garland Erbele, Chief Engineer  
June 4, 2012

REPORT TO THE CHIEF ENGINEER  
ON  
WATER PERMIT APPLICATION NO. 7289-3, BIXLER FARMS  
NOS. 7290-3 AND 7291-3, LEE GATZKE  
NO. 7293-3, JEFFREY GATZKE  
And NO. 7292-3, ALLEN GATZKE  
APRIL 25, 2012

Application No. 7289-3 proposes to appropriate 3.86 cfs from two wells approximately 75 feet deep located in the centers of the SE $\frac{1}{4}$  and SW $\frac{1}{4}$  of Section 36 to irrigate 270 acres located in the S $\frac{1}{2}$ , S $\frac{1}{2}$  NW  $\frac{1}{4}$  of Section 36; all in T115N-R63W.

Application No. 7290-3 proposes to appropriate 1.78 cfs from one well approximately 60 feet deep located in the center of the NE  $\frac{1}{4}$  of Section 6 for the irrigation of 135 acres located in the NE $\frac{1}{4}$  of Section 6; all in T114N-R63W.

Application No. 7291-3 proposes to appropriate 1.78 cfs from one well approximately 75 feet deep located in the center of the NW $\frac{1}{4}$  of Section 18 for the irrigation of 135 acres located in the NW $\frac{1}{4}$  of Section 18; all in T114N-R63W.

Application No. 7292-3 proposes to appropriate 1.78 cfs from one well approximately 76 feet deep located in the center of the NW $\frac{1}{4}$  of Section 14 for the irrigation of 135 acres located in the N $\frac{1}{2}$  NW $\frac{1}{4}$ , S $\frac{1}{2}$  SW $\frac{1}{4}$  of Section 14; all in T114N-R63W. The applicant intends to combine with Water Right No. 6339B-3 which authorizes irrigation of the S $\frac{1}{2}$  NW $\frac{1}{4}$  and the N $\frac{1}{2}$  SW $\frac{1}{4}$  of Section 14 to allow for two center pivots in the W  $\frac{1}{2}$  of Section 14; T114-R63W.

Application No. 7293-3 proposes to appropriate 1.78 cfs from one well approximately 60 feet deep located in the center of the NW $\frac{1}{4}$  of Section 15 for the irrigation of 135 acres located in the NW $\frac{1}{4}$  of Section 15; all in T114N-R63W and all in Spink County.

**AQUIFER: TULARE: WESTERN SPINK/HITCHCOCK AQUIFER**

**AQUIFER CHARACTERISTICS:**

The Tulare aquifer is a glacial outwash deposit that underlies parts of Hand, Spink and Beadle Counties. The top of the outwash is generally within 50 feet of the ground surface (Schultz, 2001) (Schultz, 2003). The thickness of the outwash deposit is highly variable ranging from less than 10 feet to over 100 feet (Kuiper, 1984). The average thickness of the outwash was estimated to be 37 feet (Hamilton and Howells, 1996). Initial work to delineate the Tulare aquifer established management units within the aquifer based on the hydrogeologic information available at the time (Hedges and others, 1982). The Tulare aquifer west of the James River was separated into the Western Spink management unit and the Hitchcock management unit (see figure 1). The Western Spink management unit consisted of the portion of the aquifer that was thought to be predominately under confined (artesian) conditions and the Hitchcock management unit contained the portion of the aquifer that was considered primarily unconfined (under water table conditions). The total areal extent of the two management units combined was estimated to be 289,300+ acres and the amount of water in storage in the two management units combined

was estimated to be 1,212,330+ acre-feet (Hedges et al., 1982). The management unit approach was adopted by the DENR and the Water Management Board to consider appropriations. In 1984 a numerical ground-water flow model was developed for the aquifer (Kuiper, 1984) that did not consider separate management units. Instead the aquifer was considered a single unit with confined and unconfined conditions present on either side of what had previously been considered a boundary between management units. The aquifer was considered to underlie a total of approximately 334,573 acres. However, the nature of the model (i.e. one square mile increments) likely resulted in an overestimation of the area (see figure 2). To a certain extent, the aquifer was further delineated in 1996 for Spink County (Hamilton and Howells, 1996). However, parts of a deeply buried valley-fill outwash that the SD Geological Survey and DENR-Water Rights considers the Deep James aquifer were included and may have resulted in some confusion but the basic outline of the Tulare aquifer was refined (see figure 3). The resulting areal extent of the Tulare aquifer in Spink County was approximately 180,605 acres. In December 2002, the Water Management Board determined that the two management units would be combined for water permit/water right management purposes (Goodman, 2002).

With data that is currently available, the areal extent of this "composite" aquifer is best defined using a compilation of Aquifer Materials Maps for Spink and Beadle Counties produced by the SDGS (Schulz, 2001) and (Schulz, 2003) respectively (see figure 4). Since no new data is available for the Hand County portion of the aquifer, the area defined by Hedges and others, (1982), remains the best information available (Note: more detailed delineation of the Tulare aquifer in Hand County will likely reduce its area (Iles)). For the purpose of this report the aquifer will be considered the Tulare: Western Spink/Hitchcock aquifer. Based on the best information currently available, the areal extent of the Tulare: Western Spink/Hitchcock aquifer is considered to be 263,016 acres (includes 9,600 acres for Hand County from Hedges).

Table one shows a compilation of the delineation's of the Tulare: Western Spink/Hitchcock aquifer by various investigators.

| INVESTIGATOR                                                                   | AREA                     |
|--------------------------------------------------------------------------------|--------------------------|
| Hedges and others, 1982                                                        | 289,300+                 |
| Kuiper, 1984                                                                   | 334,573                  |
| Hamilton and Howells, 1996                                                     | 180,605 (Spink Co. only) |
| Current composite using Schulz, 2001, Schulz, 2003 and Hedges and others, 1982 | 263,016                  |

Table 1. Areal Extent of the Tulare: Western Spink/Hitchcock aquifer

The Tulare: Western Spink/Hitchcock aquifer is generally under confined conditions with lesser areas where it is under unconfined conditions. During dryer periods the percent of the aquifer that is unconfined increases. Groundwater movement in the aquifer is mainly from the southwest to the northeast.

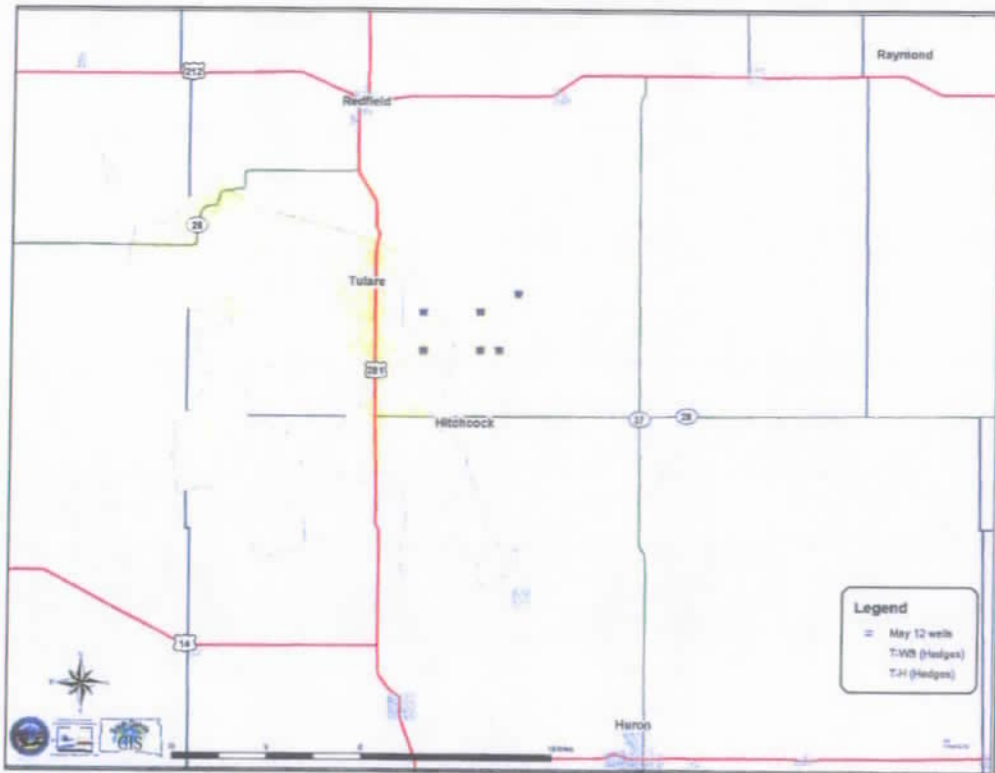


Figure 1. The areal extent of the Tulare: Western Spink/Hitchcock aquifer with management units (modified from Hedges and others (1982).

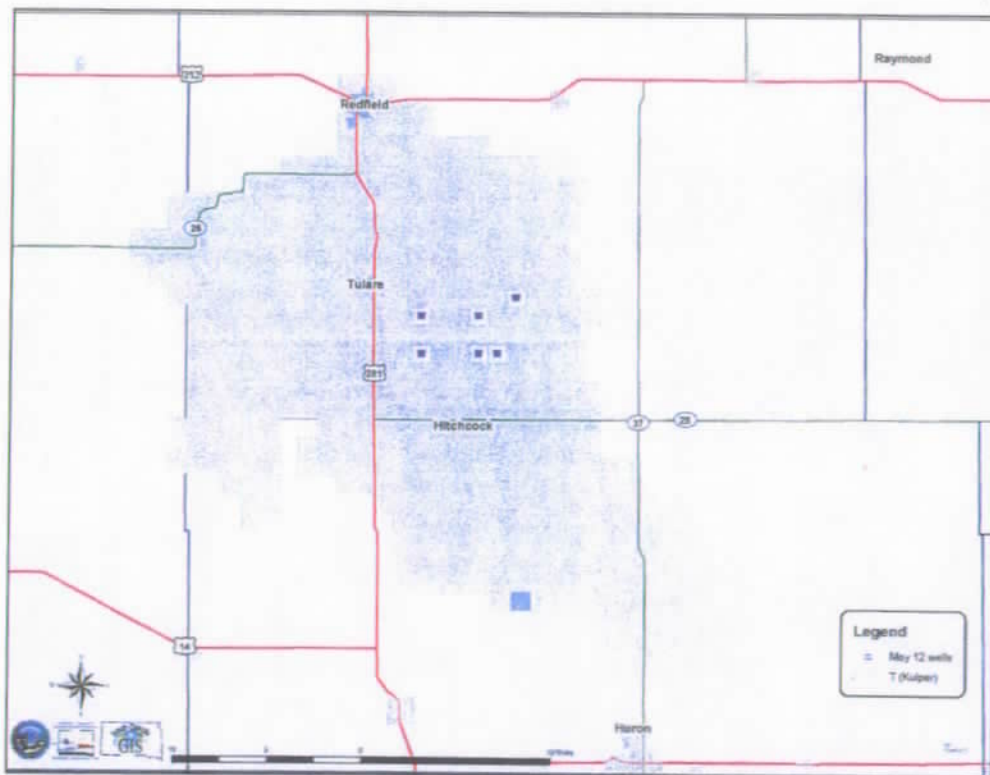


Figure 2. The areal extent of the Tulare: Western Spink/Hitchcock aquifer used in the computer groundwater model (modified from (Kuiper, 1984))

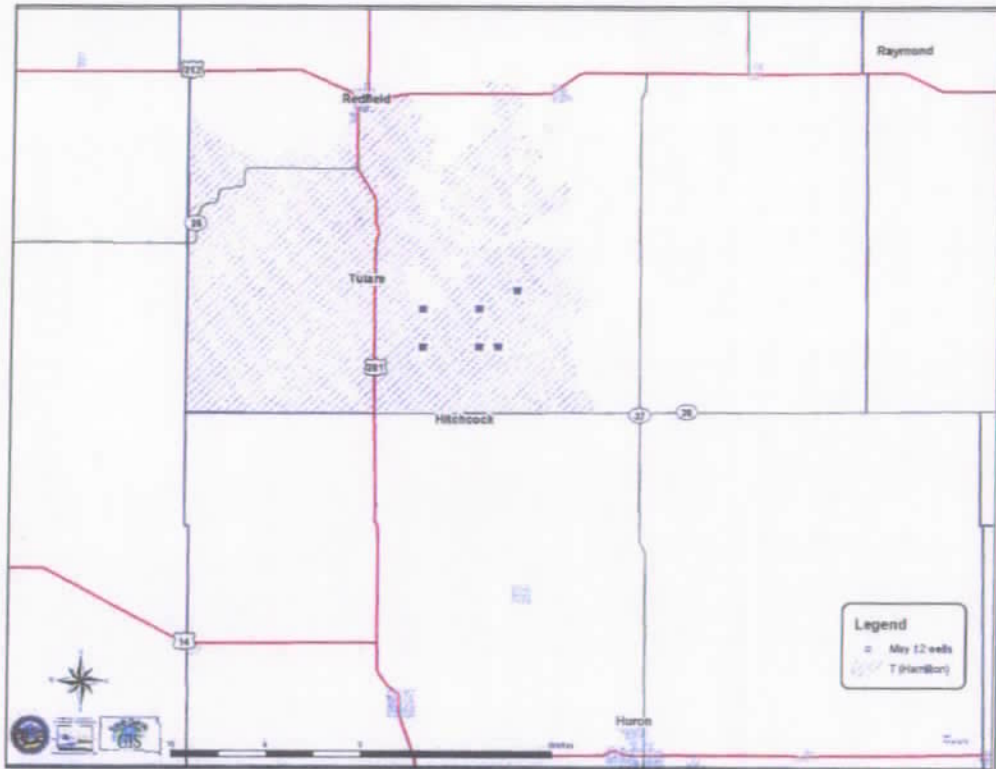


Figure 3. The areal extent of the Tulare: Western Spink/Hitchcock aquifer in Spink County defined in 1996 (modified from Hamilton and Howells, (1996).

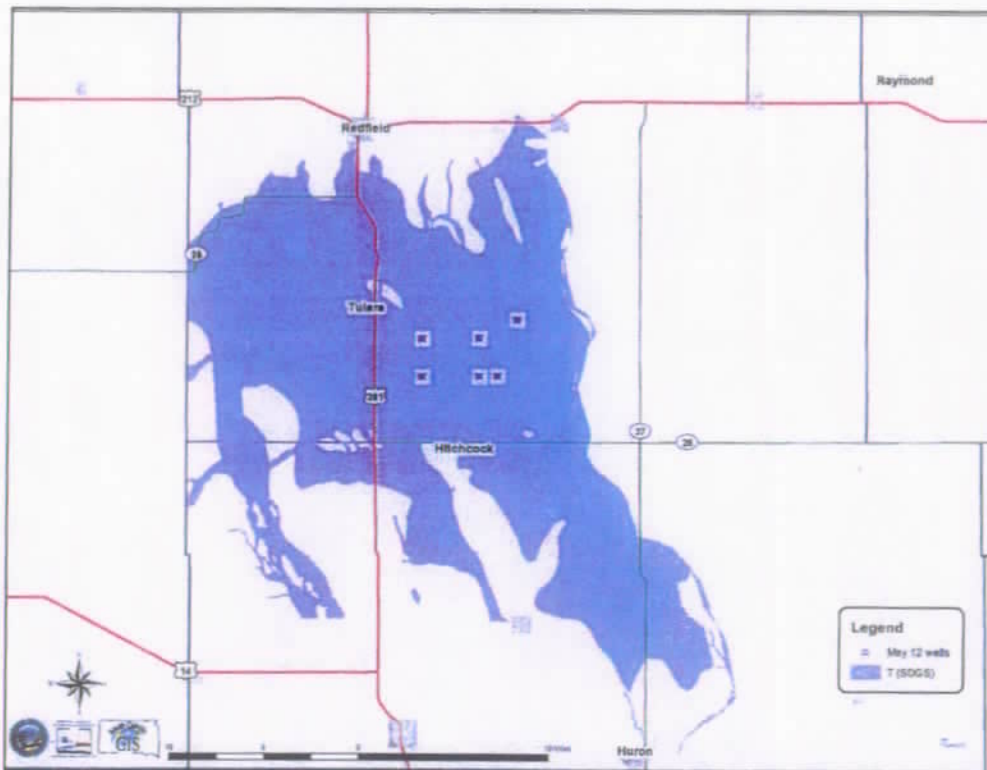


Figure 4. The areal extent of the Tulare: Western Spink/Hitchcock aquifer in Spink and Beadle Counties (modified from (Schulz, 2001) and (Schulz, 2003)).

### **SDCL 46-2A-9**

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversion can be developed without unlawful impairment of existing rights and that the proposed use is a beneficial use and in the public interest. This report will primarily address the availability of unappropriated water and existing rights from the Tulare: Western Spink/Hitchcock aquifer.

### **WATER AVAILABILITY:**

The water permit applications considered in this report propose to appropriate a total of 2,304 acre-feet annually from the Tulare: Western Spink/Hitchcock. The actual water use if these applications are approved will be less than the appropriation. The probability of unappropriated water available from the aquifer can be evaluated by considering SDCL 46-6-3.1 which requires "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source."

The availability of unappropriated water from the Tulare: Western Spink/Hitchcock aquifer can be determined by comparing the estimated average annual recharge to the aquifer with the estimated average annual withdrawals from the aquifer and by examining data from the DENR-Water Rights' Observation Well Network.

### **Recharge versus Withdrawals:**

#### **Recharge:**

Recharge to the Tulare: Western Spink/Hitchcock aquifer occurs primarily through infiltration of precipitation where the outwash is at or near ground surface. The best information reasonably available to estimate the average annual recharge to the aquifer is from the groundwater flow model developed by Kuiper (1984). The model incorporated an average recharge rate throughout the aquifer although recharge generally occurs only in unconfined areas. The average annual recharge to the aquifer based on the groundwater flow model ranged from 0.41-1.66 inches per year with a "best fit" reflecting various simulations of 0.83 inches per year (Kuiper, 1984).

Considering an areal extent of the Tulare: Western Spink/Hitchcock aquifer equal to 263,016 acres (see above), and applying a 0.83 inches per year recharge rate, the average annual recharge to the Tulare: Western Spink/Hitchcock aquifer is estimated to total 18,192 acre-feet per year.

#### **Withdrawals:**

Withdrawals from the Tulare: Western Spink/Hitchcock occur through natural discharge, domestic use and uses from appropriative rights/permits. Except for three small commercial water rights/permits and one municipal/rws water right that likely is not used (Goodman, 2002), all of the water use from the aquifer from appropriative use is for irrigation. Water use statistics for irrigation from the Tulare: Western Spink/Hitchcock aquifers are shown in table 2.

| YEAR | NUMBER OF PERMITS | TOTAL APPROPRIATION (Acre-feet/yr) | PUMPED (Acre-feet/yr) |
|------|-------------------|------------------------------------|-----------------------|
| 2011 | 130               | 54539.6                            | 8512.07               |
| 2010 | 130               | 54539.6                            | 3007.90               |
| 2009 | 129               | 54539.6                            | 8108.14               |
| 2008 | 129               | 54536.6                            | 9748.11               |
| 2007 | 130               | 54671.6                            | 12380.15              |
| 2006 | 126               | 55277.6                            | 18572.88              |
| 2005 | 129               | 54431.4                            | 15669.49              |
| 2004 | 129               | 54705.4                            | 15185.22              |
| 2003 | 131               | 55115.4                            | 19397.25              |
| 2002 | 121               | 55656.8                            | 18649.47              |
| 2001 | 119               | 51860                              | 12786.81              |
| 2000 | 119               | 50762.7                            | 11250.15              |
| 1999 | 117               | 52235.7                            | 8444.64               |
| 1998 | 111               | 49341.7                            | 5878.45               |
| 1997 | 109               | 48869.7                            | 3005.00               |
| 1996 | 110               | 49064.7                            | 12422.89              |
| 1995 | 111               | 50858.7                            | 6833.56               |
| 1994 | 110               | 49718.7                            | 5684.41               |
| 1993 | 111               | 50633.1                            | 2200.29               |
| 1992 | 111               | 50900.7                            | 5320.30               |
| 1991 | 112               | 52165.7                            | 12307.90              |
| 1990 | 112               | 52632.7                            | 11509.49              |
| 1989 | 113               | 52339                              | 15061.79              |
| 1988 | 114               | 54595                              | 12462.92              |
| 1987 | 111               | 54329                              | 9329.14               |
| 1986 | 128               | 62637                              | 3444.70               |
| 1985 | 130               | 61321.6                            | 7712.30               |
| 1984 | 128               | 62389.6                            | 7937.04               |
| 1983 | 125               | 1983                               | 10052.40              |
| 1982 | 111               | 52073.4                            | 6116.30               |
| 1981 | 148               | 67387                              | 10255.51              |
| 1980 | 134               | 62580                              | 6675.45               |
| 1979 | 128               | 60649                              | 5022.37               |
| MAX  | 148               | 67387                              | 19397.25              |
| MIN  | 109               | 1983                               | 2200.29               |
| AVE  | 121.4             | 53010.3                            | 9725.6                |

Table 2. Irrigation water use statistics for the Tulare: Western Spink/Hitchcock aquifer (Water Rights, 1980-2012)

A comparison of the amount of water reported pumped from the Tulare: Western Spink/Hitchcock aquifer for irrigation with the estimated average annual recharge rate for the aquifer (18,192 acre-feet/year) shows that irrigation withdrawals alone exceeded the average annual recharge in 2002, 2003, and 2006. However, in 2005, the Sixth Judicial Circuit Court ruled that if the Board uses average annual recharge than it should also use average annual withdrawals to determine if unappropriated water is available from an aquifer.

The average reported water use for irrigation for the period of 1979-2011 is 9,725.59 acre-feet per year. However, since new water permits were being approved and developed during most of

the 1979-2011 time period, the water use from the aquifer did not meet its full potential until around 2007. The average annual irrigation withdrawal from the aquifer from 2007-2011 was 8,351.3 acre feet per year. However, 2007-2011 was a time period in which growing season (April 1-October 31) precipitation was consistently above the average annual growing season precipitation. The 20 year average growing season precipitation for Huron-Raymond-Redefied area for the 1981-2000 was calculated to be 18.35 inches. The 20 year average growing season precipitation for Huron-Raymond-Redefied area for the 1991-2010 was calculated to be 19.75 inches (Mathiowetz, 2012). Annual growing season precipitation calculated for this area (Mathiowetz, 2012) and the deviation from normal are shown in figures 5 and 6.

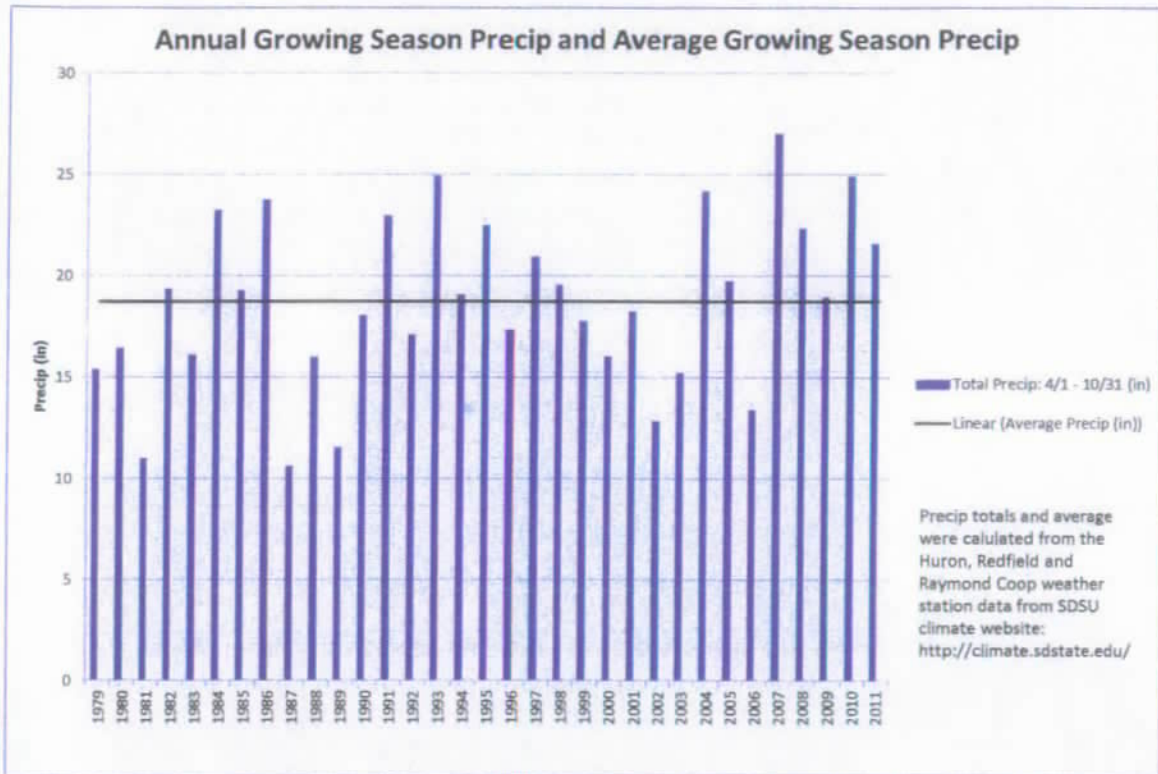


Figure 5. Annual growing season (April-October 31) precipitation for the Tulare: Western Spink/Hitchcock aquifer (Modified from Mathiowetz, 2012)

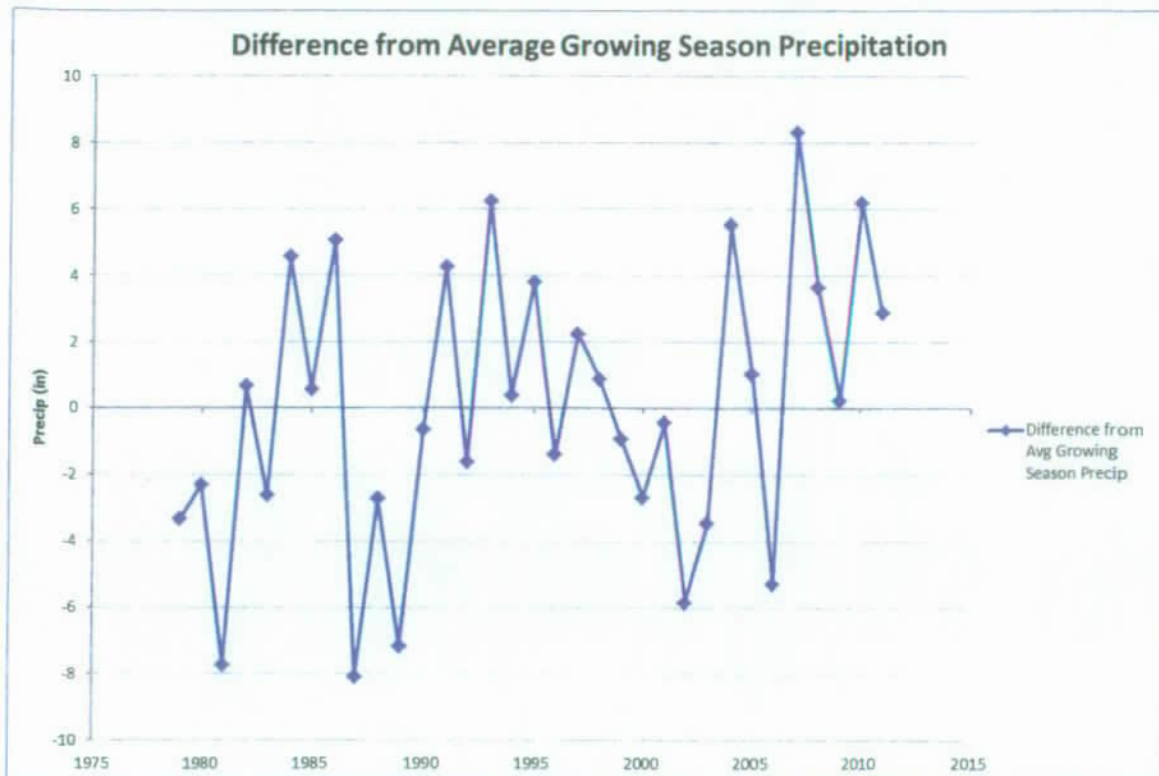


Figure 6. Annual growing season (April 1- October 31) precipitation for the Tulare: Western Spink/Hitchcock aquifer (Modified from Mathiowetz, 2012)

To determine the average annual irrigation withdrawals that can be expected at the current level of development, using the best information available, an average irrigation application rate for the entire period of record (1979-2011) was applied to the number of acres authorized for irrigation. Precedence for this method of estimating irrigation withdrawals for the Tulare: Western Spink/Hitchcock aquifer was set in 2002 when the Water Management Board considered 19 water permit applications and approved 11 permits based on an assumed application rate of 16 inches per year. Again, in 2007, the Board considered 33 deferred permit applications and four new applications from the aquifer using calculations based on an average application rate (11.2 inches per year) for the 2002-2007 time period, consistent with the 2005 Circuit Court Decision.

The average annual irrigation application rate for the Tulare Western Spink/Hitchcock aquifer based on irrigation questionnaires (Water Rights, 1980-2012a) is shown in figure 7. The average application rate for the entire period of record, excluding 1980-1982 a period which data is not available, is 9.32 inches per year. As expected, this average annual irrigation application rate is inversely proportional to the annual growing season precipitation (April 1-October 31), see figure 8.

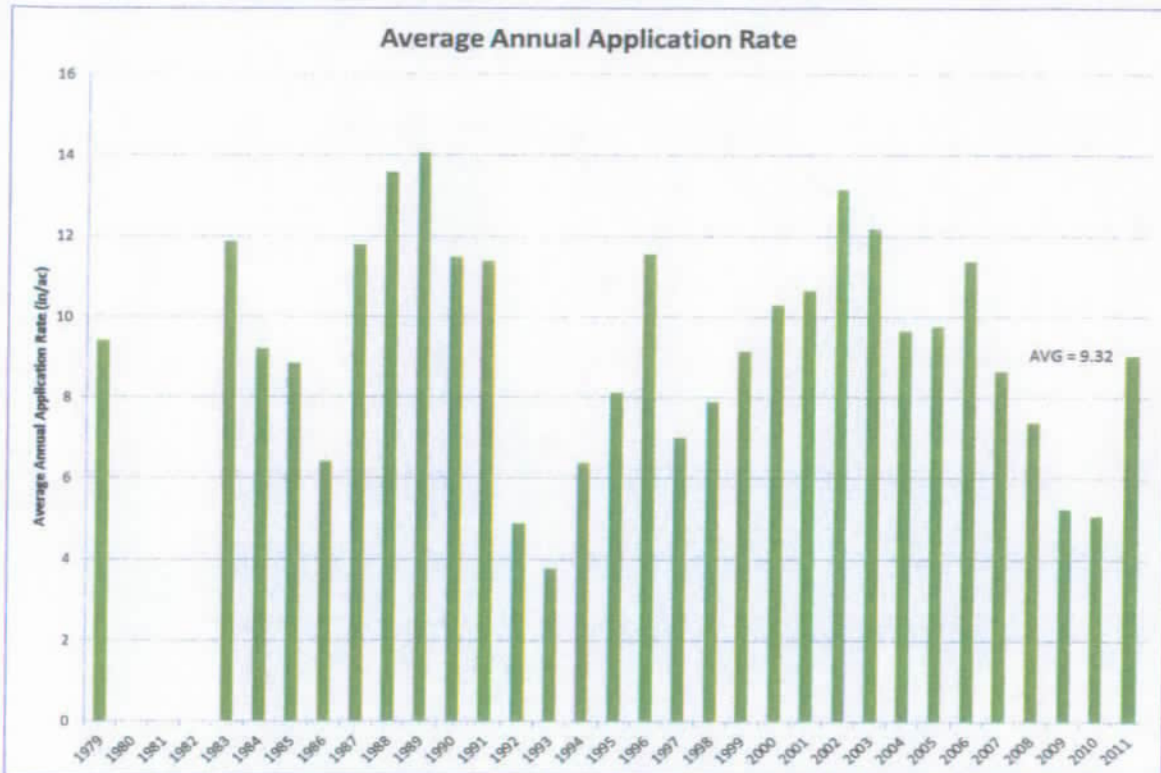


Figure 7. Average application rate for the Tulare: Western Spink/Hitchcock aquifer. (Note: data not available to calculate 1980-1982) (Water Rights, 1980-2012a)

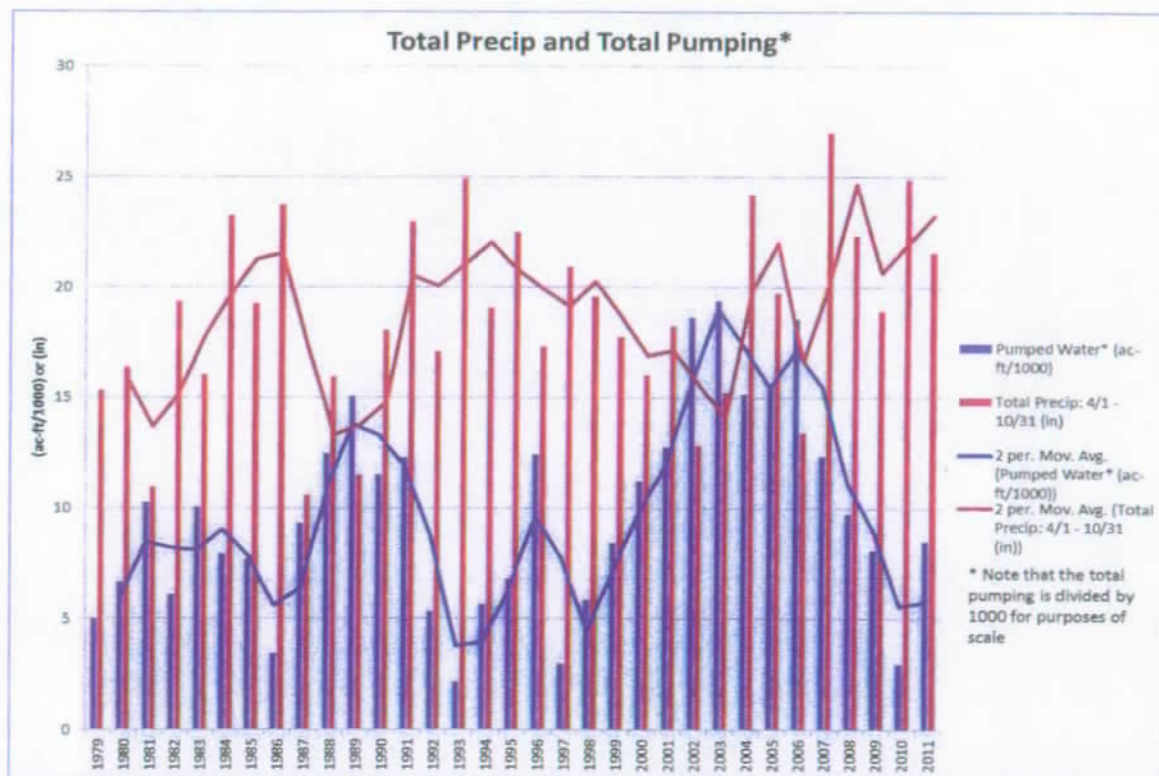


Figure 8. Irrigation pumping from Tulare: Western Spink/Hitchcock aquifer compared growing season precipitation (April 1- October 31)

Assuming an average application rate of 9.32 inches per year, the maximum number of acres that can be irrigated without exceeding the average annual recharge is 23,423 acres. Water rights/permits currently authorize the irrigation of 22,838.8 acres from the Tulare: Western Spink/Hitchcock aquifer. A comparison of the number of acres that could potentially be irrigated from the aquifer with the number of acres that are currently authorized for irrigation shows that another 584.4 acres can be irrigated at an average application rate of 9.32 inches per year without exceeding the average annual recharge rate.

#### **Observation well Data:**

Administrative Rule of South Dakota Section 74:02:05:07 requires that "the Water Management Board shall rely upon the record of observation well measurements to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge to the aquifer".

The DENR-Water Rights Program monitors 50 observation wells completed into the Tulare: Western Spink/Hitchcock aquifer. The observation well data shows the aquifer responds well to climatic conditions with rising water levels during wet years and gradually declining water levels during dry years. A rising water level indicates that recharge to the aquifer exceeds withdrawals from the aquifer and conversely a declining water level is indicative of withdrawals exceeding recharge. An equation for this relationship is:

$$\Delta S = R - W$$

Where:  $\Delta S$  = change in the volume of water in storage in the aquifer

R = Recharge

W = Withdrawals

A positive number indicates that recharge exceeds withdrawals and a negative number indicates that withdrawals exceed recharge.

An analysis of observation well hydrographs was used to quantify the change in volume of water in storage in the aquifer. The analysis involved identifying observation wells completed into the unconfined portion of the Tulare: Western Spink/Hitchcock aquifer and determining the change of the water level in each well for every year. The amount of water represented by a change in water level was determined by multiplying the water level change by the aquifer's specific yield (0.15) (Kuiper, 1984). The average change in storage was applied over the portion of the aquifer that is under unconfined conditions to determine the volume in acre-feet per year of the change in storage.

This analysis is restricted to observation wells completed into an area where the aquifer is under unconfined conditions. A hydrograph (figure 9) for an observation well that was completed in a portion of the Tulare: Western Spink/Hitchcock aquifer that was under unconfined conditions from 1966-2009 but became confined in 2009, shows fairly well the difference between changes in the amount of water in storage in the aquifer (pre-2009) and changes of the "pressure" of the aquifer (post-2009).

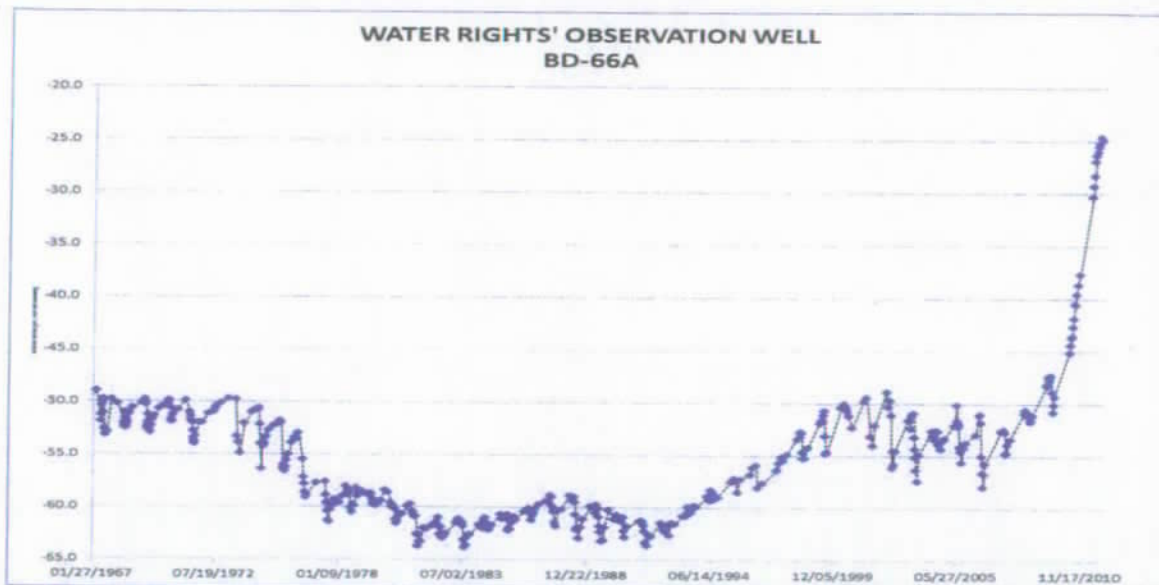


Figure 9. Hydrograph showing the difference between an unconfined aquifer and a confined aquifer.

Five DENR-Water Rights' observation wells were used to analyze the Tulare: Western Spink/Hitchcock aquifer. These wells were chosen because they were in portions of the aquifer that remain unconfined for their entire period of record and the wells were determined to accurately reflect aquifer conditions. Although three of these observation wells have data older than 1983, the time period used for analysis was 1983-2011 to maximize the record-years of data. The results of the analysis are shown in table 3 and Appendix A.

| ANNUAL WATER LEVEL CHANGE (ft) |                 |                 |                 |                 |                 |             |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------|
|                                | SP-79F          | SP-78B          | SP-80B          | SP-82E          | SP-82G          | AVE         |
| 1983                           | 0.8             | 0.24            | 0.25            | 0.85            | -0.43           | 0.342       |
| 1984                           | 0.98            | 0.72            | 0.65            | 1.04            | 0.38            | 0.754       |
| 1985                           | 0.77            | 0.09            | 0.29            | 0.06            | -0.18           | 0.206       |
| 1986                           | 1.75            | 1.59            | 2.16            | 4.85            | 1.97            | 2.464       |
| 1987                           | -2.99           | 0.2             | 0.4             | -3.7            | 0.1             | -1.198      |
| 1988                           | -0.61           | -0.03           | -0.4            | -1.25           | -0.73           | -0.604      |
| 1989                           | 0.23            | -0.03           | -0.19           | -0.25           | -0.31           | -0.11       |
| 1990                           | 0.41            | -0.22           | -0.41           | 0.6             | -0.59           | -0.042      |
| 1991                           | 0.26            | 0.02            | 0.1             | 0.2             | 0.13            | 0.142       |
| 1992                           | 0.35            | 0               | -0.08           | 1.61            | 0.12            | 0.4         |
| 1993                           | 1.55            | 0.5             | 0.68            | 1.49            | 0.48            | 0.94        |
| 1994                           | -0.35           | 0.5             | 0.8             | 0.59            | 0.88            | 0.484       |
| 1995                           | 1.45            | 1.16            | 1.75            | 1.26            | 3.56            | 1.836       |
| 1996                           | -1.6            | 0.44            | 0.87            | -2.25           | -0.14           | -0.536      |
| 1997                           | 1.68            | 1.35            | 1.92            | 3.2             | 3.79            | 2.388       |
| 1998                           | 1.22            | 0.63            | 0.81            | -0.25           | -0.15           | 0.452       |
| 1999                           | -2.21           | 0.5             | 0.4             | -2.01           | -1.35           | -0.934      |
| 2000                           | -1.89           | -0.57           | -2.24           | -1.82           | -2.49           | -1.802      |
| 2001                           | 1.7             | 0.54            | 1.72            | 0.78            | 1.12            | 1.172       |
| 2002                           | -1.95           | -0.76           | -1.79           | -1.88           | -2.05           | -1.686      |
| 2003                           | -0.32           | -0.69           | -1.12           | -0.82           | -0.87           | -0.764      |
| 2004                           | 0.62            | -0.5            | -0.79           | 0.45            | -0.65           | -0.174      |
| 2005                           | -0.18           | -0.18           | 0.23            | 1.54            | 0.3             | 0.342       |
| 2006                           | 0.16            | -0.1            | 0.08            | -1.09           | 0.35            | -0.12       |
| 2007                           | 1.67            | 1.81            | 2.21            | 2.77            | 2.2             | 2.132       |
| 2008                           | 0.56            | 0               | 0.37            | 1.1             | 1.1             | 0.626       |
| 2009                           | 0.32            | 0.99            | 1.02            | -0.3            | 0.66            | 0.538       |
| 2010                           | 1.23            | 2.46            | 1.58            | 0.7             | 1.44            | 1.482       |
| 2011                           | 3.5             | 0.55            | 2.3             | 0               | -0.7            | 1.13        |
|                                |                 |                 |                 |                 |                 |             |
| <i>AVE</i>                     | <i>0.314138</i> | <i>0.386552</i> | <i>0.467931</i> | <i>0.257586</i> | <i>0.273793</i> | <i>0.34</i> |

Table 3. Water Level change per year per observation well

The average annual water level change for the five observation wells for the period of 1983-2011 is +0.34 feet. Therefore, the water level for the unconfined portion of the aquifer increased an average of 0.34 feet per year from 1983-2011.

A comparison of average annual water level rises from Table 3 with the average annual precipitation for the aquifer area (see figure 10) shows as expected, that the change in the volume of water in the aquifer is directly related to the annual precipitation. During the five year period of record of 2007-2011 the average annual water level change in the unconfined portion of the aquifer was 1.18 feet compared with the 0.34 foot average over the period of record. Therefore, the entire period of record (1983-2011) was evaluated so anomalously wet or dry time periods would not overly influence the data.

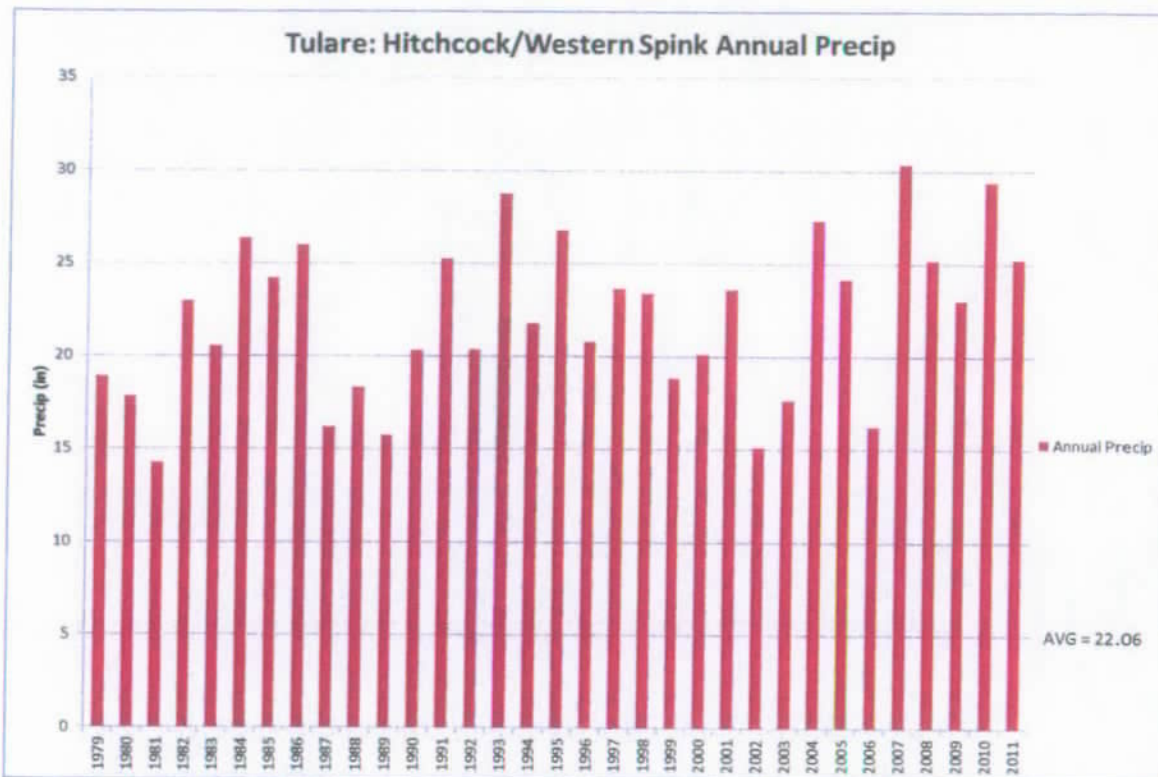


Figure 10. Annual precipitation for the Tulare: Western Spink/Hitchcock aquifer (Modified from Mathiowetz, 2012)

The best information available delineating the portion of the Tulare: WesternSpink/Hitchcock aquifer that is confined vs. unconfined is the Kuiper (1984) groundwater flow model. In figure 26 of the report, 67 “nodes” of the model were identified as being under water table conditions. These 67 nodes are equivalent to 42,880 acres. However, since Kuiper’s model was developed, wetter conditions have prevailed and less of the aquifer is under unconfined conditions. Observation well data identifies a significantly smaller proportion of the aquifer under unconfined conditions now than in the late 1970’s and early 1980’s. Of the 19 observation wells that were originally considered to be completed into unconfined portions of the aquifer, only five are currently in unconfined portions of the aquifer and the aquifer has become confined in the remaining 14 sites. Since only 26 % of the original sites that was originally unconfined remains unconfined, the area where the aquifer is unconfined is now considered to be only 11,149 acres.

Since 11,149 acres of the aquifer had an average annual water level rise of 0.34 feet, assuming a specific yield of 0.15, the annual change in volume of :

$$(11,149 \text{ acres} \times 0.34 \text{ feet} \times 0.15) = 569 \text{ acre feet}$$

Therefore annual recharge to the aquifer exceed discharge from the aquifer by an average of 569 acre-feet per year for the period of 1983-2011.

Allowing for an average application rate of 9.32 inches per year, on average, another 733 acres per year could have been irrigated without exceeding average annual recharge.

The DENR-Water Rights observation wells completed into the Tulare: Western Spink/Hitchcock aquifer verify that over the period of record (1983-2011), withdrawals from the aquifer have not exceeded recharge and unappropriated water is available from the aquifer.

#### EXISTING WATER RIGHTS:

There are 136 Water Rights/Permits currently appropriating water from the Tulare: Western Spink/Hitchcock aquifer. There have been a total of 81 water permit applications filed within approximately two miles of the well sites proposed by these applications. The status of these applications is shown in table 4.

| STATUS       | NUMBER |
|--------------|--------|
| CANCELLED    | 13     |
| DENIED       | 19     |
| INCORPORATED | 8      |
| LICENSED     | 37     |
| PERMITTED    | 2      |
| WITHDRAWN    | 2      |

Table 4. Status of Water Permit Applications filed for this area.

Well interference has never been a problem in this aquifer (Goodman, 2002). Where the aquifer is under unconfined conditions, drawdown created by pumping is not significant and does not extend very far from the individual production well (see figure 11). Where the aquifer is under confined conditions water level fluctuations are more pronounced (see figure 12).

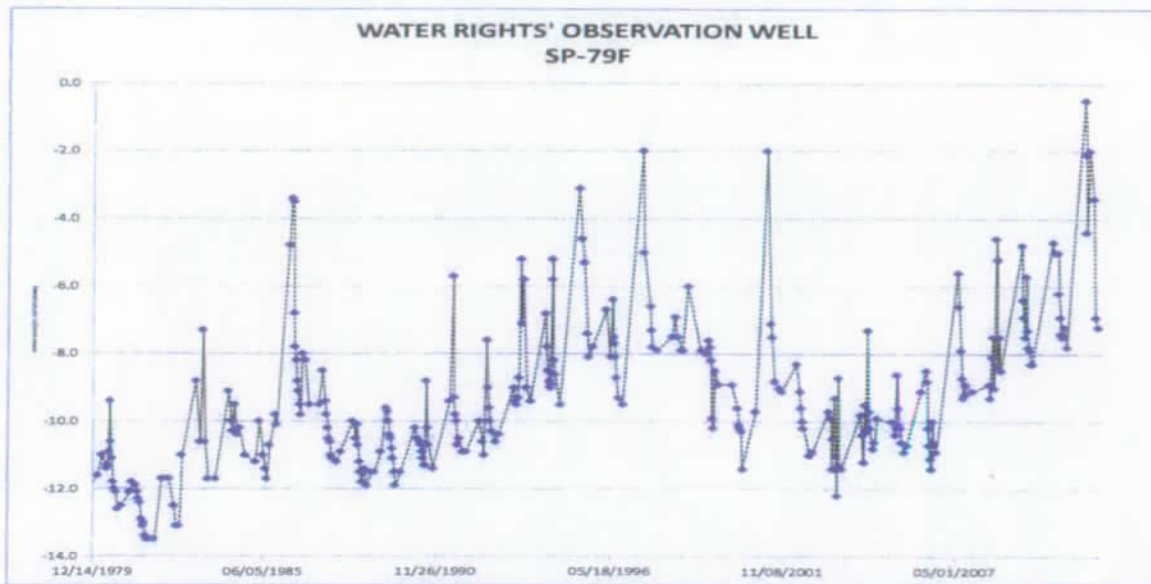


Figure 11. DENR-Water Rights' observation well completed into the unconfined portion of the Tulare:Western Spink/Hitchcock aquifer

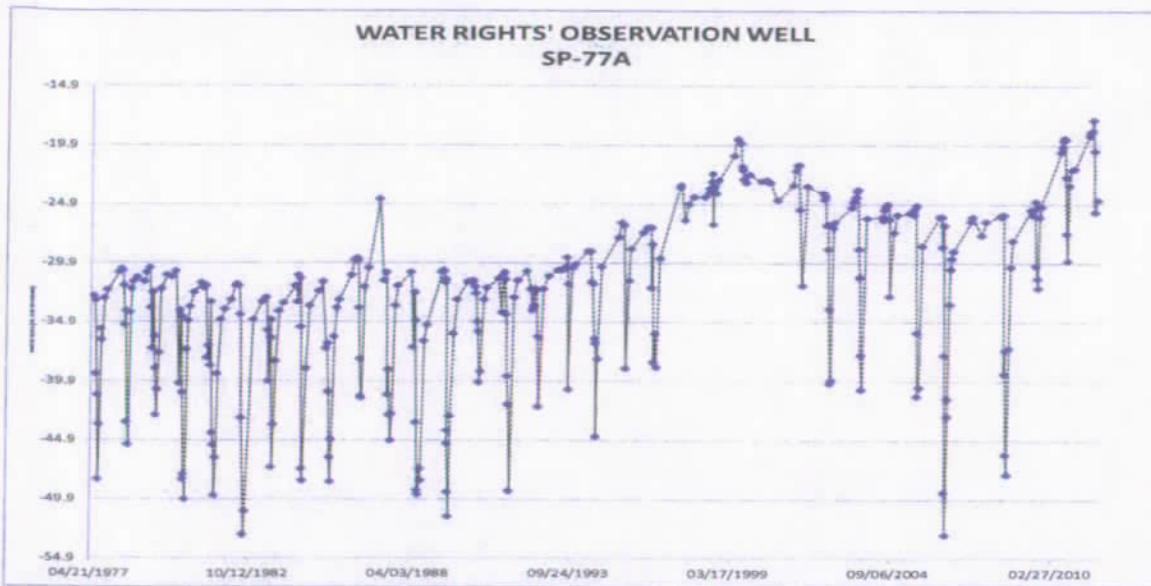


Figure 12. DENR-Water Rights' observation well completed into the confined portion of the Tulare:Western Spink/Hitchcock aquifer

#### CONCLUSIONS:

1. The best information currently available indicates the Tulare: Western Spink/Hitchcock aquifer underlies approximately 263,016 acres of Beadle, Spink, and Hand Counties.
2. The best information currently available identifies an average annual recharge rate to the Tulare: Western Spink/Hitchcock aquifer as 0.83 inches per year.
3. The volume of average annual recharge to the Tulare: Western Spink/Hitchcock aquifer based on an area of 263,016 acres and a recharge rate of 0.83 inches per year is approximately 18,192 acre-feet per year.
4. The average annual irrigation application rate for the Tulare: Western Spink/Hitchcock aquifer from 1979-2011 has been 9.32 inches per year.
5. The maximum **average** annual irrigation withdrawal based on a recharge of 18,192 acre-feet per year and an application rate of 9.32 inches per year would allow for the irrigation of 23,423 acres.
6. The total number of acres that are currently authorized for irrigation from the Tulare: Western Spink/Hitchcock aquifer is 22,838.8 acres.
7. The difference between the number of acres that can be irrigated from the Tulare: Western Spink/Hitchcock aquifer and the number of acres that are currently permitted to be irrigated shows approximately 585 additional acres can be permitted for irrigation.
8. The analysis of DENR-Water Rights' observation well data identifies that the over the period of record of 1983- 2011, average annual recharge to the aquifer has exceeded the average annual withdrawals from the aquifer by approximately 569 acre-feet per year.
9. The observation well data indicates that another 733 acres could have been irrigated over the time period of 1983- 2011, at an average application rate of 9.32 inches per year.
10. There is a reasonable probability that unappropriated water is available from the Tulare: Western Spink/Hitchcock aquifer to irrigate approximately 733 additional acres.
11. Additional irrigation withdrawals are not expected to impair existing users.



Ken Buhler  
SD DENR-Water Rights Program

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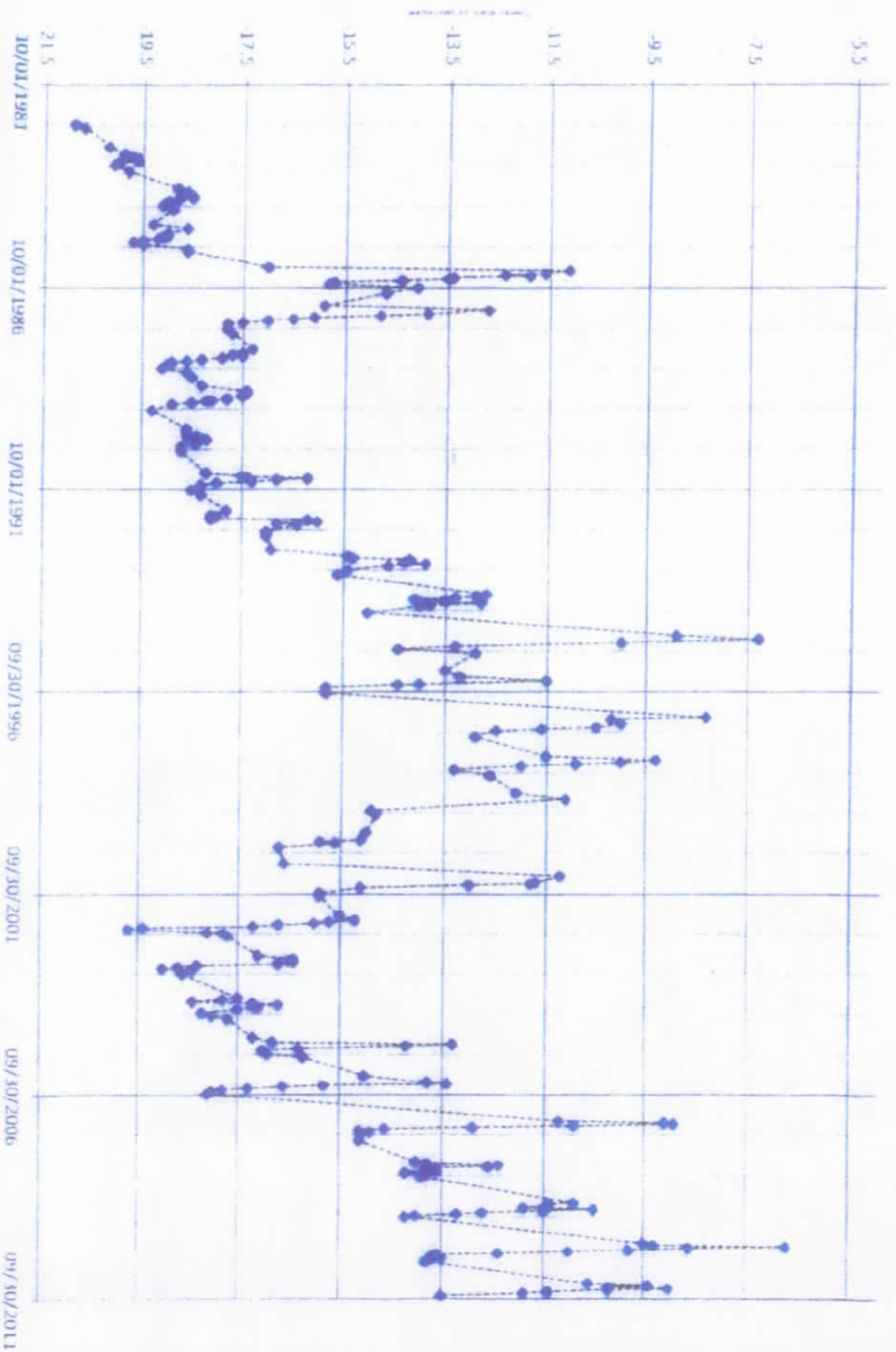
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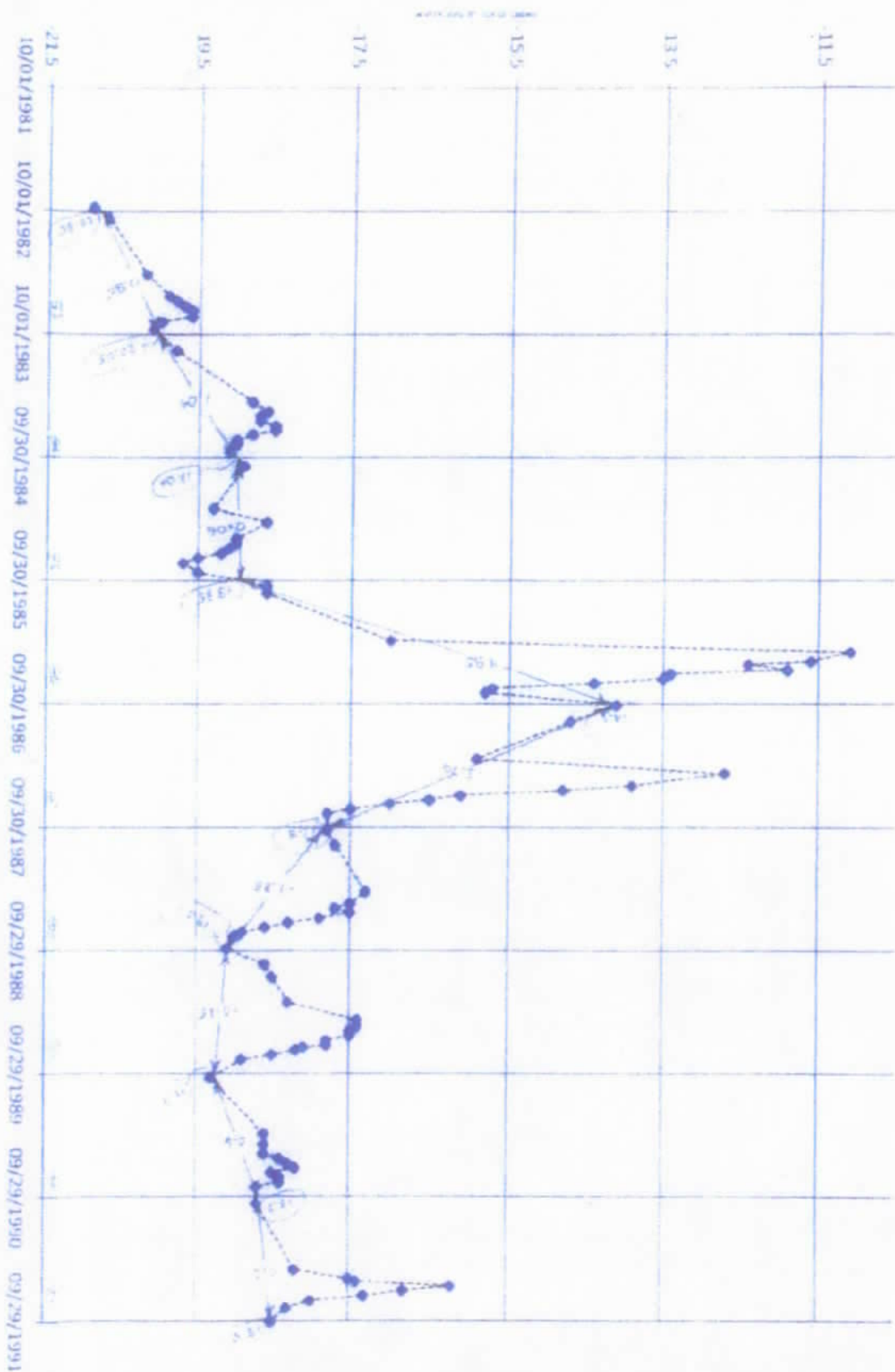
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## APPENDIX A

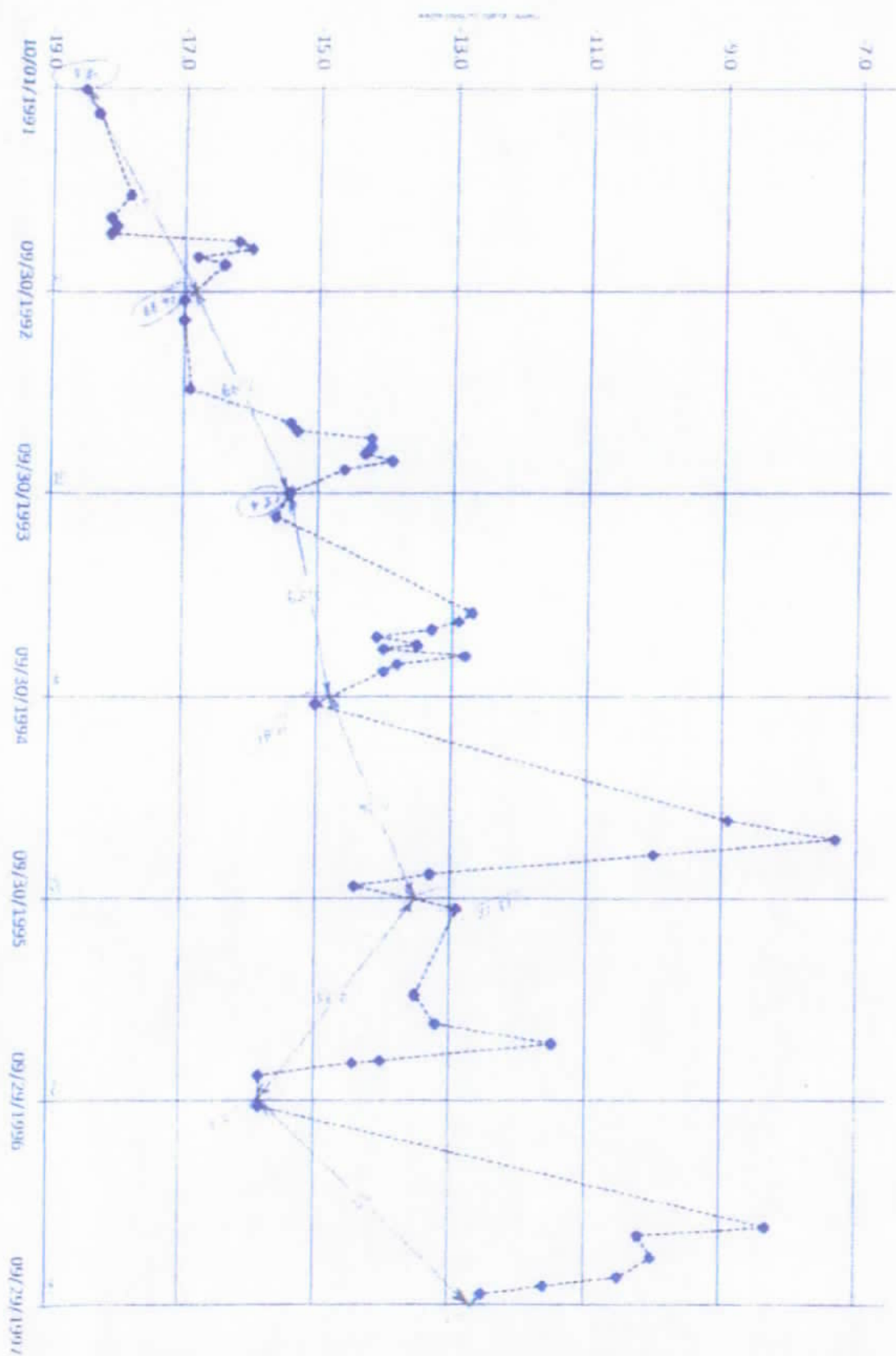
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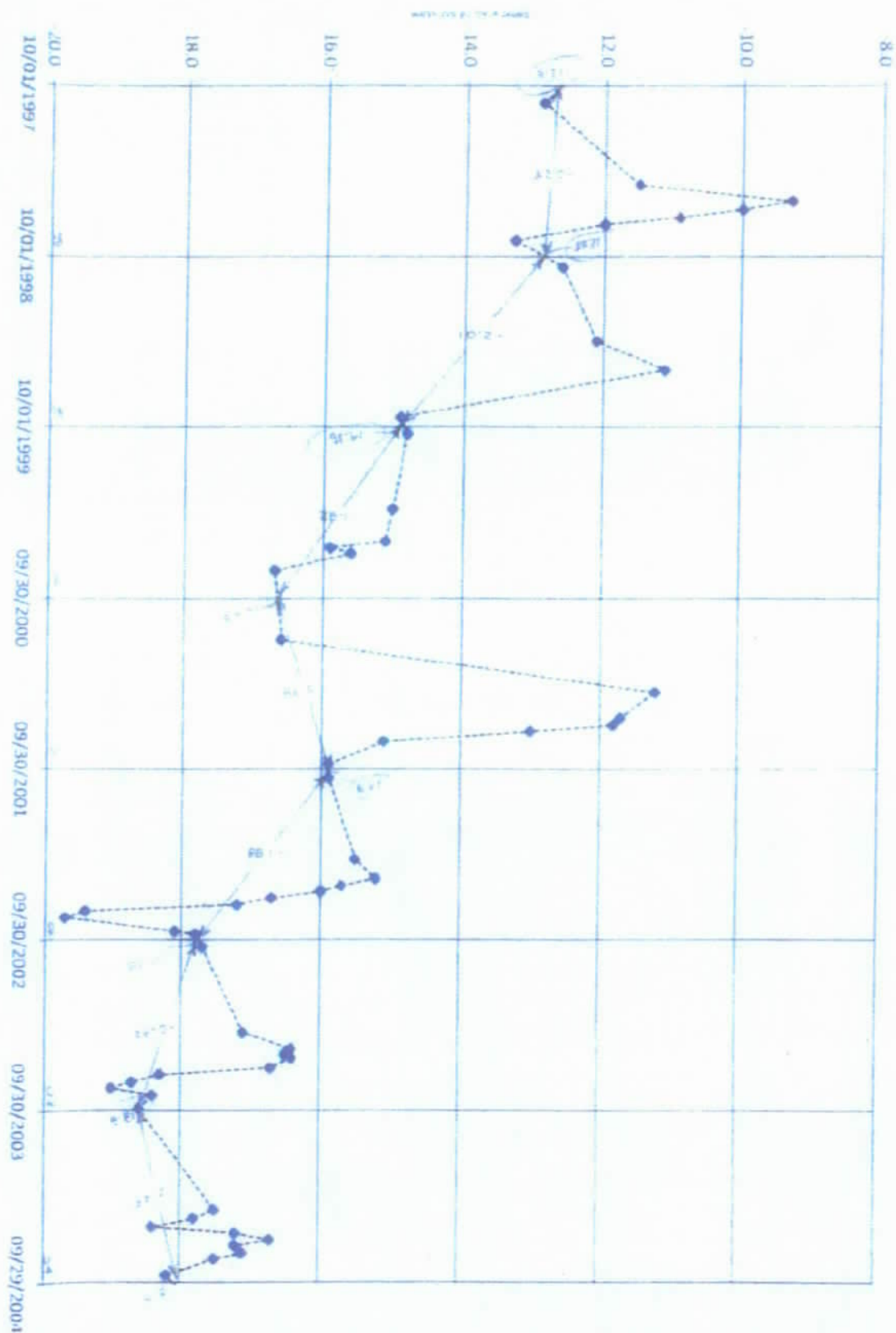
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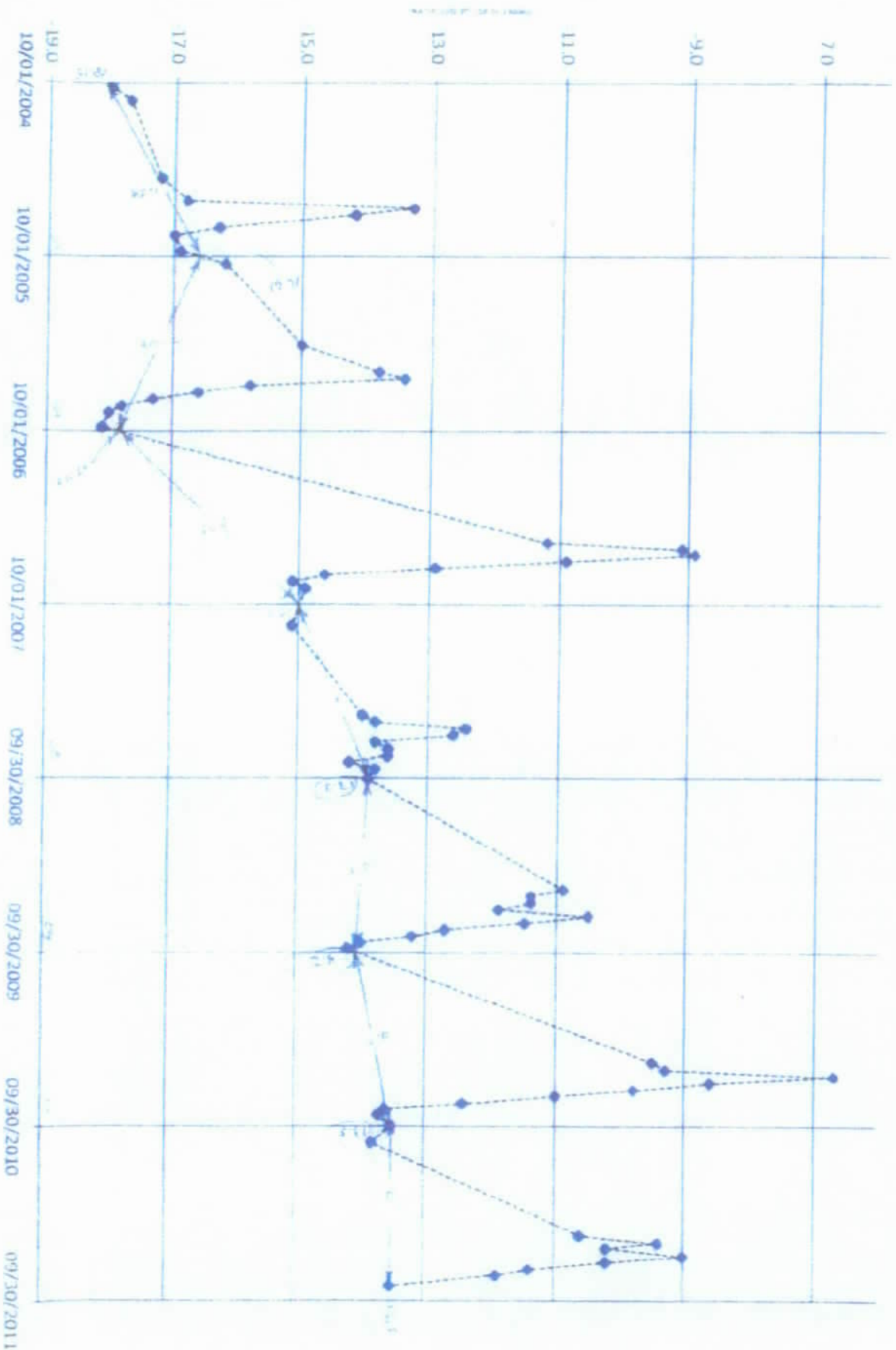
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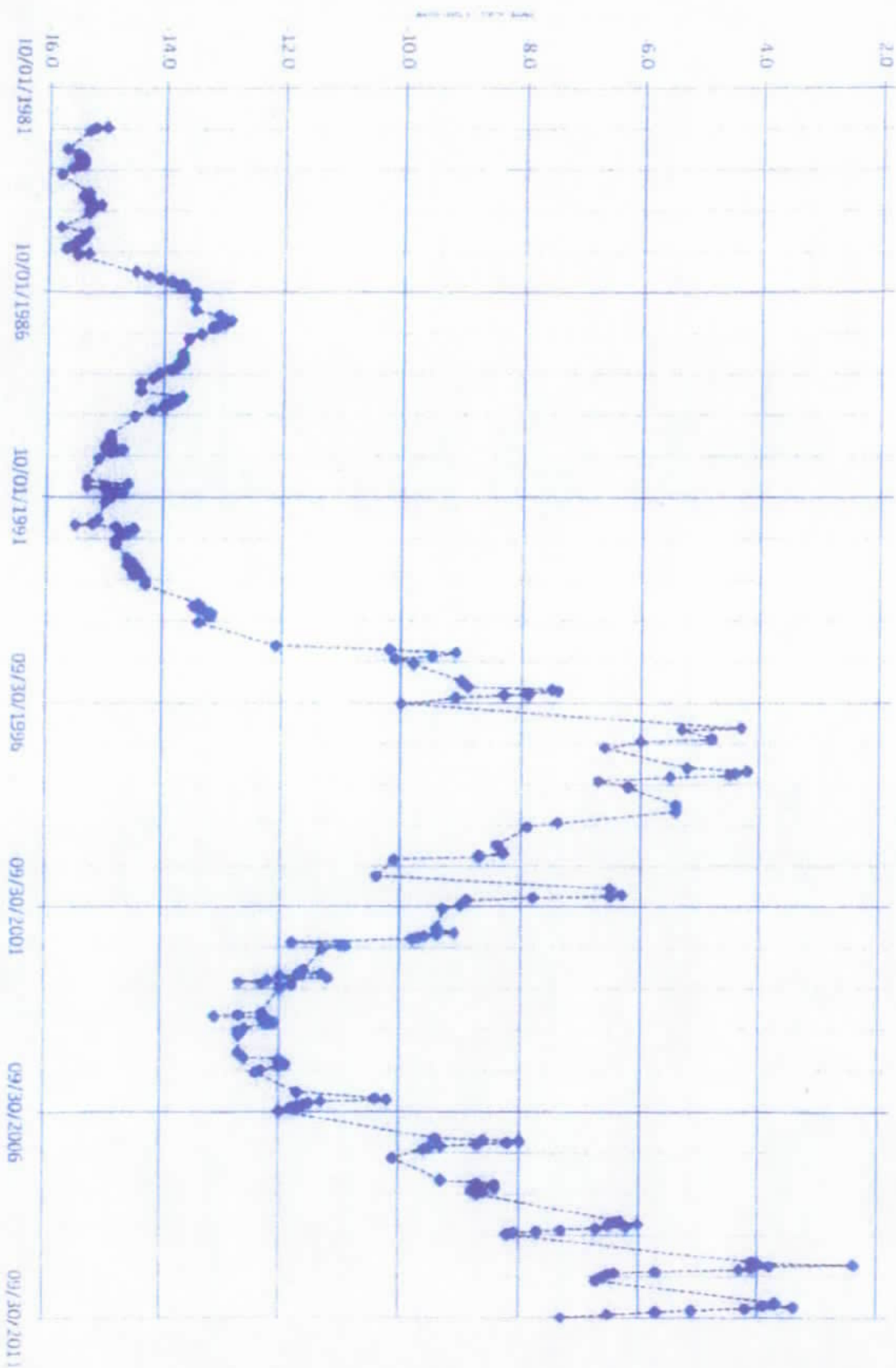


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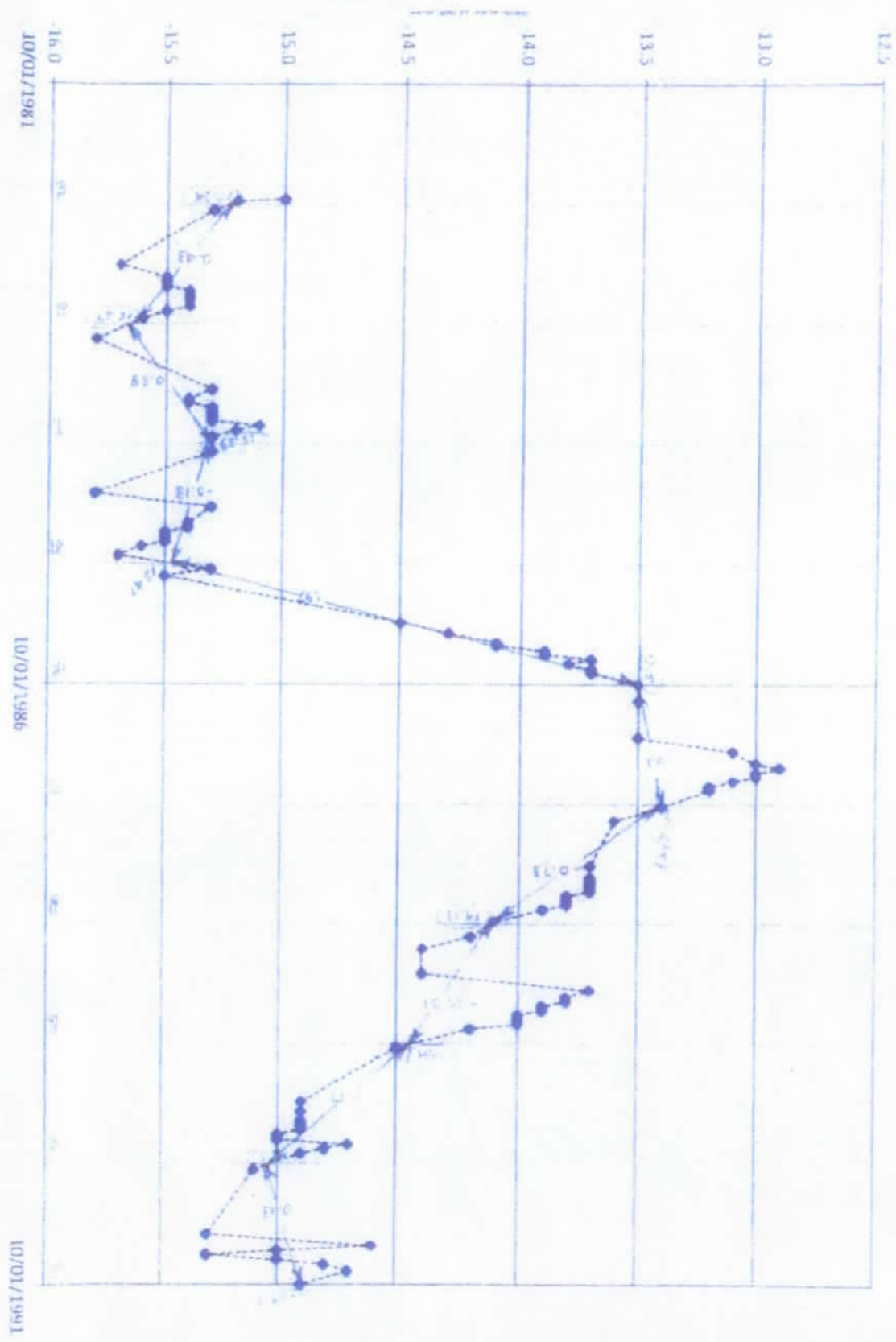


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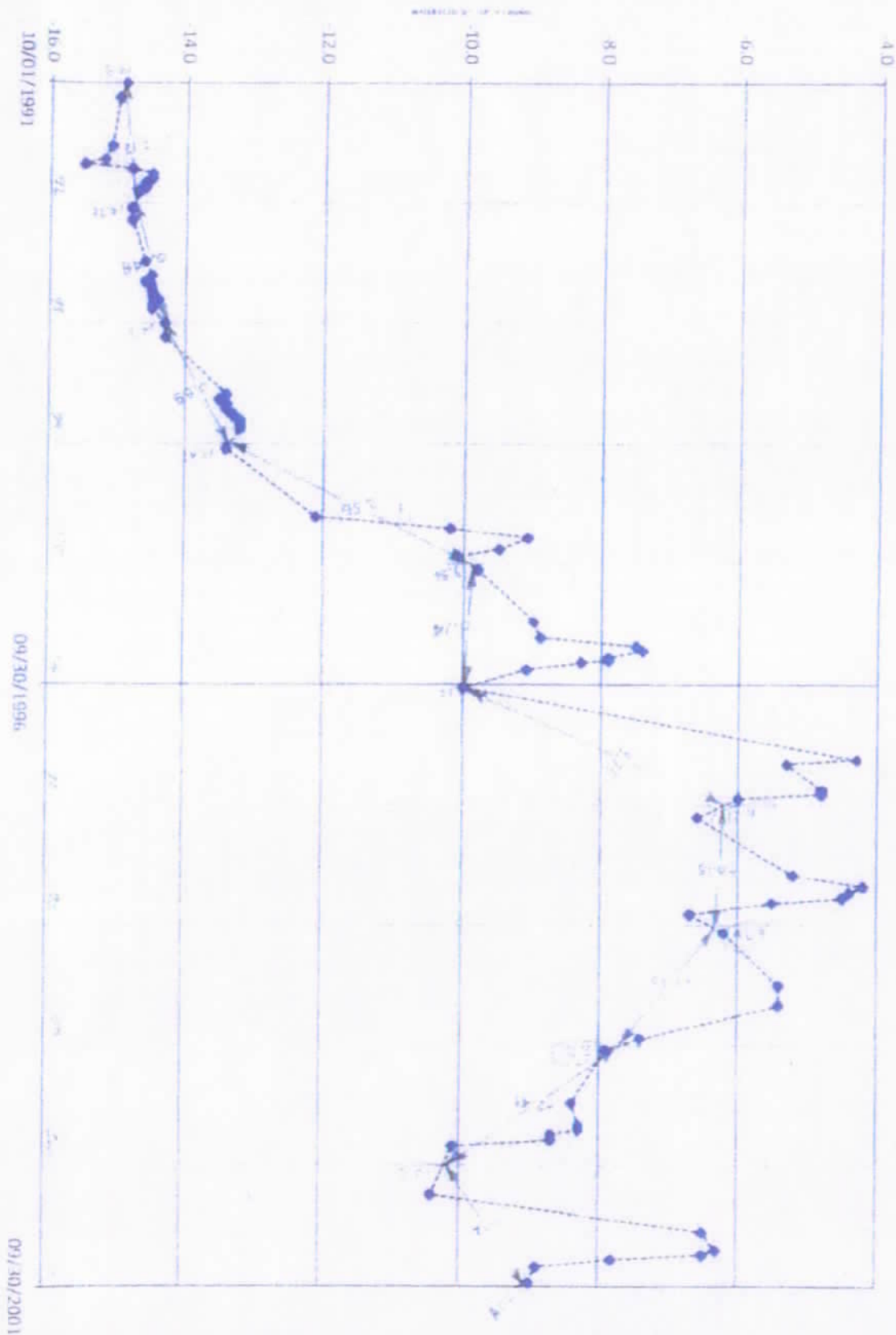
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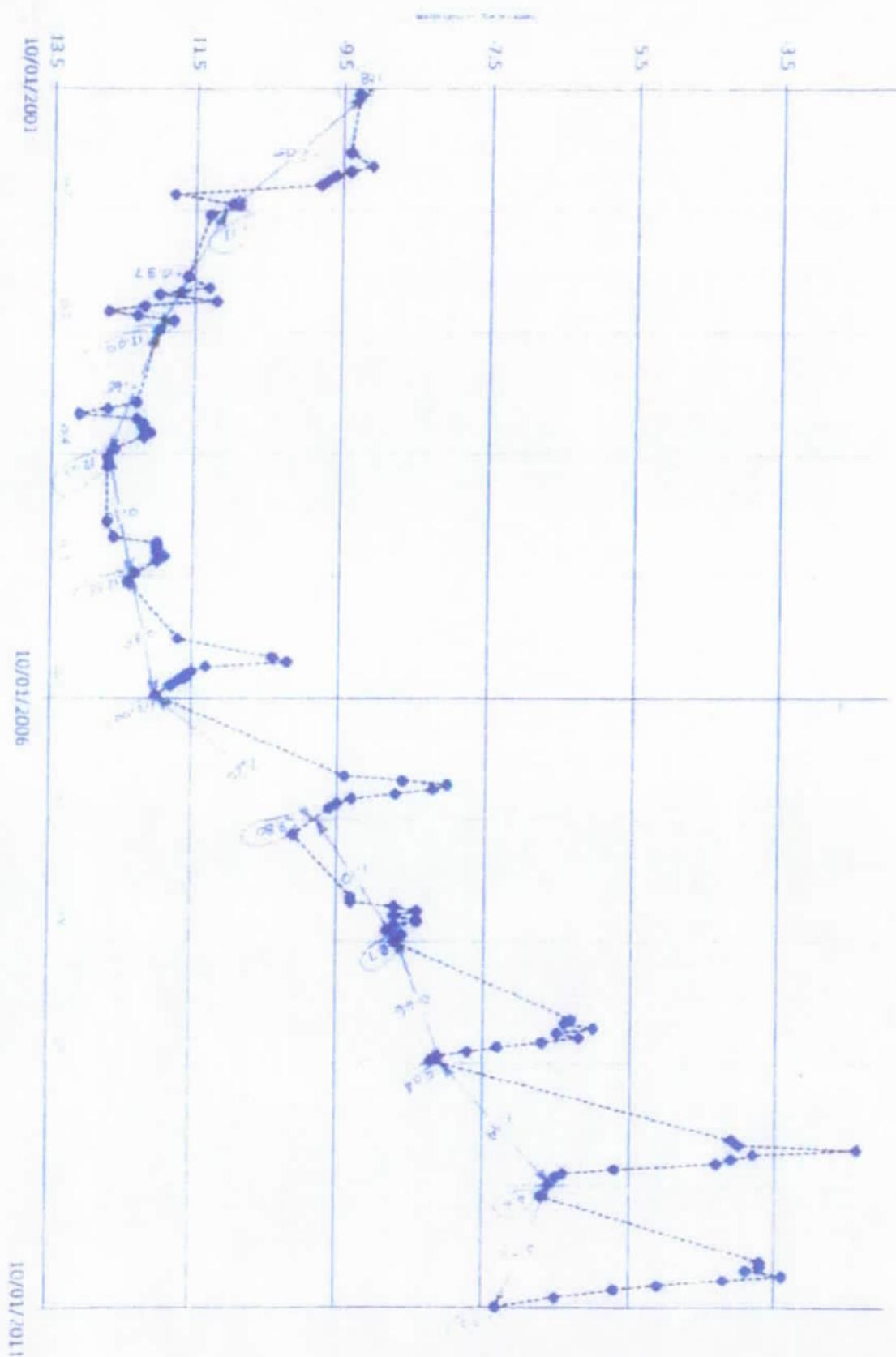


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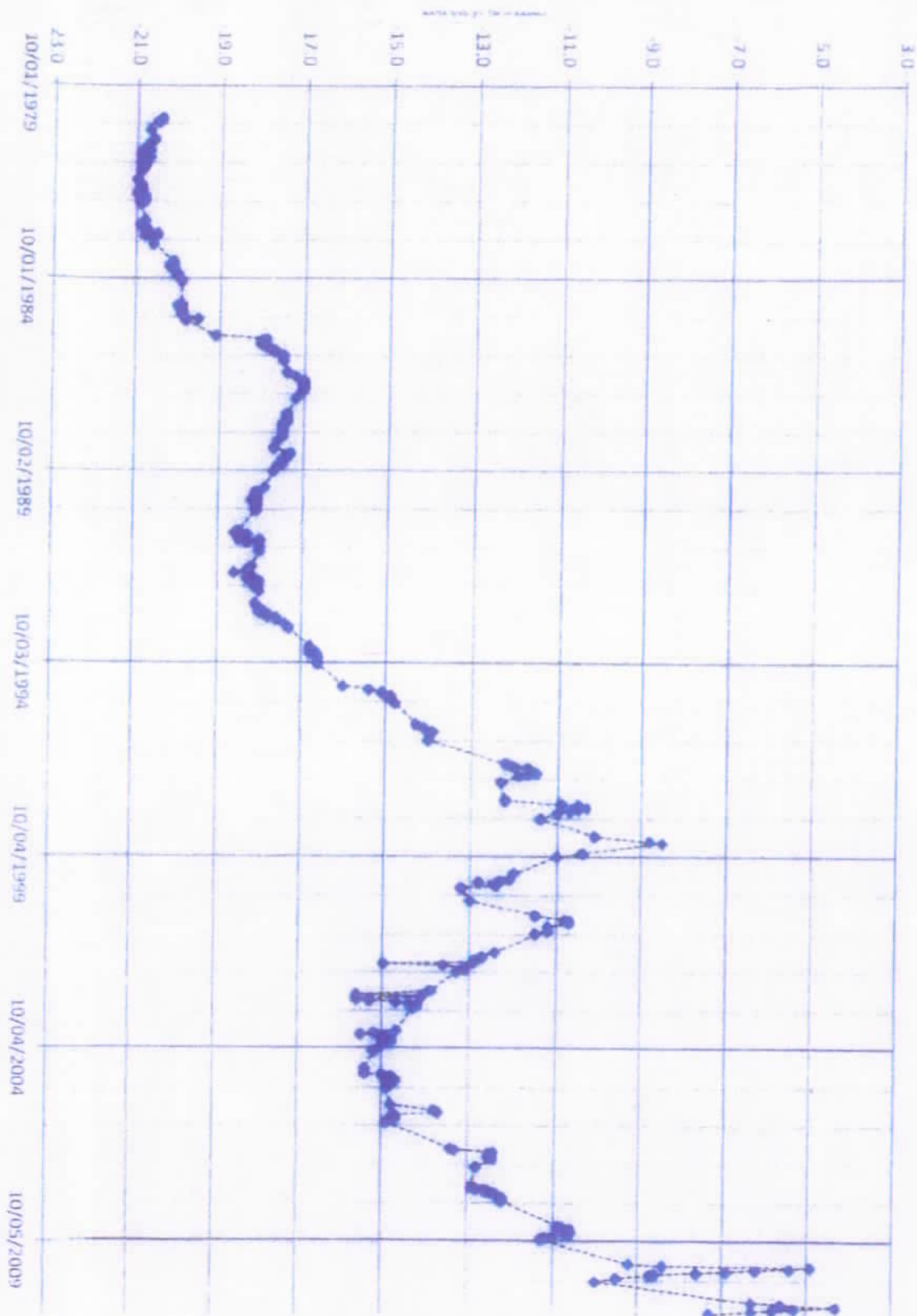
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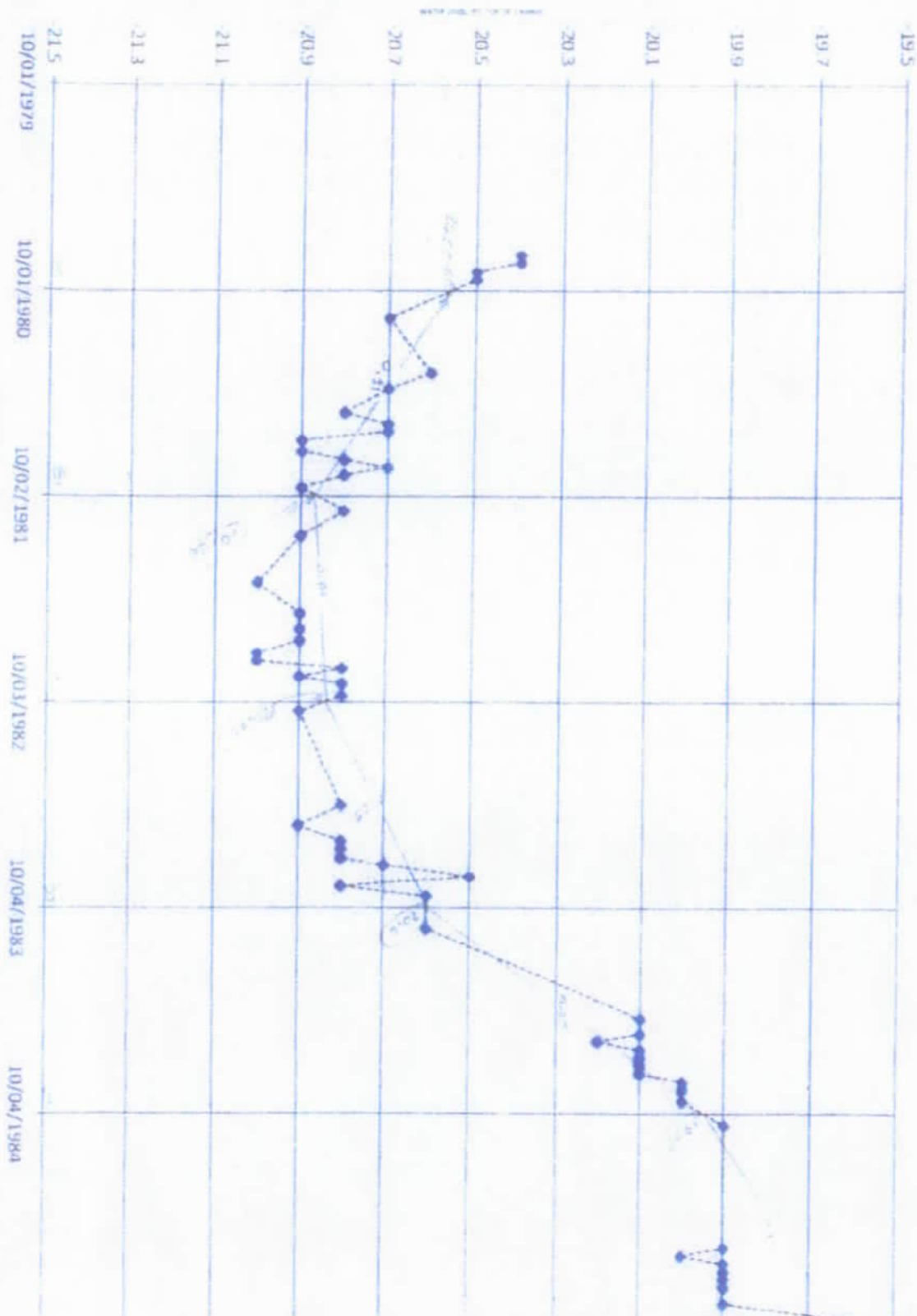


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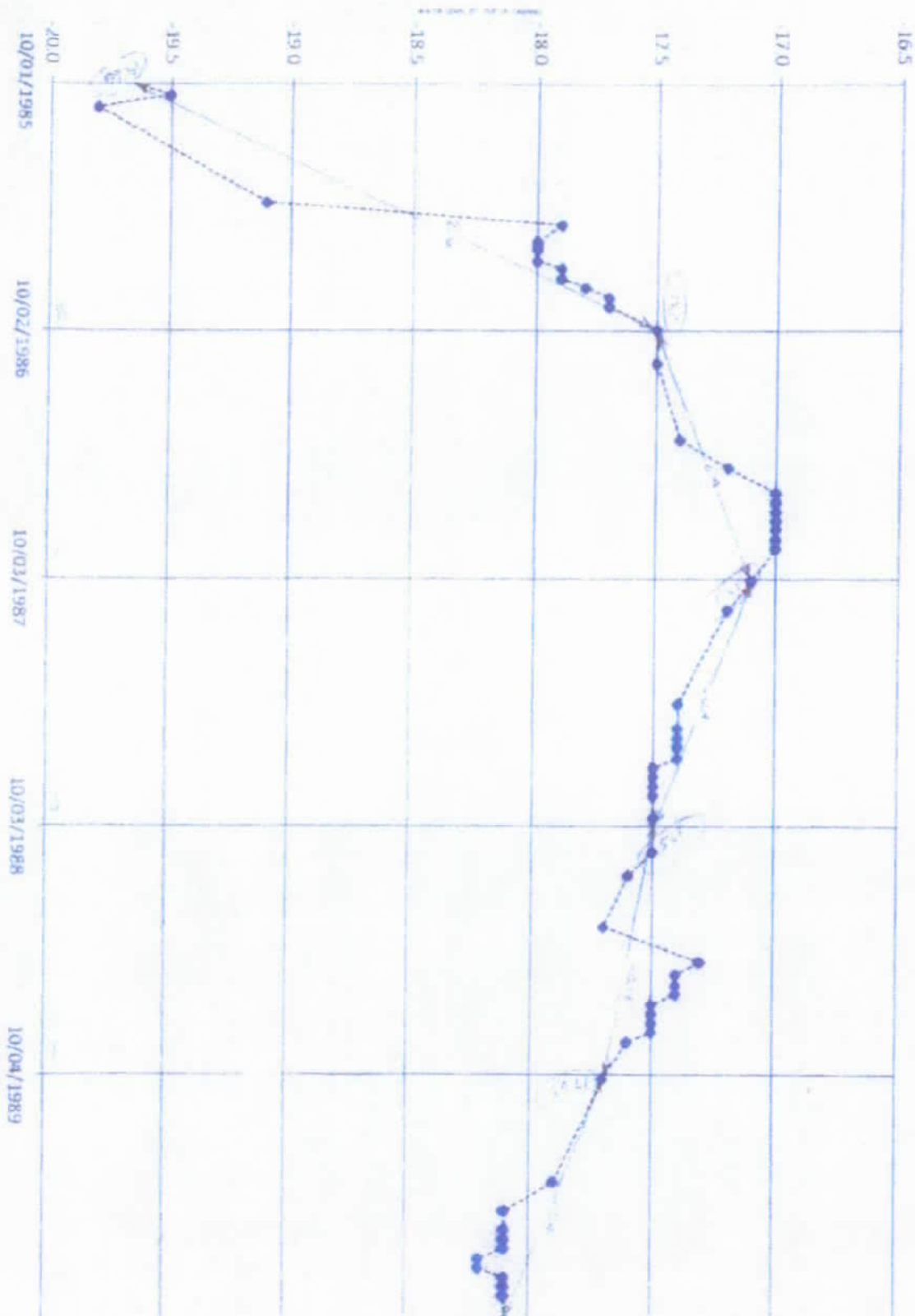
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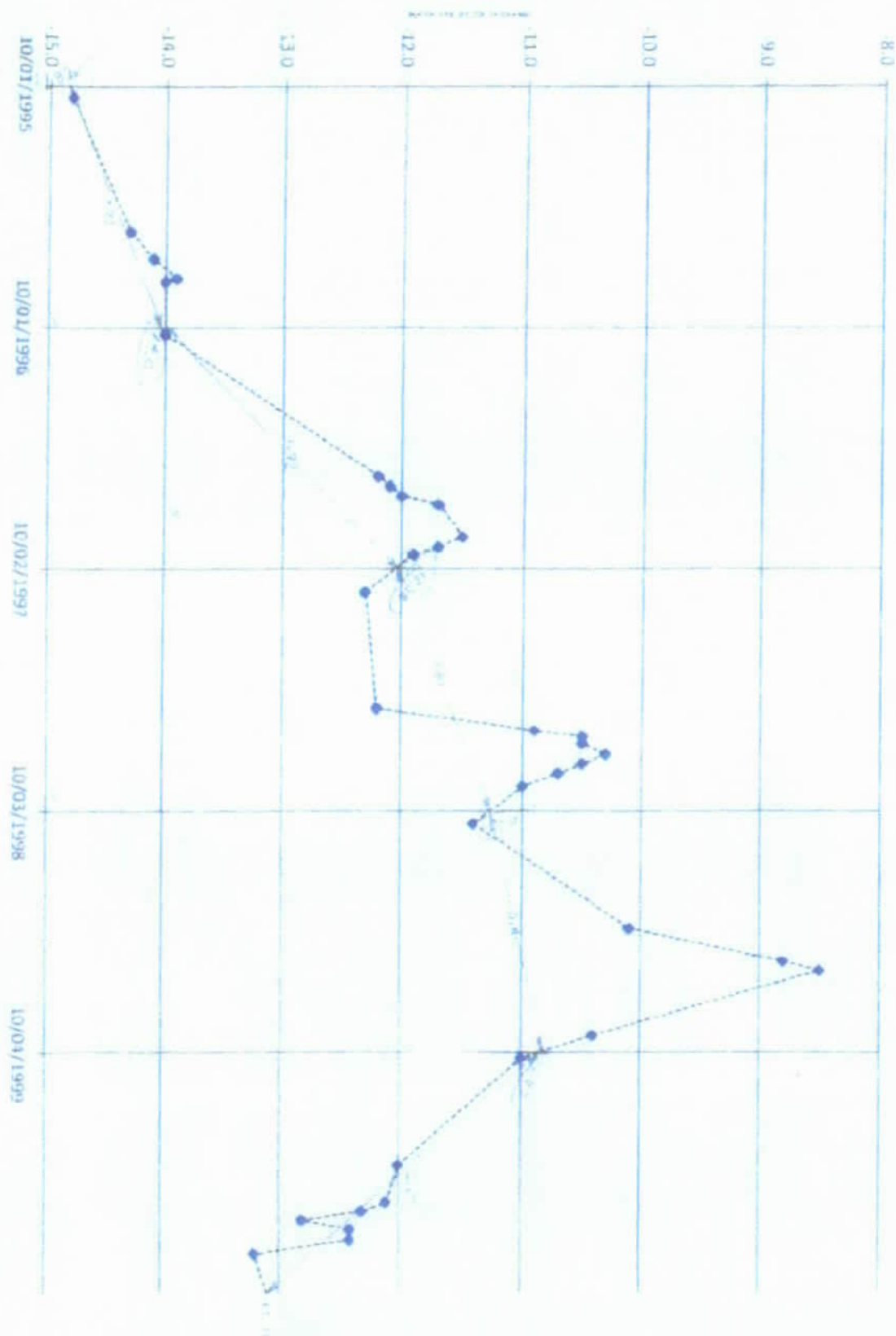


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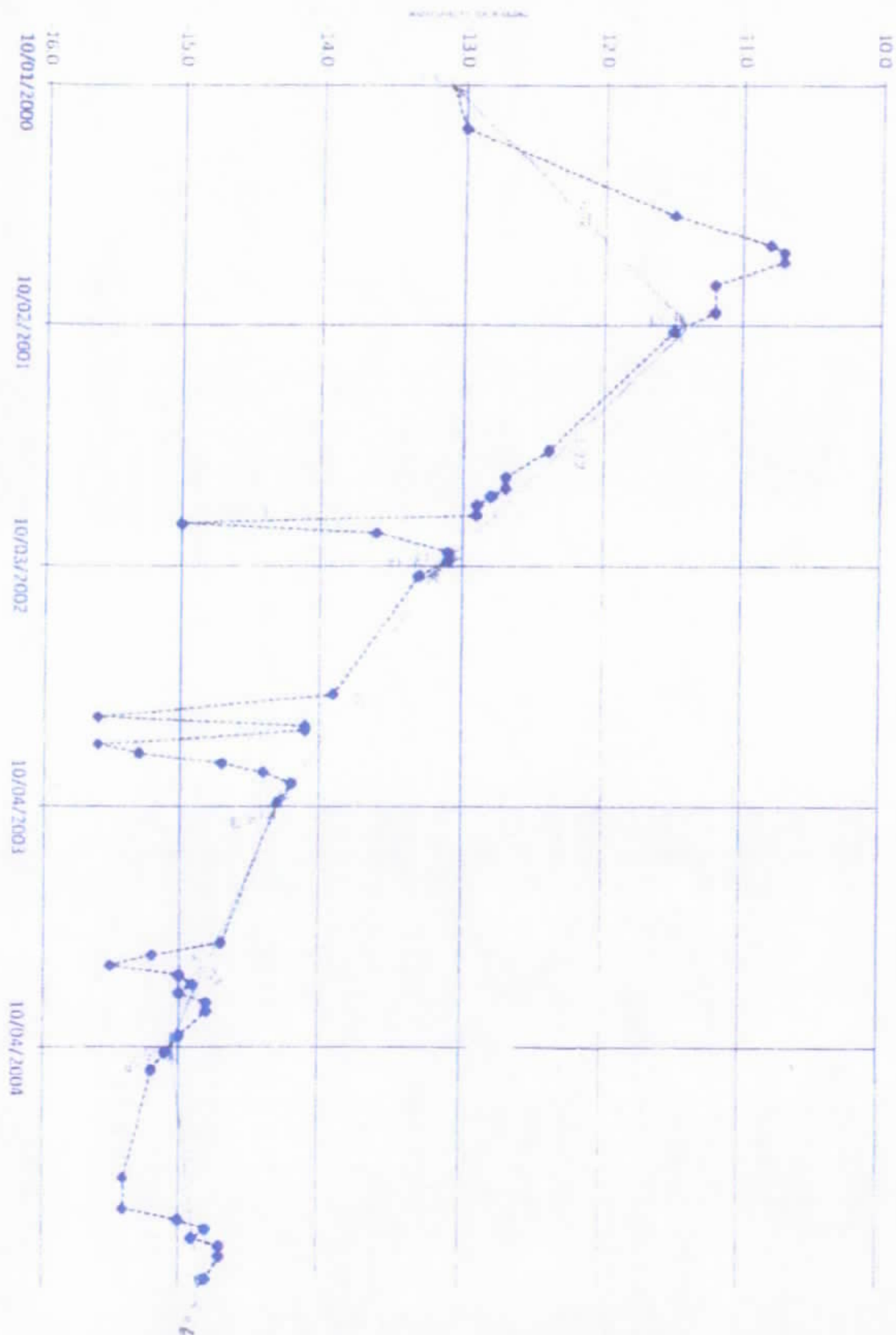


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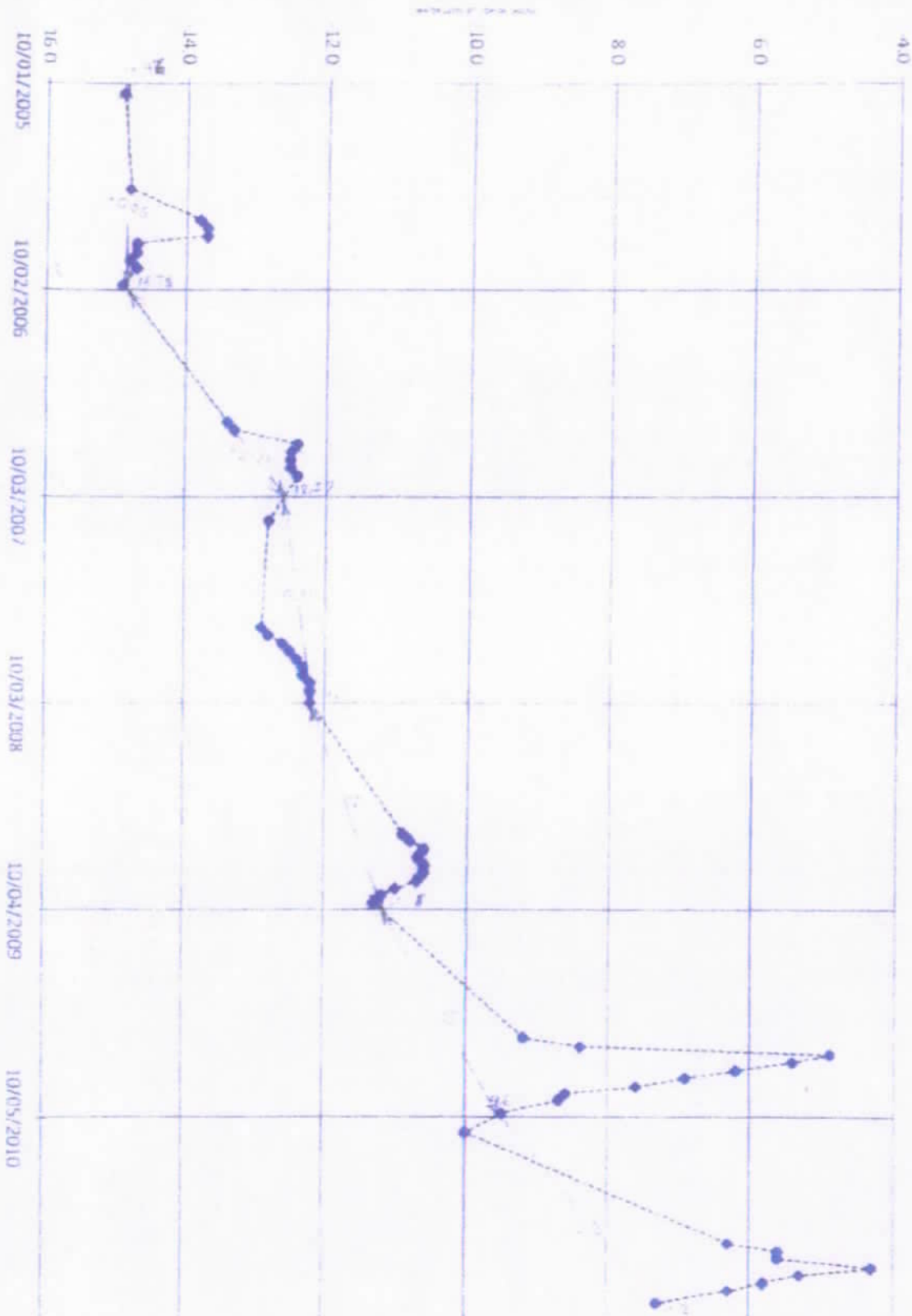
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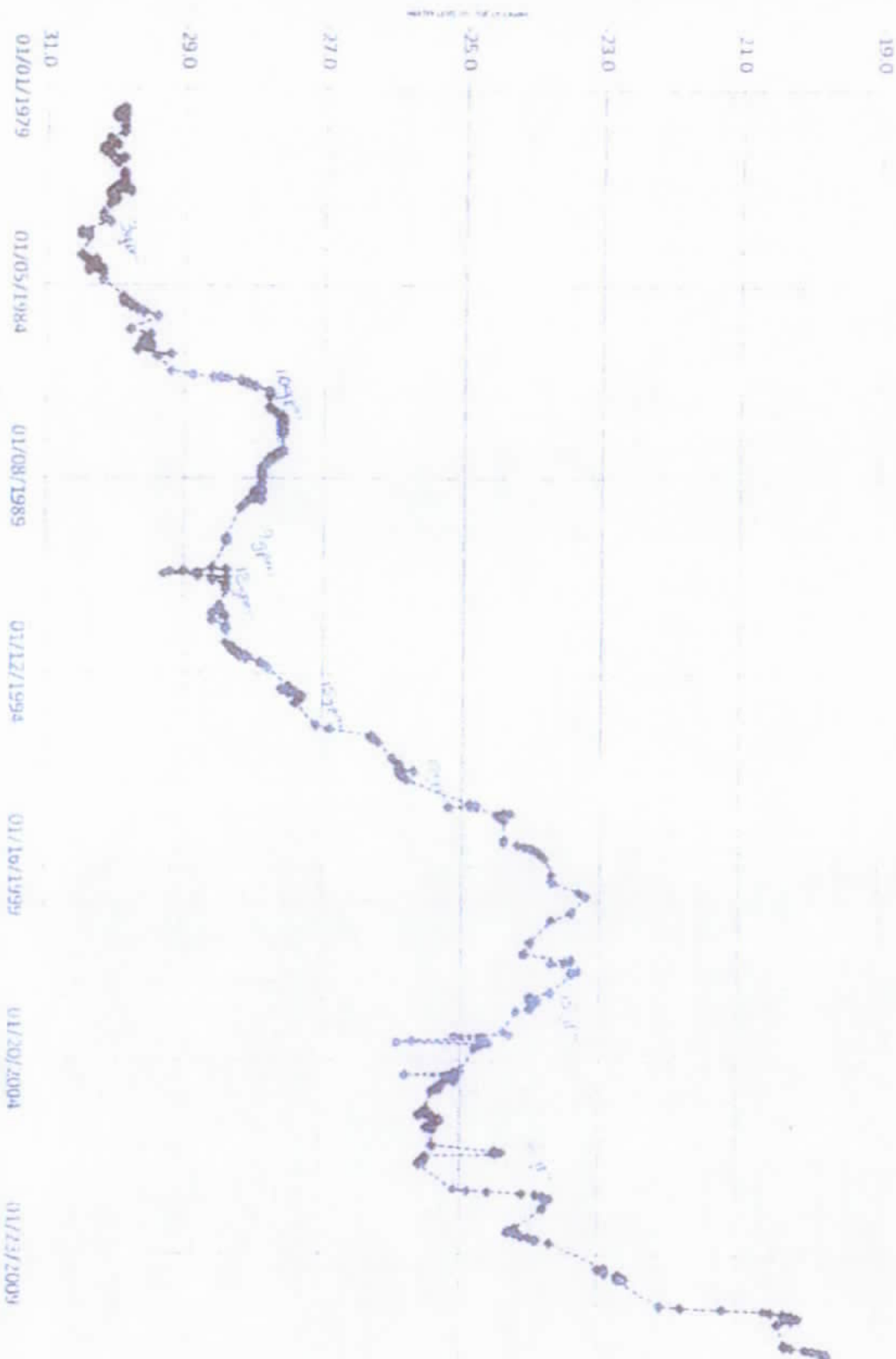


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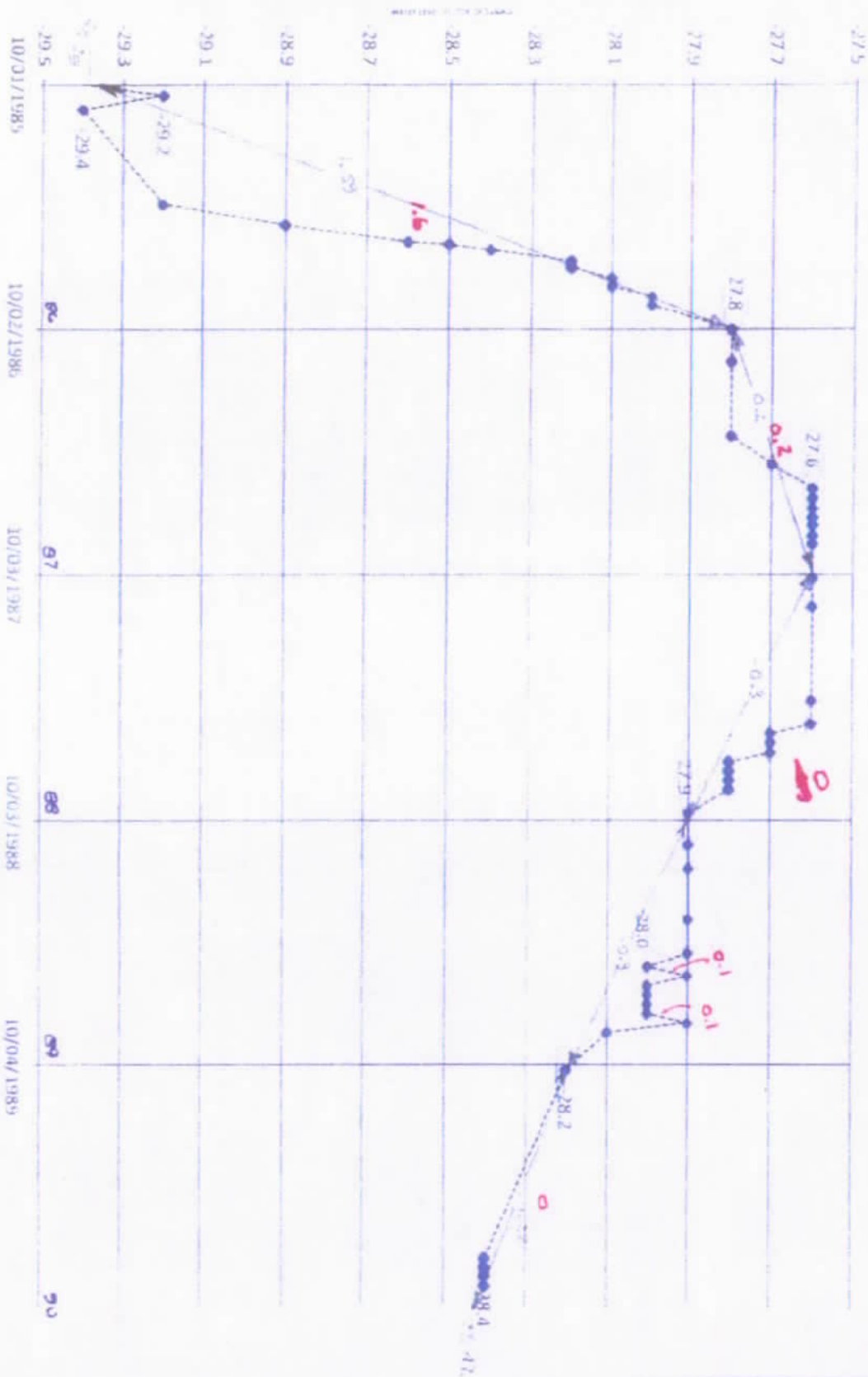
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## SP-78B

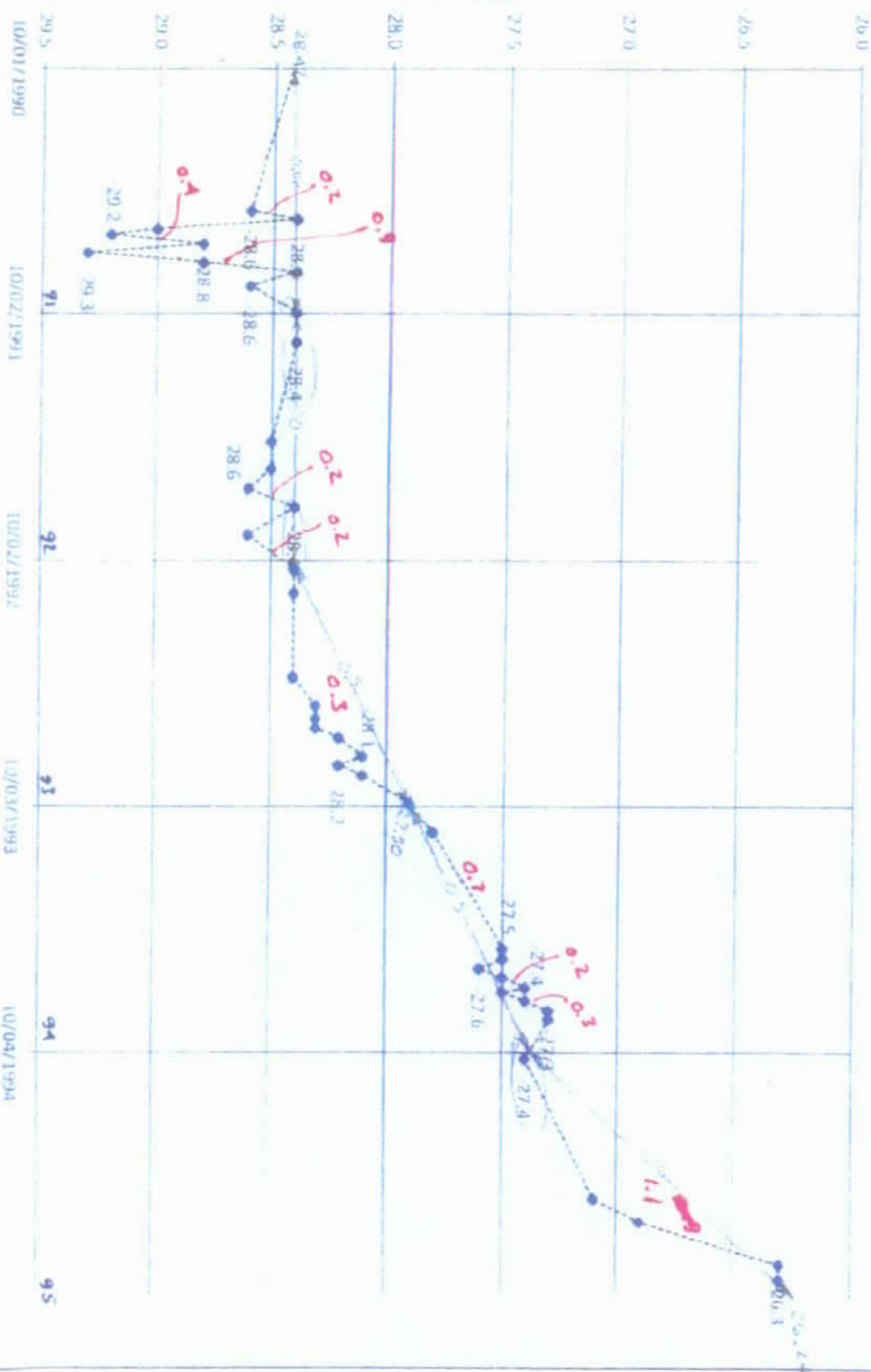


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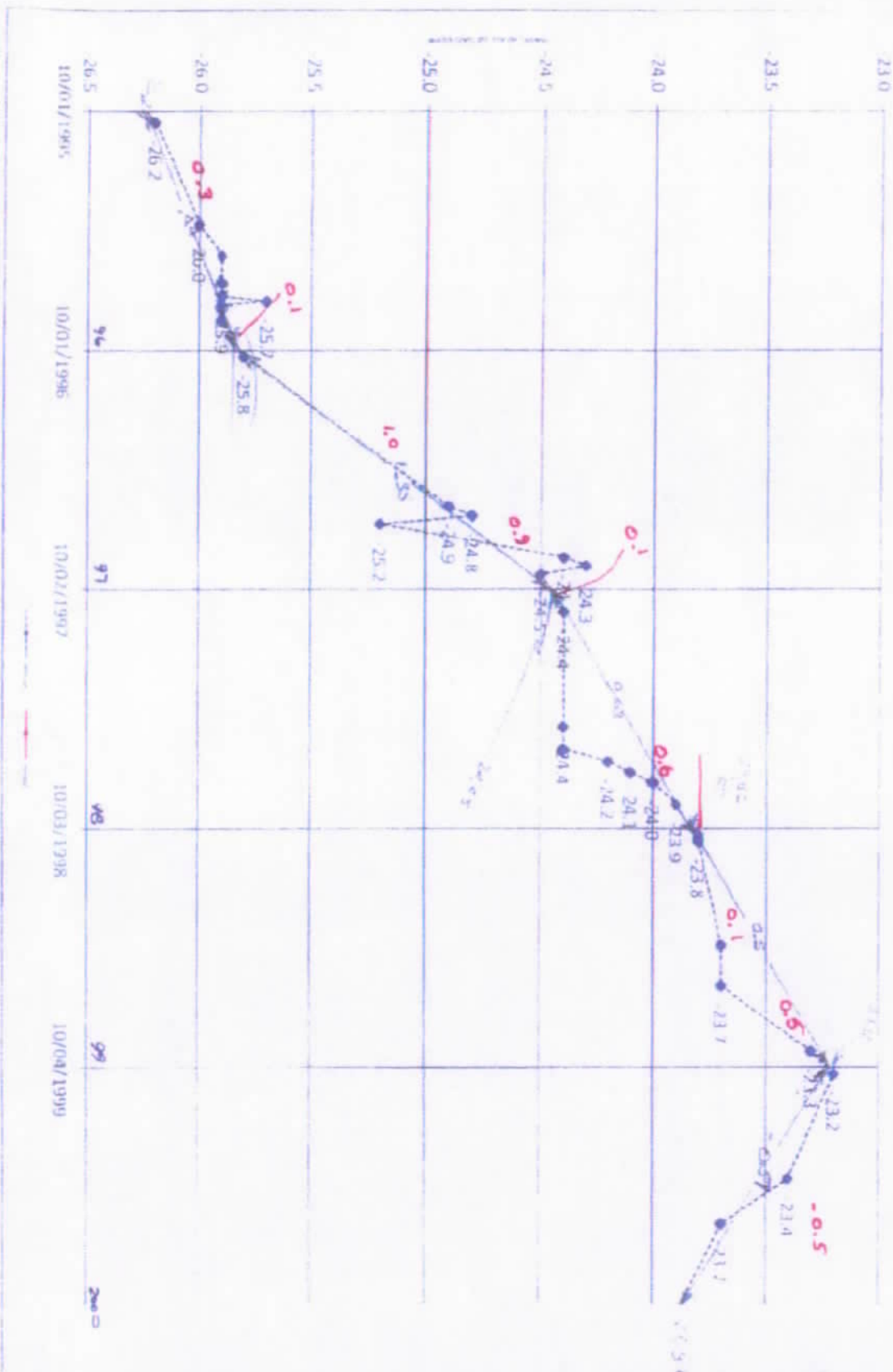


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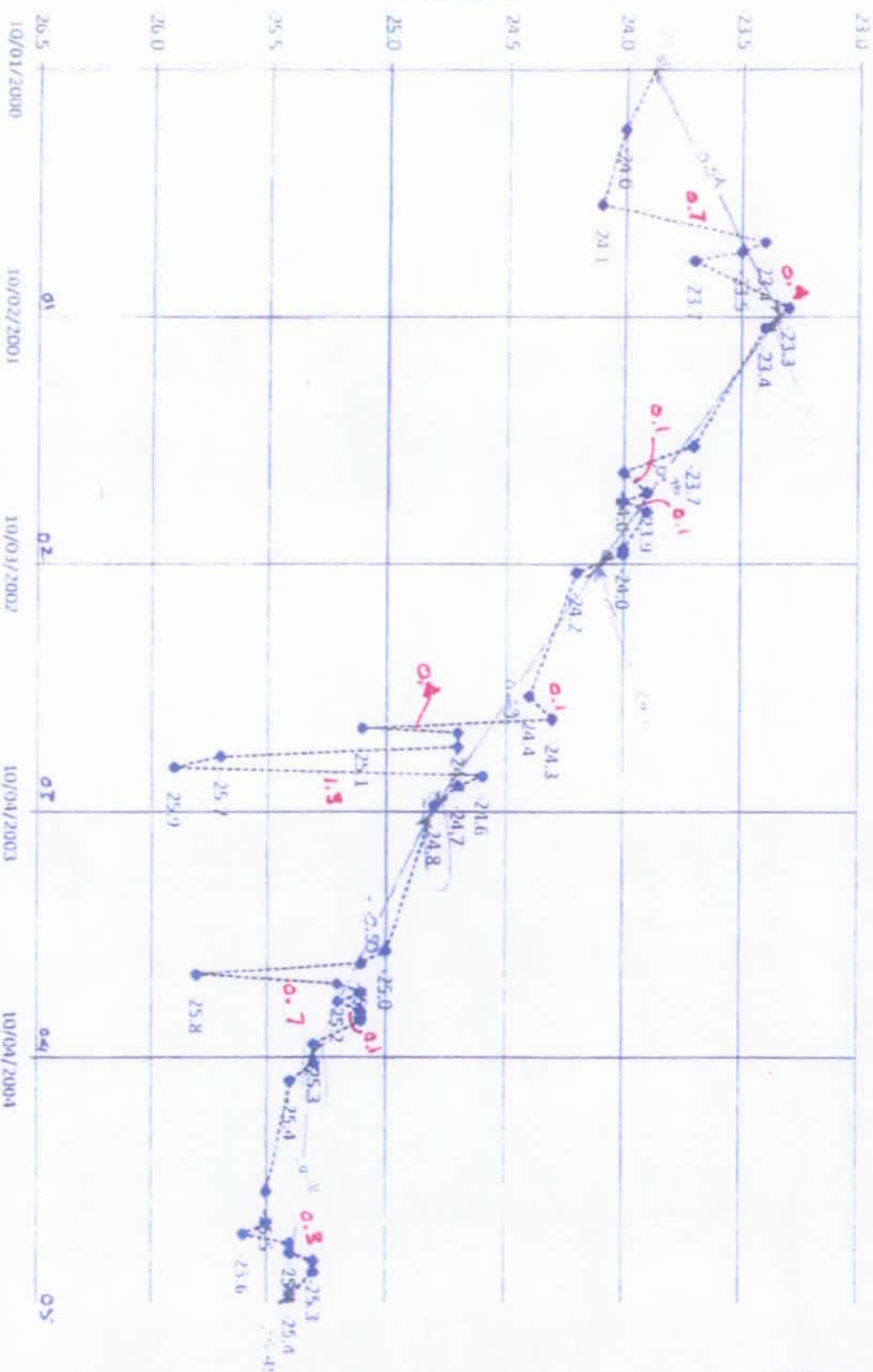


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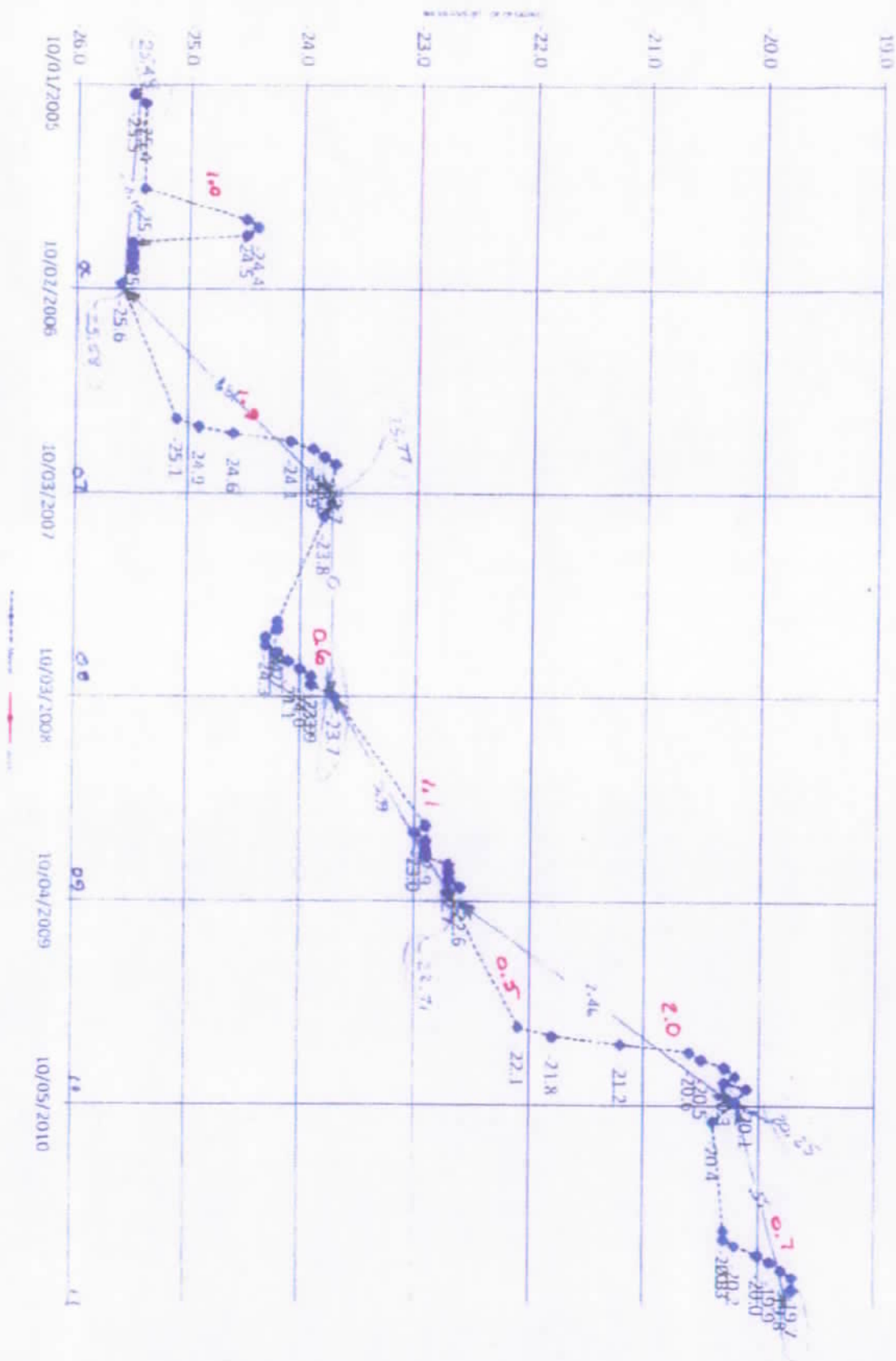


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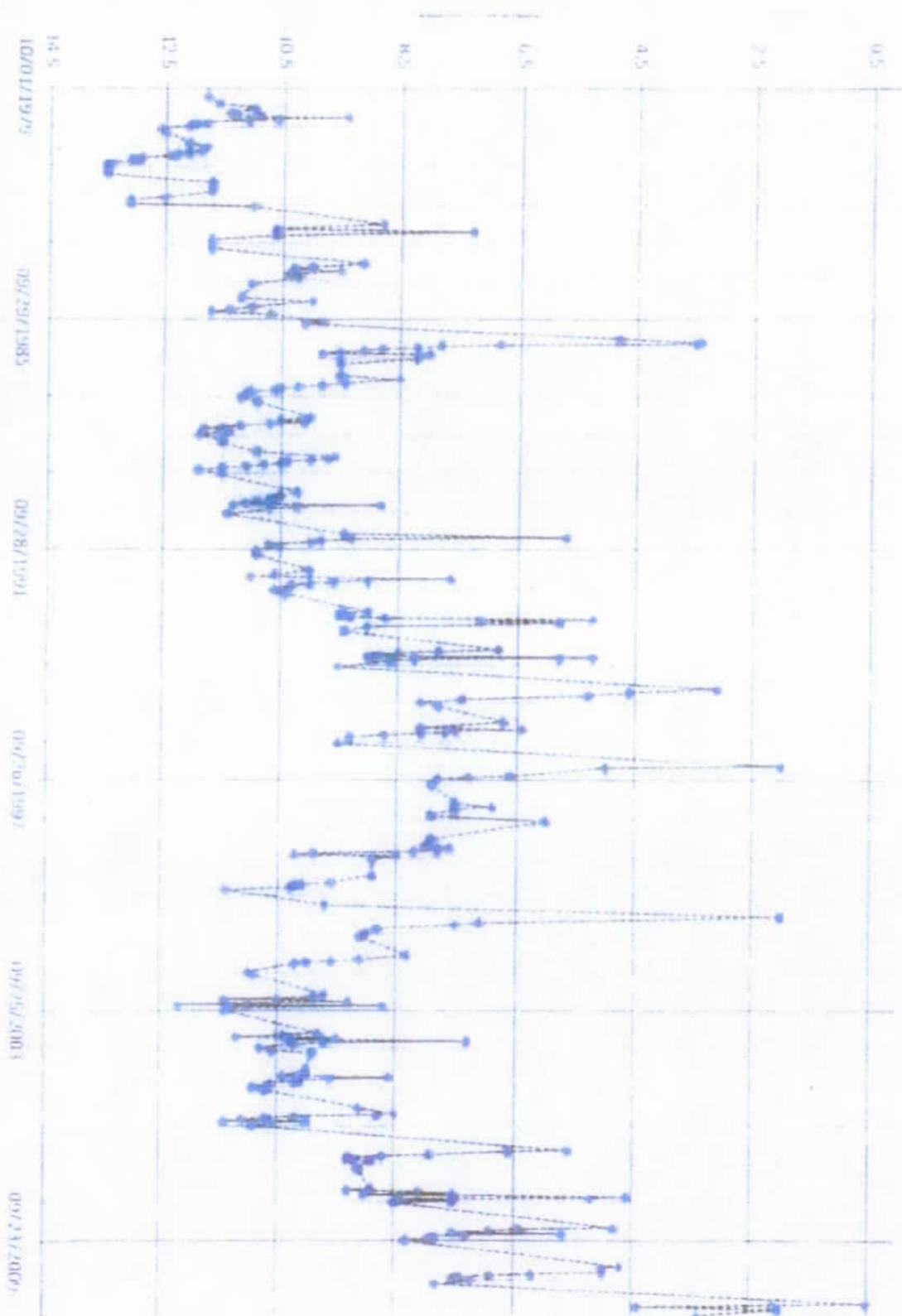
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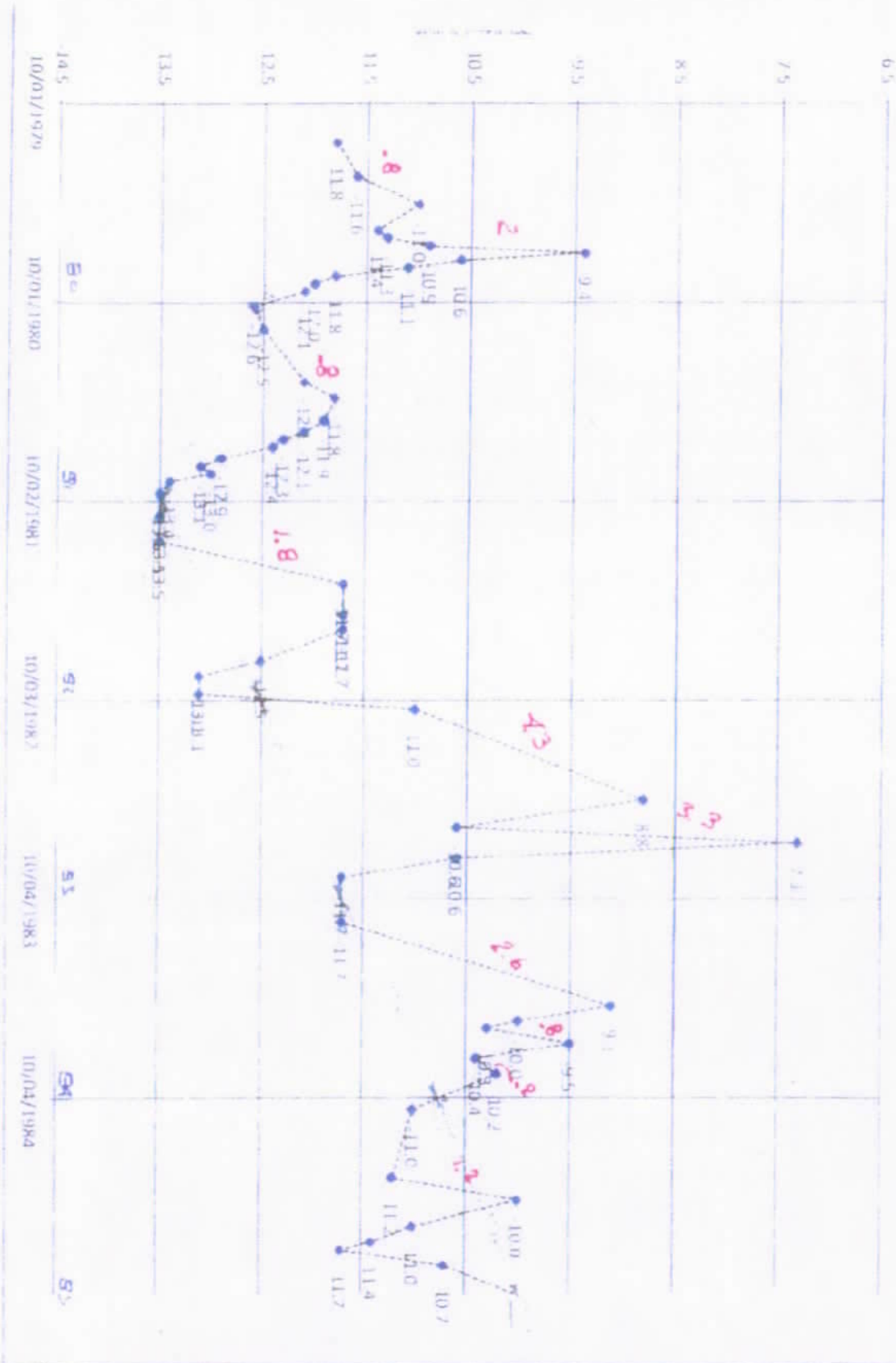
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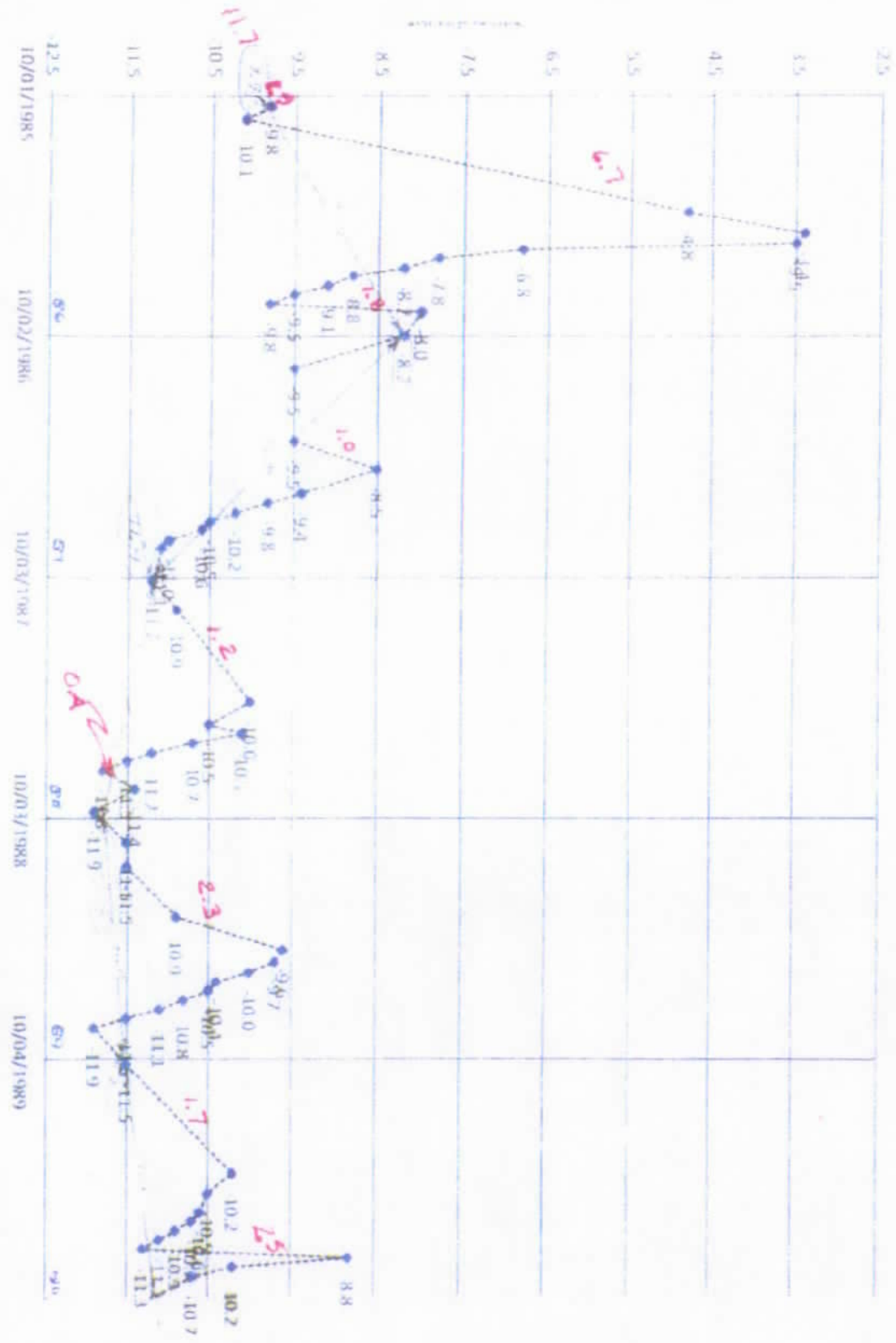
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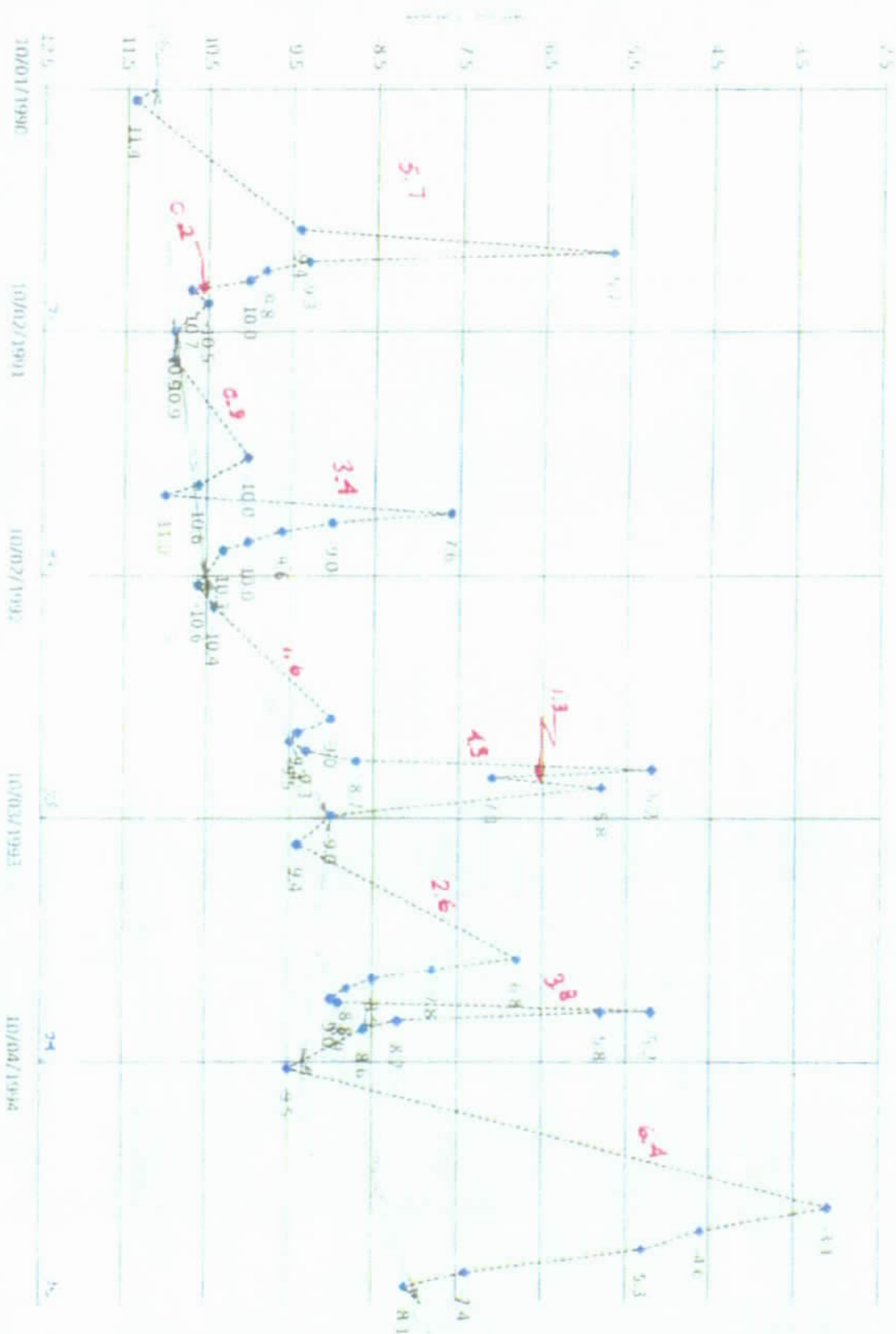
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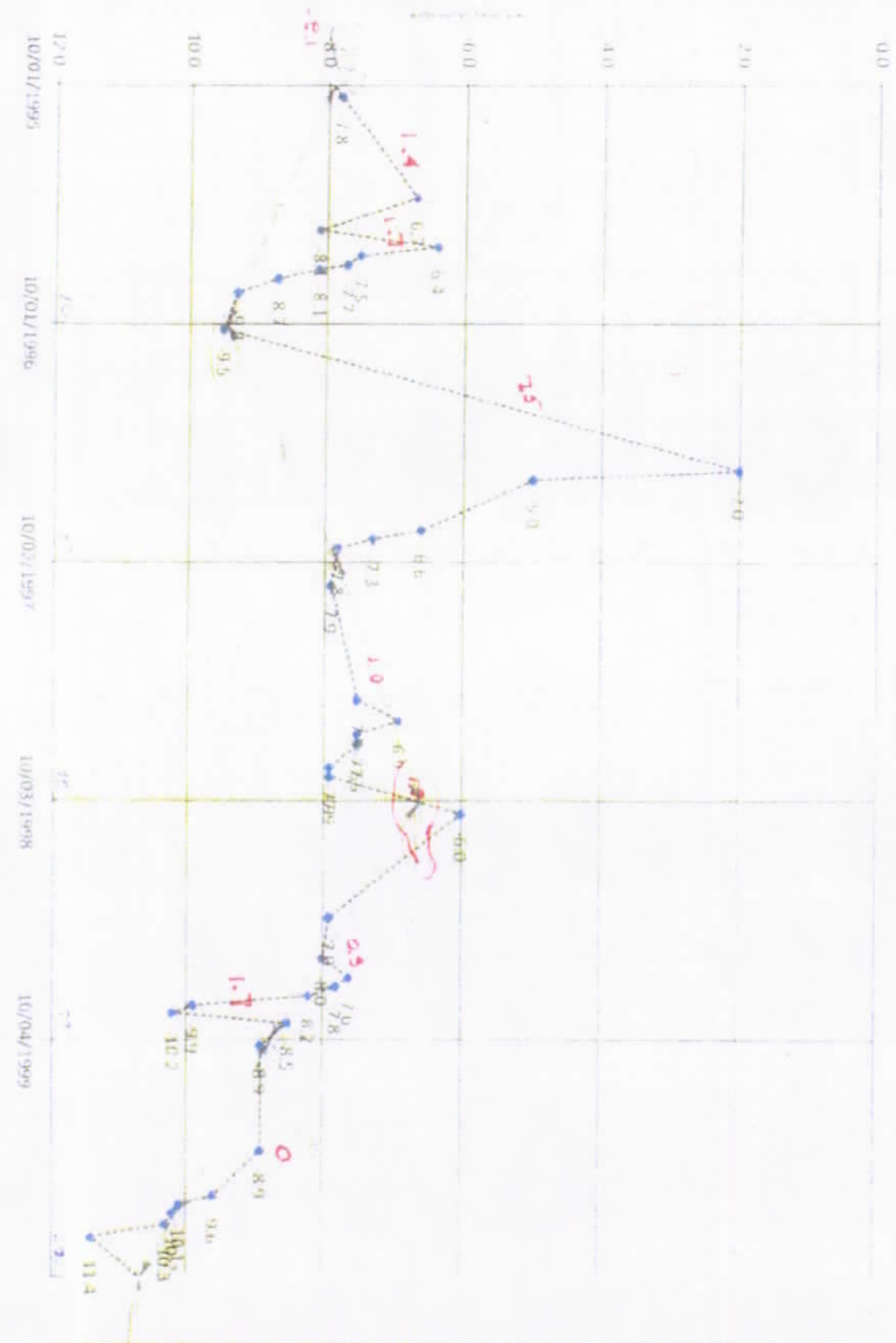
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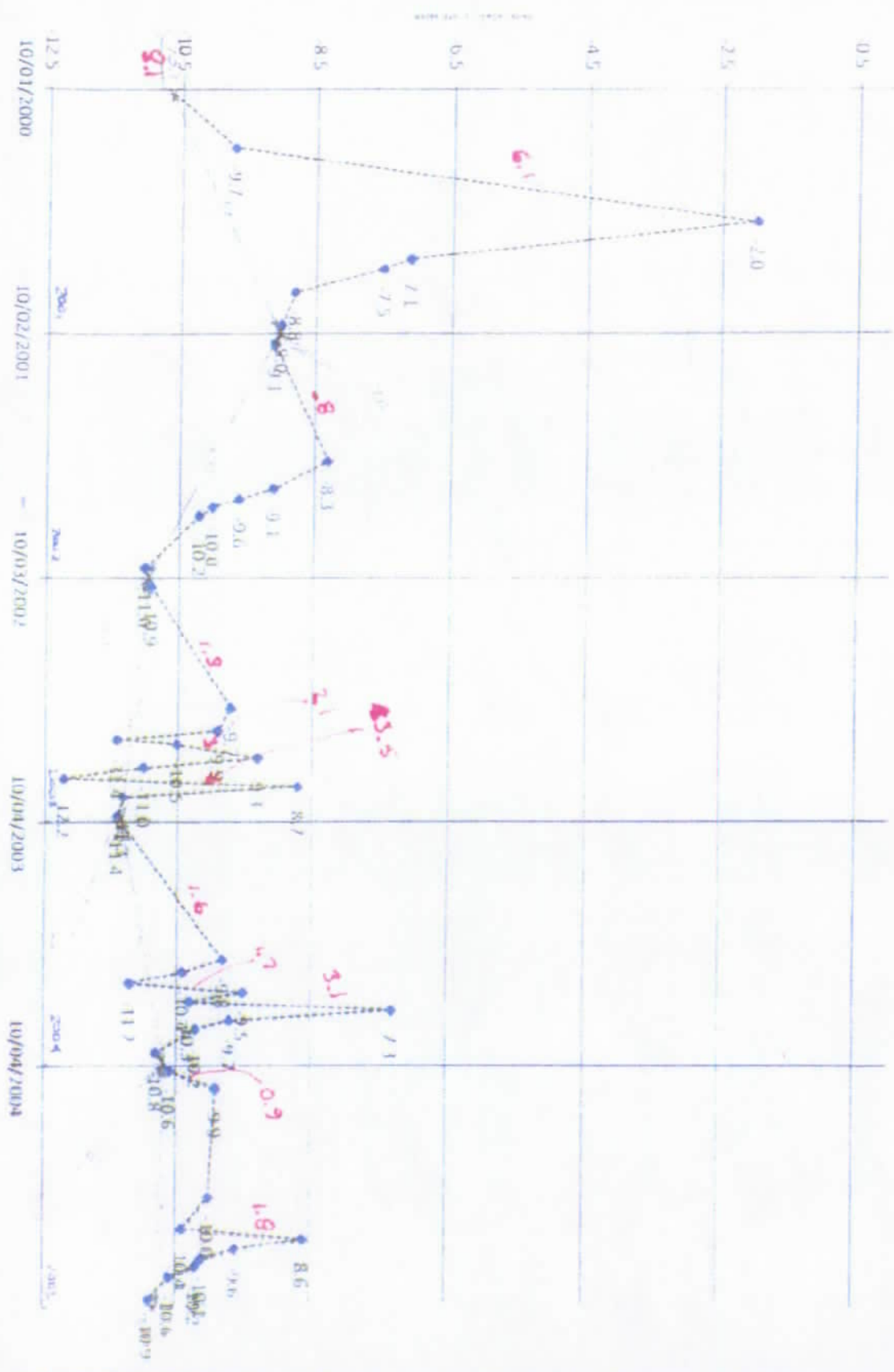
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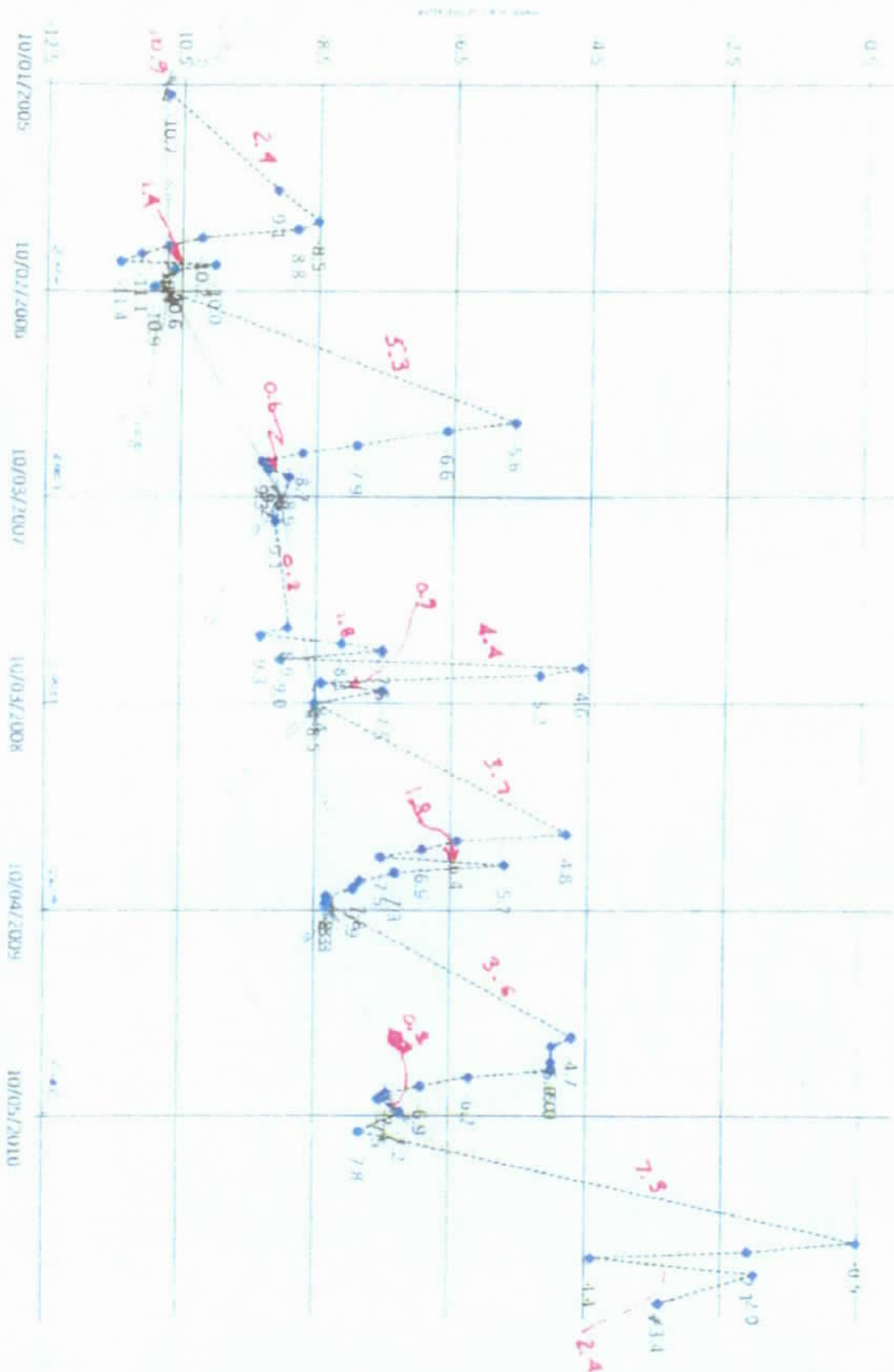
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FEB 16 2012

WATER RIGHTS  
PROGRAM

## Affidavit of Publication

STATE OF SOUTH DAKOTA,  
County of Spink: ss.

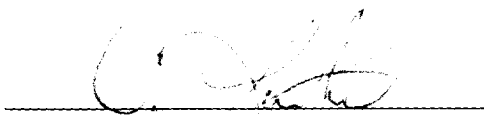
I, Mark E. Davis, of said County & State, being first duly sworn on oath, say that THE REDFIELD PRESS is a legal weekly newspaper as defined in Sec. 65.0508 South Dakota Code 1939, as amended by Chapter 298 of the Session of Laws of 1939, printed and published in the English language in the City of Redfield, in said County and State, by THE REDFIELD PRESS, and has been such newspaper during the time hereinafter mentioned, and that I Mark E. Davis, the undersigned, am Publisher of said newspaper in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit, and that the legal or official notice entitled:

### #157 Hearing Notice

A printed copy of which is hereto attached, was printed and published in said newspaper in 2 successive issues, to wit: The first publication being made on February 8th and the last publication being made on February 15th, that Seventy-seven and .49/100 Dollars, insures to the benefit of the publisher of THE REDFIELD PRESS, that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever.



Subscribed and sworn to before me this 15th day of February, 2012.



Notary Public, South Dakota

My commission expires 04/06/2016

## Hearing Notice

#157

### NOTICE OF HEARING ON APPLICATION NO. 7293-3 TO APPROPRIATE WATER

Notice is given that Jeffery Gatzke, 39334 187th, Hitchcock SD 57348 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second from one well to be completed into the Tulare:Hitchcock Aquifer (60 feet deep) located in the center of the NW 1/4 Section 15 for irrigation of 160 acres located in the NW 1/4 Section 15; all in T114N-R63W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends DENIAL of Application No. 7293-3 because 1) SDCL 46-6-3.1 states that the annual withdrawal of groundwater shall not exceed the average estimated annual recharge to the aquifer; 2) the Water Management Board adopted finding of fact, conclusions of law and a final decision on March 11, 2008 that the Western Spink and Hitchcock Management Units of the Tulare Aquifer are fully appropriated; 3) since the 2008 Board decision, there has not been a change in the appropriative status of water rights/permits within the aquifer; 4) it is not in the public interest to permit additional groundwater withdrawals in excess of the average annual recharge of the Tulare:Hitchcock Aquifer.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 27, 2012. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will consider this application at 1:00 p.m. March 7, 2012 at the Matthew Training Center, 523 E. Capitol Ave., Pierre SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The March 7, 2012 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by February 27, 2012.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by February 27, 2012, at the above Water Rights Program address to request copies of information pertaining to this application. Notice is given to individuals with disabilities that this hearing is being held in a physically accessible place. Please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing. The telephone number for making arrangements is (605) 773-3352.

Since this application does not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case may not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by February 27, 2012.

This application is made pursuant to SDCL ~~46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16~~; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, ~~46-2A-15, 46-2A-20, 46-2A-21~~; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Steven M. Pirner, Secretary  
Department of Environment and  
Natural Resources

Published twice at an approximate  
cost of \$77.49. (Feb 8, 15)



DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov

February 3 2012

Redfield Press  
PO Box 440  
Redfield SD 57469

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7293-3 to Appropriate Water to be published twice. Please publish the first notice on February 8, 2012 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Jeffrey Gatzke, 39334 187<sup>th</sup> St., Hitchcock SD 57348 (Ph # 605-472-0822).

**Please send the Water Rights Program the first publication immediately.** The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

  
Eric Gronlund  
Natural Resources Engineer  
605 773-3352

enclosures

-----CUT HERE-----

No. 7293-3

TO: Eric Gronlund  
Water Rights Program  
Joe Foss Building  
Pierre SD 57501-3181

Date \_\_\_\_\_

We are in receipt of your letter of February 3, 2012 enclosing Notice to Appropriate Water by Application No. 7293-3 which was first published in our issue of \_\_\_\_\_. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Newspaper



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[denr.sd.gov](http://denr.sd.gov)

February 3, 2012

Jeffrey Gatzke  
39334 187<sup>th</sup> St  
Hitchcock SD 57469

Dear Mr. Gatzke:

Water Permit Application No. 7293-3 for irrigation use has been examined and found to comply with the South Dakota water laws and applicable rules. The Chief Engineer's recommendation is for DENIAL of Application No. 7293-3. For your information, the staff report, Chief Engineer's recommendation and notice of hearing are enclosed.

Please review the report and recommendation. If you wish to proceed with the application and schedule a March 7, 2012 hearing before the Water Management Board, you must contact the Redfield Press (ph# 605 472-0822) to authorize publication of the notice of hearing. The notice was sent to the Redfield Press with instructions to publish only if the applicant authorizes publication.

If the notice is published on February 8 and 15, 2012, a hearing is scheduled for 1:00 PM, March 7, 2012 in the Matthew Training Center, Joe Foss Building, 523 E Capitol Avenue in Pierre SD. The hearing will be held in conjunction with other pending applications from this aquifer.

State law provides that if the Chief Engineer recommends denial of an application, the applicant has 20 days from the date the recommendation is mailed to state whether they intend to oppose the recommendation. Failure to submit a statement of intent to oppose the recommendation to deny constitutes withdrawal of the application. If you authorize the newspaper to publish the notice of hearing, this will constitute your formal intent to oppose the recommendation and proceed to a March hearing before the Board. You may also choose to delay consideration of the application until the May Board meeting. If you want to delay the hearing, do not authorize publication of the notice at this time. Contact me by February 27, 2012 to state your intent to proceed with the application but wait until the May meeting. Failure to either authorize publication or contact me by February 27, 2012 will constitute withdrawal of your application.

Please contact me if you have any questions.

Sincerely,

Eric Gronlund  
Water Rights Program, DENR  
605 773-3352  
[eric.gronlund@state.sd.us](mailto:eric.gronlund@state.sd.us)

enclosures

Instruction to Newspaper - Publish first Notice on February 8, 2012 with the second publication 7 days later. The applicant is responsible for payment.

---

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Since this application does not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case may not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by February 27, 2012.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru

46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3. 1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Published twice at the total approximate cost of \_\_\_\_\_.

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JUN 28 2012

WATER RIGHTS  
PROGRAM

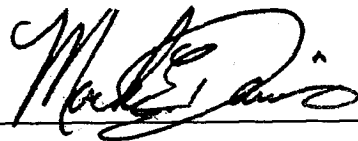
## Affidavit of Publication

STATE OF SOUTH DAKOTA,  
County of Spink: ss.

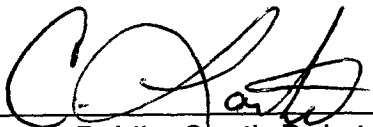
I, Mark E. Davis, of said County & State, being first duly sworn on oath, say that THE REDFIELD PRESS is a legal weekly newspaper as defined in Sec. 65.0508 South Dakota Code 1939, as amended by Chapter 298 of the Session of Laws of 1939, printed and published in the English language in the City of Redfield, in said County and State, by THE REDFIELD PRESS, and has been such newspaper during the time hereinafter mentioned, and that I Mark E. Davis, the undersigned, am Publisher of said newspaper in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit, and that the legal or official notice entitled:

### #388 Hearing Notice

A printed copy of which is hereto attached, was printed and published in said newspaper in 2 successive issues, to wit: The first publication being made on June 13th and the last publication being made on June 20th, that One hundred forty-seven and .42/100 Dollars, insures to the benefit of the publisher of THE REDFIELD PRESS, that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever.



Subscribed and sworn to before me this 20th day of June, 2012.



Notary Public, Spouth Dakota

My commission expires 04/06/2016

# Hearing Notice

#388

## NOTICE OF HEARING ON APPLICATION NOS. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 AND 7293-3 TO APPROPRIATE WATER

Notice is given of six water permit applications to appropriate water from the Tulare:Western Spink and Tulare:Hitchcock Aquifer in Spink County. The following applications were public noticed for denial on February 8 and 15, 2012. Upon reevaluation of the current availability of water in the aquifer in light of historic record, recent irrigation reports and past and recent USGS reports, the Chief Engineer has revised his recommendation and the applicants have amended their applications. Therefore it is necessary to public notice the applications and the Chief Engineer's revised recommendations.

Application No. 7288-3 filed by Bixler Farms, c/o Greg Bixler, 39477 184th St, Hitchcock SD 57348 proposes to appropriate 2.22 cubic feet of water per second (cfs) from one well to be completed into the Tulare:Hitchcock Aquifer (60 feet deep) located in center of the NW 1/4 Section 3 for irrigation of 160 acres located in the NW 1/4 Section 3; all in T114N-R63W. This application has been withdrawn by the applicant.

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Application No. 7290-3 filed by Lee Gatzke, 18479 389th Ave, Tulare SD

57476 proposes to appropriate 1.78 cfs from one well to be completed into the Tulare:Western Spink Aquifer (60 feet deep) located in the center of the NE 1/4 Section 6 for irrigation of 135 acres located in the NE 1/4 Section 6; all in T114N-R63W.

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Application No. 7293-3 filed by Jeffery Gatzke, 39334 187th St, Hitchcock SD 57348 has filed an application for a water permit to appropriate 1.78 cfs from one well to be completed into the Tulare:Hitchcock Aquifer (60 feet deep) located in the center of the NW 1/4 Section 15 for irrigation of 135 acres located in the NW 1/4 Section 15; all in T114N-R63W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application Nos. 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 because 1) the Water Rights Program reevaluated the current availability of water in the aquifer and determined that unappropriated water is available for 810 additional acres of irrigation from the aquifer, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest to put water resources of the state to the fullest extent of which they are capable.

SDCL 46-2A-4(10) provides that "if the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the Chief Engineer's recommendation and no hearing may be held before the board, unless the Chief Engineer makes a finding that an application, even if uncontested, presents important issues of public policy or public interest that should be heard by the board." In this case, the Chief Engineer finds that these applications present important issues of public interest that should be heard by the Water Management Board.

The Water Management Board will consider these applications at 11:00 AM on July 11, 2012 in the Matthew Training Center, 523 E. Capitol Ave. Pierre SD. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny any of these applications based on the facts presented at the public hearing.

Any interested person who intends to participate in the hearing shall file a petition to oppose or support any of the applications and the petition shall be filed with BOTH the applicant and Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing addresses are given above. A petition filed by an interested person must be filed by July 2, 2012. The petition may be informal, but must include a statement describing the petitioner's interest in any of the applications, the petitioner's reasons for opposing or supporting any of the applications, and the signature and mailing

address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. The hearing is an adversary proceeding and any party has the right to be present at the hearing and to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing and decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

The July 11, 2012 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any person who has filed a petition to oppose or support any of the applications. The request for an automatic delay must be filed by July 2, 2012. If an automatic delay is requested, the hearing will be rescheduled for a future Board meeting and personal notice will be provided to all petitioners regarding the time, date and location.

Contact Eric Gronlund by July 2, 2012, at the above Chief Engineer's address to request copies of the staff report, recommendations, applications or other information. Notice is given to individuals with disabilities that this hearing is being held in a physically accessible place. Please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing. The telephone number for making arrangements is (605) 773-3352.

Under SDCL 1-26-17(6) notices must state that "if the amount in controversy exceeds \$2,500.00 or if a property right may be terminated, any party to the contested case may require the agency to use the Office of Hearing Examiners by giving notice of the request to the agency no later than ten days after service of a notice of hearing issued pursuant to SDCL 1-26-17." This is a Notice of Hearing, service is being provided by publication, and the applicable date to give notice to the Chief Engineer is July 2, 2012. However, since this particular matter are water permit applications and not a monetary controversy in excess of \$2,500.00 or termination of a property right the Chief Engineer disputes the applicability of this provision and maintains that the hearing must be conducted by the Board.

The legal authority and jurisdiction under which the hearing is to be held are the following as applicable: SDCL 1-26-16 thru 1-26-28; SDCL 46-1-1 thru 46-1-9, 46-1-14 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17, 46-2A-1 thru 46-2A10, 46-2A-14, 46-2A-15, 46-5-6.11, 46-5-10 thru 46-5-13, 46-5-30 thru 46-5-30.3, 46-5-32, 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-26; and Board rules ARSD 74-02:01:01 thru 74-02:01:15.

The particular section of statutes and rules pertaining to these permit applications are, in addition to the above, the following: SDCL 46-2A-9, 46-6-3.1, 46-2A-15, 46-5-10 thru 46-5-13, 46-6-10, 46-6-26; the above listed administrative rules; and the following rule pertaining to qualifications recommended by the Chief Engineer: ARSD Chapter 74-02:01:14.02.

Steven M. Pimer, Secretary,  
Department of Environment and  
Natural Resources

Published twice at an approximate cost of \$147.42: (June 13; 20)

RECEIVED

JUN 27 2012

WATER RIGHTS  
PROGRAM

PRINTER'S AFFIDAVIT

STATE OF SOUTH DAKOTA,  
COUNTY OF BEADLE: ss.

I, REBECCA FOOS, being duly sworn on oath, say that THE PLAINSMAN is a daily paper published at Huron, Beadle County, South Dakota, and that said newspaper has a bona fide circulation of at least 250 copies daily; that said newspaper has been published within said county for fifty-two consecutive weeks immediately prior to this date, that said newspaper is printed in whole or in part, in an office maintained at said place of publication; that I am Legal Advertising Coordinator of said newspaper and know the facts herein state. The annexed notice headed:

SD WATER RIGHTS PROGRAM - HEARING  
ON APPLICATION NOTICE

Was published for Two days, once each week, on the same day, in said newspaper, and not in any supplement of the said newspaper. The first publication being the 13<sup>TH</sup> day of JUNE 2012 and the last publication was on the 20<sup>TH</sup> day of JUNE 2012. That the full amount of the fee charged for publishing's: TWO HUNDRED TEN & 56/00 Dollars insures to the benefit of the publisher of said newspaper; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever.

Rebecca Foos

Subscribed and sworn to before me this 26<sup>th</sup>  
day of JUNE 2012

Shirley Kenworthy  
Notary Public, South Dakota

My term expires 10/25/2017

Legal # 261

**NOTICE OF HEARING  
on Application**Nos. 7288-3, 7289-3,  
7290-3, 7291-3, 7292-3  
and 7293-3 to**Appropriate Water**

Notice is given of six water permit applications to appropriate water from the Tulare: Western Spink and Tulare: Hitchcock Aquifer in Spink County. The following applications were public noticed for denial on February 8 and 15, 2012. Upon reevaluation of the current availability of water in the aquifer in light of historic record, recent irrigation reports and past and recent USGS reports, the Chief Engineer has revised his recommendation and the applicants have amended their applications. Therefore it is necessary to public notice the applications and the Chief Engineer's revised recommendations.

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The Water Management Board will consider these applications at 11:00 AM on July 11, 2012 in the Matthew Training Center, 523 E. Capitol Ave, Pierre SD. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to: 1) approve, 2) approve with qualifications, 3) defer, or 4) deny any of these applications based on the facts presented at the public hearing.

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Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

ND 261 (adv.)  
Published twice at the total approximate cost of \$213.57.



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[denr.sd.gov](http://denr.sd.gov)

June 4, 2012

Ray D Rylance  
Wiles & Rylance  
PO Box 227  
Watertown SD 57204-0227

Dear Mr. Rylance:

Water Permit Application Nos. 7288-3, 7289-3, 7290-3, 7291-3, 7292-3 and 7293-3 for irrigation use for your clients have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Redfield Press and Huron Daily Plainsman. The applications are set to be published June 13 and 20, 2012 scheduling a July 11, 2012 hearing before the Water Management Board. For your information, the notice of hearing, recommendations of the Chief Engineer and staff report on the applications are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

The Water Rights Program will pay the cost of publication.

The publishers have been instructed to publish the notice once each week for two consecutive weeks. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the applications.

Sincerely,

Eric Gronlund  
Natural Resources Engineer  
(605) 773-3352

enclosures

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**Schlaak, Karen**

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**From:** Schlaak, Karen  
**Sent:** Monday, June 04, 2012 11:12 AM  
**To:** 'office.redpress@midconetwork.com'; Ruby Crandall  
(rnewman.plainsman@midconetwork.com)  
**Subject:** Notice of Hearing to Appropriate Water  
**Attachments:** Tulare.public.wmb.docx  
  
**Contacts:** Robin

Redfield Press and The Plainsman,

Attached is a text for a Notice of Hearing to be published in your papers on June 13 and 20, 2012. Please send me a copy of the first publication to proof for errors and an affidavit after the second publication.

The cost of publication will be paid by the Water Rights Program @ 523 E Capitol, Pierre SD 57501. Please acknowledge receipt of this notice.

If you have questions, contact me.

*Karen Schlaak*  
Water Rights Program  
Phone: 605 773-3352  
Fax: 605 773-4068



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[denr.sd.gov](http://denr.sd.gov)

June 21, 2012

Richard Rathjen  
590 Beach Avenue NE  
Huron SD 57350-4730

Dear Mr. Rathjen:

As per your request, please find enclosed the staff report and recommendations on the pending water permit applications from the Tulare:Western Spink/Hitchcock Aquifer.

Sincerely,

Eric Gronlund  
Water Rights Program, DENR  
605 773-3352  
[Eric.gronlund@state.sd.us](mailto:Eric.gronlund@state.sd.us)

enclosures



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

PMB 2020  
JOE FOSS BUILDING  
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[denr.sd.gov](http://denr.sd.gov)

AUG 28 2012

Jeffery Gatzke  
39334 187<sup>th</sup> St  
Hitchcock SD 57348

Dear Mr. Gatzke:

Enclosed is Water Permit No. 7293-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Garland Erbele, Chief Engineer  
Water Rights Program  
(605) 773-3352

enclosures

## SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NW ¼ NW ¼ Sec 15 Twp 63 Rg 114

County

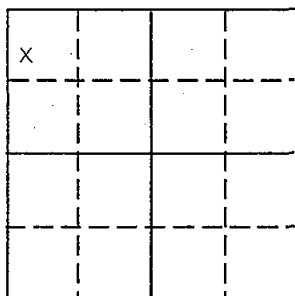
Spink

North

Please mark well location with an "X"

W

E



Well Completion Date

11/16/2012

1 Mile

Distance to nearest potential pollution source (Septic tank, abandoned well, feed lot, etc.)

? \_\_\_\_\_ ft. from \_\_\_\_\_ (identify source)

## PROPOSED USE:

☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes  
☒ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

## METHOD OF DRILLING:

Reverse Rotary

## CASING DATA:

☐ Steel ☐ Plastic ☐ Other

If other describe \_\_\_\_\_

| PIPEWEIGHT<br>LB/FT | DIAMETER<br>IN | FROM<br>FT | TO<br>FT | HOLE DIAMETER<br>IN |
|---------------------|----------------|------------|----------|---------------------|
|                     | 16.00          | 0.0        | 55.0     | 25.00               |
|                     |                |            |          |                     |
|                     |                |            |          |                     |

## GROUTING DATA:

| Grout Type | No. of Sacks | Grout Weight<br>Lb/gal | From<br>Ft | To<br>Ft |
|------------|--------------|------------------------|------------|----------|
| Vol Clay   | 34           |                        | 0.0        | 51.0     |
|            |              |                        |            |          |

Describe grouting procedure \_\_\_\_\_

## SCREEN:

☐ Perforated pipe ☒ Manufactured
Diameter 16.00 Inches Length 15.0 FeetMaterial Stainless SteelSlot Size 0.057 Set From 55.0 Feet to 70.0 Feet

Other information \_\_\_\_\_

## WAS A PACKER OR SEAL USED?

☒ Yes ☐ No
If so, what material? Pearock

Describe packer(s) and location

51-70'

## DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Pellets
☐ No, Why Not? \_\_\_\_\_  
 Lab sample sent to for water quality analysis
Well Owner: Jeffrey Gatzke

Business Name: \_\_\_\_\_

Address: 38344 187th StCity, State, Zip: Hitchcock SD 57348

## WELL LOG:

| FORMATION                      | DEPTH |    |
|--------------------------------|-------|----|
|                                | FROM  | TO |
| Yellow Clay                    | 0     | 13 |
| Yellow Sand                    | 13    | 30 |
| Med Gray Sand w/ Coal          | 30    | 43 |
| Med to Coarse Sand w/ Coal     | 43    | 53 |
| Med Sand w/ Coal               | 53    | 60 |
| Coarse Sand w/ Coal            | 60    | 63 |
| Coarse Sand and Gravel w/ Coal | 63    | 70 |
|                                |       |    |
|                                |       |    |

## STATIC WATER LEVEL

FEET

If flowing: closed in pressure \_\_\_\_\_

PSI

GPM flow \_\_\_\_\_ through \_\_\_\_\_ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other \_\_\_\_\_

Reduced flow rate \_\_\_\_\_ GPM

Can well be completely shut in?

## WELL TEST DATA:

☐ Pumped Describe: \_\_\_\_\_  
☐ Bailed  
☐ Other

Pumping Level Below Land Surface

\_\_\_\_\_ Ft. After \_\_\_\_\_ Hrs. pumped \_\_\_\_\_ GPM

\_\_\_\_\_ Ft. After \_\_\_\_\_ Hrs. pumped \_\_\_\_\_ GPM

If pump installed, pump rate: \_\_\_\_\_ GPM

## REMARKS

RECEIVED

MAR - 4 2013

WATER RIGHTS PROGRAM

This well was drilled under license # 440

And this report is true and accurate.

Drilling firm: Pullman Well Drilling Inc.Signature of License Representative: [Signature]

Signature of Well Owner or Equitable Property Holder: \_\_\_\_\_

Date: \_\_\_\_\_

## Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 7293-3

I have this day, November 4, 2015, made a thorough examination of the water use system constructed by Jeffery Gatzke, 39334 187<sup>th</sup> Street, Hitchcock SD 57348 of Permit No. 7293-3, bearing the priority of December 15, 2011 authorizing the diversion of 1.78 cu. ft. per second of the Tulare:Western Spink Hitchcock aquifer for irrigation purposes, in Spink County.

Inspection contact & relationship to permit holder, if applicable: **Jeffery Gatzke - owner**

### A. Works used to divert the water:

#### Well Information:

- 1) Well Drilling Firm: Pullman
- 2) No. of Wells 1
- 3) Depth(s) 70 feet
- 4) Well log is available Yes If no, explain in comments

Comments:

#### Casing:

- 1) Diameter 16 inches
- 2) Length 55 feet
- 3) Type not specified on completion report

#### Screen:

- 1) Type stainless steel
- 2) Length 15 feet
- 3) Static water level not provided on completion report feet

#### Pump:

- 1) Make submersible
- 2) Model \_\_\_\_\_
- 3) Size \_\_\_\_\_
- 4) Capacity 800 GPM

#### Motor:

- 1) Make \_\_\_\_\_
- 2) Model No. \_\_\_\_\_
- 3) Horsepower rating \_\_\_\_\_ hp

**B. Works used to transport water to place of use:**

- 1) Type not applicable 2) Size \_\_\_\_\_ inches 3) Length \_\_\_\_\_ feet

Comments:

**C. Works used to apply water to beneficial use:**

**Center pivot:**

- 1) Make Zimmatic
- 2) Overall length 1366 feet
- 3) Number of towers 7
- 4) End gun Yes – pivot length is 1,366 feet and end gun throw is 88 feet.
- 5) Capacity 800 GPM

**Chemigation Equipment:**

- 1) Does chemigate chemigation equipment was present but not hooked up
- 2) Main line check valve Y/N
- 3) Inspection port/air relief Y/N
- 4) Low pressure drain Y/N
- 5) Discharge is 20' from source Y/N
- 6) Interlock type electrical or mechanical
- 7) Injection pump type piston or other
- 8) Injection check valve Y/N
- 9) Injection line check valve or positive displacement pump Y/N

Comments: **xx**

**D. Compliance with Permit Requirements:**

- 1) Permit qualifications being abided by Yes

If no, describe:

- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period Yes (irrigation began to be reported in 2013)

List any extended period of nonuse: **No**

- 3) Exceptions to compliance are:

**E. Condition and Location:**

1. The system is in **excellent**, condition with the point(s) of diversion located as follows: approximately 1,320 south and 1,320 feet east of northwest corner **of Section 15, T114N, R63W (Latitude 44.68705 Longitude -98.39710)**

2. The works are capable of diverting and conveying to the place of use **1.78** cu. ft. per second of water which is to be used for **irrigation**. Water has been put to beneficial use to the maximum extent as follows:

**All in Section 15, T114N, R63W**

**NW ¼ NW ¼ - 33.75 acres**

**NE ¼ NW ¼ - 33.75 acres**

**legal description/acreage**

**SW ¼ NW ¼ - 33.75 acres**

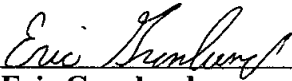
**SE ¼ NW ¼ - 33.75 acres**

comprising a total of **135** acres of land and the license should be issued for **1.78** cfs.

3. All structures, wells and lands on map **Yes**

If no, describe:

**F. Comments or other permit(s) associated with the project:**



Eric Gronlund

Water Rights Engineer

DENR, Water Rights Program

Date report completed: **December 17, 2015**

**NOTICE OF COMPLETION OF WORKS AND  
APPLICATION OF WATER TO BENEFICIAL USE**

MAIL TO: PMB 2020  
DENR - Water Rights Program  
523 E Capitol Ave  
Pierre, SD 57501-3182  
ph. (605) 773-3352

Date

11/4/15FROM: Jeffrey Gatzke

(name)

39334 187th Street

(address)

Hitchcock

(city)

SD

(state)

57348

(zip)

605 266-2711

(phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

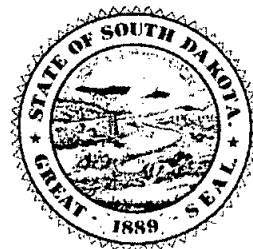
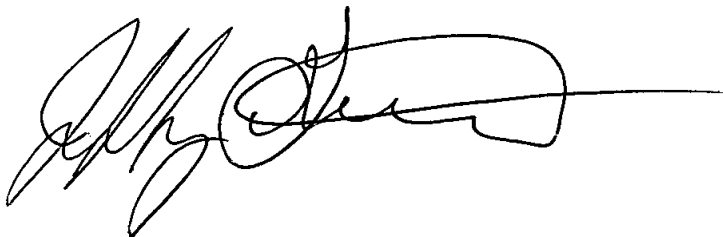
Water Permit No. 7293-3 states that the water use system is to be constructed by

\_\_\_\_\_, and water is to be put to beneficial use by \_\_\_\_\_  
(date) (date)

The water use system was completed on Fall 2012  
(date)

Applying the water to beneficial use was completed on 2013  
(date)

You may schedule an investigation so that the water license may be issued.





1,000 500 0 1,000 Feet



Well is in approximate center of NW 1/4 Section 15, T114N, R63W  
1,320 feet south and 1,320 east of northwest corner of section  
Latitude 44.68705 Longitude -98.39710



*Eric Gronlund*

Eric Gronlund  
Water Rights Program, DENR  
Date of Inspection - November 4, 2015



DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE SOUTH DAKOTA 57501-3182  
<http://denr.sd.gov>

FEB 01 2016

7293-3

Jeffery Gatzke  
39334 187<sup>th</sup> St  
Hitchcock SD 57348

Dear Mr. Gatzke:

Enclosed is Water License No. 7293-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 7293-3, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

Jeanne Goodman, Chief Engineer  
Water Rights Program  
(605) 773-3352

enclosures

**STATE OF SOUTH DAKOTA  
WATER LICENSE NO. 7293-3**

---

(1) Jeffery Gatzke, 39334 187<sup>th</sup> St, Hitchcock SD 57348 made Application No. 7293-3, December 15, 2011 for a water permit to divert 1.78 cubic feet of water per second from ground water (one well – Tulare:Western Spink Hitchcock Aquifer), Spink County, South Dakota for irrigation purposes. Permit No. 7293-3, with a priority date of December 15, 2011 was approved July 11, 2012 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before July 11, 2017 and for the application to beneficial use of said water on or before July 11, 2021.

The Permit holder submitted a "*Notice of Completion of Works and Application of Water to Beneficial Use*" indicating the water use system was completed in the fall of 2012 and the water placed to beneficial use in 2013.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 1.78 cubic feet of water per second for beneficial use. The location of the diversion point is 1,320 feet south and 1,320 feet east of the NW corner of Section 15, T114N, R63W (approximate center of the NW ¼).

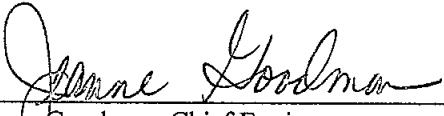
(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate the following land:

|                        |           |              |
|------------------------|-----------|--------------|
| T114N, R63W Section 15 | NW ¼ NW ¼ | 33.75 acres  |
|                        | NE ¼ NW ¼ | 33.75 acres  |
|                        | SW ¼ NW ¼ | 33.75 acres  |
|                        | NE ¼ NW ¼ | 33.75 acres  |
|                        | Total     | 135.00 acres |

(4) Pursuant to South Dakota Water Law 46-5-30.1 Jeffery Gatzke, 39334 187<sup>th</sup> St, Hitchcock SD 57348 the holder and/or owner of Water Right No. 7293-3 is issued a license to appropriate water, the right to use 1.78 cubic feet of water per second from ground water (one well – Tulare:Western Spink Hitchcock Aquifer) with a priority date of December 15, 2011 from the location specified in (2) of this license for irrigation purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 7293-3 and subject to the following qualifications:

- The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
- The well authorized by Permit No. 7293-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with the Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28. *The well was completed by Pullman Well Drilling in November, 2012. A copy of the well log is on file with the Water Rights Program.*
- This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

  
Jeanne Goodman, Chief Engineer  
Water Rights Program  
Department of Environment and Natural Resources

**FEB 01 2016**  
date

