

WATER PERMIT NO. 2885-2

Name of Applicant: **Rapid Valley Sanitary District – Water Service**

Address: **4611 Teak Drive, Rapid City SD 57703** Phone: **605-393-1050**

Amount of Water Claimed: **110 AF** Total Acres: **N/A**

Source of Water Supply: **Surface**

Water to be used for: **WDS** County: **Pennington**

Type of Waste Disposal System:

Location: **Approx. 3 miles on the southeastern outskirts of Rapid City**

PRIORITY Date Received: **01-28-25** Application/License Fee: **\$300.00**

Corrected Application Received: **02-03-25** Period of Annual Use: **April 1 – October 31**

Remarks: **Transfer Ahrlin Vested WR 1727-2 to RVSD at an alternate point of diversion and changing use from irrigation to WDS.**

Diversion Point: **NE 1/4 NW 1/4 Sec 15-T1N-R8E**

Land to be Irrigated: **N/A**

Depth of Well:

Well Driller:

Remarks:

Type of Map: **aerial**

		x			
			15		

Reviewed and the Number Assigned on: **02-04-25**

By: **Rachel Rodriguez**

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 2885-2

Date of first receipt of application January 28, 2025.

Date of return to applicant for corrections, amendments or changes February 4, 2025.

Date of receipt of corrected application February 18, 2025.

The Acting Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2885-2 to Rapid Valley Sanitary District – Water Service, 4611 Teak Drive, Rapid City SD 57703, 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. 2885-2 transfers a portion of Rapid Valley Water Company (aka Murphy Ditch) stockholder/landowner's use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 from irrigation use via Murphy Ditch to use by the Rapid Valley Sanitary District (RVSD) in its water distribution system. The transfer is for Rapid Creek water historically used for irrigation of 68.4 acres located in the SE 1/4 SW 1/4, SW 1/4 SE 1/4 Section 19, NE 1/4 NW 1/4, NW 1/4 NE 1/4 Section 30; all in T1N-R9E, under the Ahrlin and Gravatt shares in Parcel Nos. 18 & 19. The portion of Rapid Creek natural flows to be transferred to RVSD is 0.8 cubic feet of water per second (cfs) with an annual volume limitation of 147.8 acre-feet of water. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE 1/4 SW 1/4 Section 8-T1N-R8E. This permit changes the diversion point for 0.8 cfs (147.8 acre-feet) to a permanent diversion point used by RVSD located in the NE 1/4 NW 1/4 (Lot 3R) Section 15-T1N-R8E. This permit does not authorize any new water to be appropriated from Rapid Creek. This permit will retain the April 6, 1878, priority date established by the Murphy Ditch vested water right for natural flow from Rapid Creek. This site is located on the southeastern outskirts of Rapid City SD.
2. The water appropriated shall be used for water distribution system purposes and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: April 1- October 31 (as set forth in qualification No. 1).
4. The date of approval of Permit No. 2885-2 is April 14, 2025.
5. The date from which applicant may claim right is April 6, 1878 (established by Murphy ditch vested water right for natural flows from Rapid Creek).
6. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Permit No. 2885-2 is limited to a diversion rate of 0.8 cubic feet of water per second for a total annual volume of 147.8 acre feet of water. The Rapid Valley Sanitary District shall measure diversions at the District's water treatment plant. The total monthly diversion shall not exceed the amount listed on the following table.

(continued)

Monthly Volume Limitation (acre-feet)

Month	Volume Limitation (acre-feet)
April	5.6
May	18.5
June	21.4
July	28.3
August	36.6
September	26.8
October	10.6
TOTAL:	147.8

2. The Rapid Valley Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn each month as measured at the District's water treatment plant.
3. Permit No. 2885-2 authorizes diversion of only natural flow water by the Rapid Valley Sanitary District and does not include any right to stored irrigation water available under contract from Pactola Reservoir and Deerfield Reservoir.
4. The Water Management Board retains jurisdiction of Permit No. 2885-2 in the event that changes occur in the system that require adjustments to be made in the monthly or total annual volumes authorized by Permit No. 2885-2.
5. Diversion under Permit No. 2885-2 may not interfere with existing water rights in effect prior to approval of No. 2885-2 or any domestic rights.
6. The amount of water with an April 6, 1878, priority date which may be appropriated under Vested Water Right No. 1727-2, is reduced by 0.8 cfs.
7. The permit holder, Rapid Valley Sanitary District, shall permanently render inoperable the structural means of diverting water to the land which is no longer subject to Vested Water Right No. 1727-2. This work shall be completed prior to the permit holder's diversion of the transferred water to beneficial use by the district. The permit holder must notify the Acting Chief Engineer to schedule an inspection. This transfer is subject to the Acting Chief Engineer's approval that the works are rendered inoperable. This qualification does not grant access to property owned by third parties for making structural changes. The permit holder is responsible for ensuring that access is obtained from such third parties for making structural changes. The permit holder is also responsible for ensuring that such third parties are notified that inspections will occur.

WATER MANAGEMENT BOARD

By: _____

Mark Mayer, PE
Director of Office of Water
Department of Agriculture and Natural Resources

5/6/25
date



FORM 2: Application for uses other than irrigation
(type or print)

Mail to: SD DANR, Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2885-2</u> Hydrologic Unit <u>10120110</u>
	Basin <u>Cheyenne</u>
	Newspaper <u>Rapid City Journal</u>
	(office use only)

PAID
FFR 03 2025
CK# 030737
Permit # _____

Application for Permit to Appropriate Water in South Dakota

Check use(s) of water:

☐ Municipal	☒ Water Distribution System	☐ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☐ Fish & Wildlife	☐ Geothermal
☐ Domestic (over 18 gpm)	☐ Industrial	☐ Other _____	

Type of Application:

(check one)

*and portion
of Gravatt*

☐ New	☒ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☒ Place to Beneficial Use Water Reserved by Future Use Permit		
☒ No. Amendment/Correction to Permit No. <u>1727-2</u>		

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

Transfer of Ahrlin water rights (current owner Steve Simunek) to Rapid Valley Sanitary District at alternate point of diversion located at District water treatment intake. Change use from irrigation to municipal.

- Name to Appear on Water Permit Rapid Valley Sanitary District -water service
Mailing Address 4611 Teak Dr. Rapid City S.D. 57703
(Address) (City) (State) (Zip Code)
Phone 605-393-1050 Mobile 605-3812904 Email water@rvsd.com
- Amount of water claimed 0.8 *CFS or 40 **GPM and 40 ***AF or 147.8 Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***) Acre Feet - storage capacity of dam/dugout or annual use)
- Source of water supply Murphy Ditch-Rapid Valley Water Company Rapid Creek
- Location of point of diversion Lot 3r T1N,R8E, BHM, NE1/4NW1/4 Section 15, County pennington
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
If not a public water supply (e.g. municipal), will water be used outside of the area described ☐ Yes ☐ No
above? If "Yes," where will water be used? na
(example - NW1/4 section 12-T104N-R53W)
- County or counties where water will be used Pennington
- Annual period during which water is to be used April-October
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Used for RVSD-WS potable water production for municle use. See report by Leonard Rice Engineers 2011.

Land Parcel #19 in Leonard Rice report Table 1 and 6

portion of #18

RECEIVED

JAN 28 2025

OFFICE OF
WATER

I, Rusty Schmidt Manager, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

2021-08

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)

Supplemental Information

(type or print)

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JAN 28 2025

OFFICE OF
WATER

1. Well Information (check one or both as applicable)

☐ Drilling new well(s) ☐ Using existing well(s)

- a) If new wells, how many _____ Have test holes been drilled? ☐ Yes ☐ No Drilled by _____
(if yes, please provide copies of logs)
- b) If existing wells, how many _____ Provide copy of log(s), if available. Drilled by _____

For either existing or proposed wells:

- c) Well Depth (required) _____ Depth to Top of Water Bearing Material _____ Depth to Water from Surface _____
- d) Distance to nearest domestic well on applicant's property _____ 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 _____

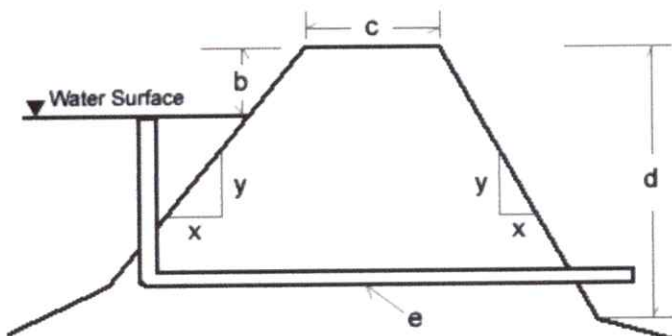
- f) Secondary Spillway Capacity _____
Spillway Width _____

- g) X & Y Slope (e.g. 3 to 1 is a typical slope)
Upstream _____
Downstream _____

- h) Area of Impoundment _____

- i) Storage _____ Acre Feet

- j) Drainage Area Above Dam _____ Acres







1N 8E
Section: 09

1N 8E
Section: 10

1N 8E
Section: 11

1N 8E
Section: 16

10120110 Rapid

Cheyenne
1N 8E
Section: 15

1N 8E
Section: 14

1N 8E
Section: 21

1N 8E
Section: 22

1N 8E
Section: 23



Measure Area

Planar

Acres

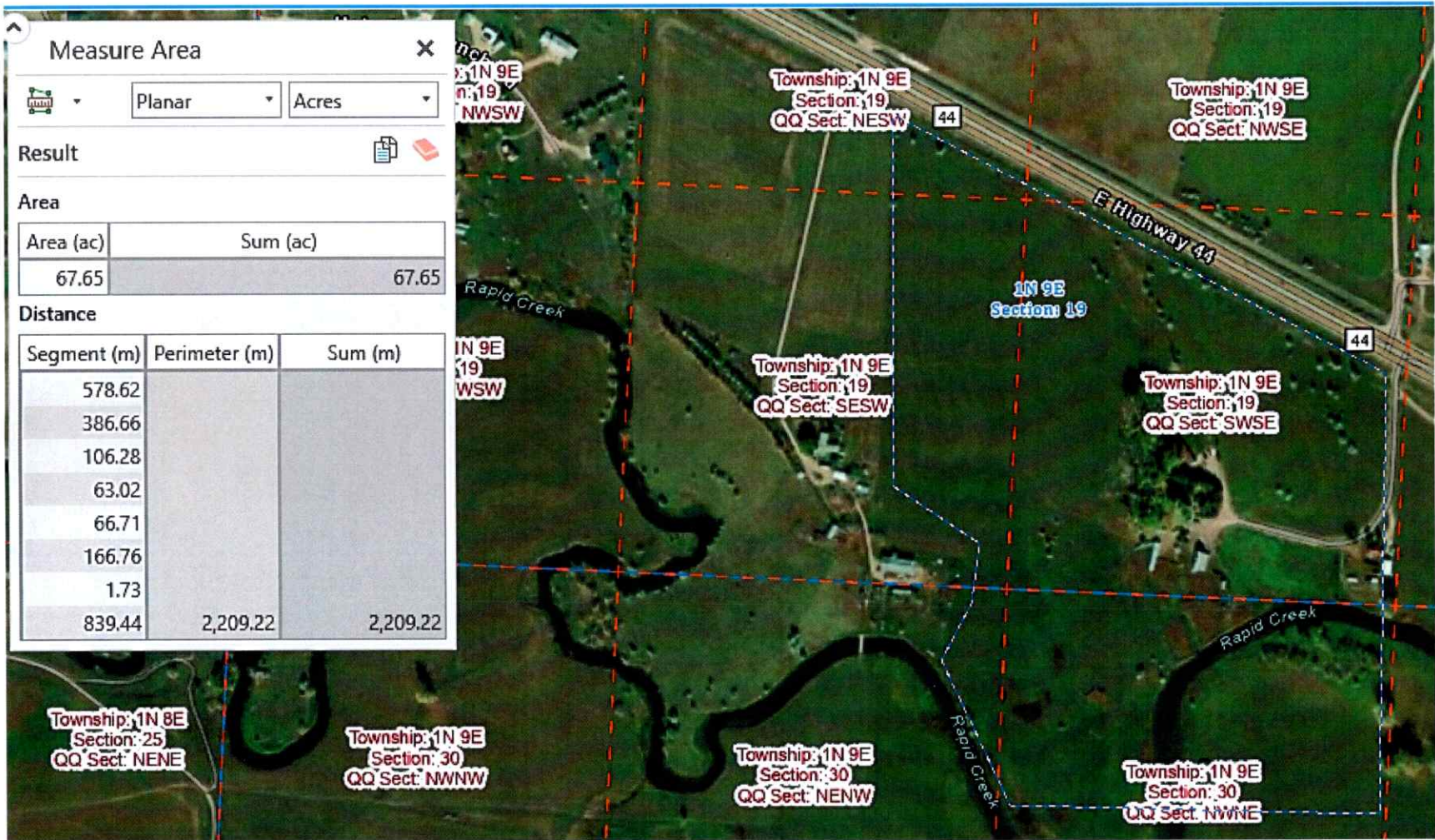
Result

Area

Area (ac)	Sum (ac)
67.65	67.65

Distance

Segment (m)	Perimeter (m)	Sum (m)
578.62		
386.66		
106.28		
63.02		
66.71		
166.76		
1.73		
839.44	2,209.22	2,209.22





LeonardRice
ENGINEERS, INC.

ENGINEERING REPORT

TRANSFER OF WATER RIGHTS

1878 MURPHY DITCH VESTED WATER RIGHT

PREPARED FOR

RAPID VALLEY SANITARY DISTRICT

IN ASSOCIATION WITH

CETEC ENGINEERING, INC.

JUNE 2011

PROJECT NO.: 1161RVS04

2000 Clay Street, Suite 300 | Denver, Colorado 80211
303-455-9589 | www.LREwater.com

Engineering Report: Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Prepared For:
Rapid Valley Sanitary District

June 2011

Prepared by:
Leonard Rice Engineers, Inc.

In Association with
Cetec Engineering, Inc.

Project Number: 1161RVS04

The technical material in this report was prepared by or under the supervision and direction of the undersigned, whose seal as a Professional Engineer is affixed below.



Miranda Larsen-Funk, P.E.
Project Engineer

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EXECUTIVE SUMMARY

The Rapid Valley Sanitary District ("the District" or RVSD) provides drinking water to residents and businesses in rural portions of Pennington County east of Rapid City, South Dakota. A portion of the District's potable water supplies comes from previous transfers of shares purchased in the Rapid Valley Water Company ("the Company"). The District is contemplating purchasing additional shares of the Company. Rapid Valley Water Company diverts water from Rapid Creek via the Murphy Ditch under a vested 1878 water right ("subject right"). To date, RVSD has secured contracts for approximately 9 percent of the subject right.

This Engineering Report summarizes an evaluation of the transferable yield of the 1878 water right in the Murphy Ditch ("subject right"). As a result of prior transfers irrigation has ceased on approximately 817 acres of the original 1,148 acres identified in Permit No. 1727-2. **Approximately 331 acres continue to be irrigated using the subject right.** The transferrable yield from the 1878 Murphy Ditch water right associated with the "untransferred" 331 acres are the subject of this report. An analysis was conducted to quantify the transferable yield of the untransferred portion of the subject right. Historical diversions and deliveries through the Murphy Ditch over the period 1946 through 1980 were estimated to average 2.6 ac-ft per acre per year. **The irrigated lands associated required, on average, a total of 3.7 ac-ft per acre of delivery to fully meet the crop irrigation requirements each year.** The transferable amount was estimated by taking the lesser of the historical deliveries and the required deliveries on a monthly basis.

If irrigation of the untransferred portion of the subject right is discontinued, an average of up to 703 ac-ft per year (4.3 c.f.s.) could be diverted at an alternate point of diversion located at the District water treatment plant (194 ac-ft or 1.19 c.f.s. for those shares under contract). This report contains several terms and conditions on the future use of the subject right by the District to protect other water rights owners on Rapid Creek.

1. INTRODUCTION

This Engineering Report summarizes an evaluation of the transferable yield of the untransferred portion of lands historically irrigated by the 1878 Murphy Ditch water right. The report documents the historical operation of the Murphy Ditch as it relates to delivery of irrigation water to these lands and quantifies the future transferable yield based on historical water supply requirements and water availability.

The District is currently negotiating with multiple stockholders to acquire additional interest in the 1878 Murphy Ditch water right. To date they have secured contracts with three water right owners. The District will use the portion of the subject right acquired, following a transfer proceeding with the South Dakota Department of Environment and Natural Resources (SDDENR), to supply a portion of its existing and future demand for potable water. Following the transfer, the District would divert water under the subject right at a treatment facility located approximately 3.5 river miles below the Ditch headgate on Rapid Creek.

2. BACKGROUND

2.1. RAPID VALLEY SANITARY DISTRICT

The RVSD is located on the eastern edge of Rapid City in central Pennington County (**Figure 1**). The District was formed in the early 1960s to serve a growing population east of Rapid City in the plains area known as Rapid Valley and is the oldest organized rural water system in South Dakota.

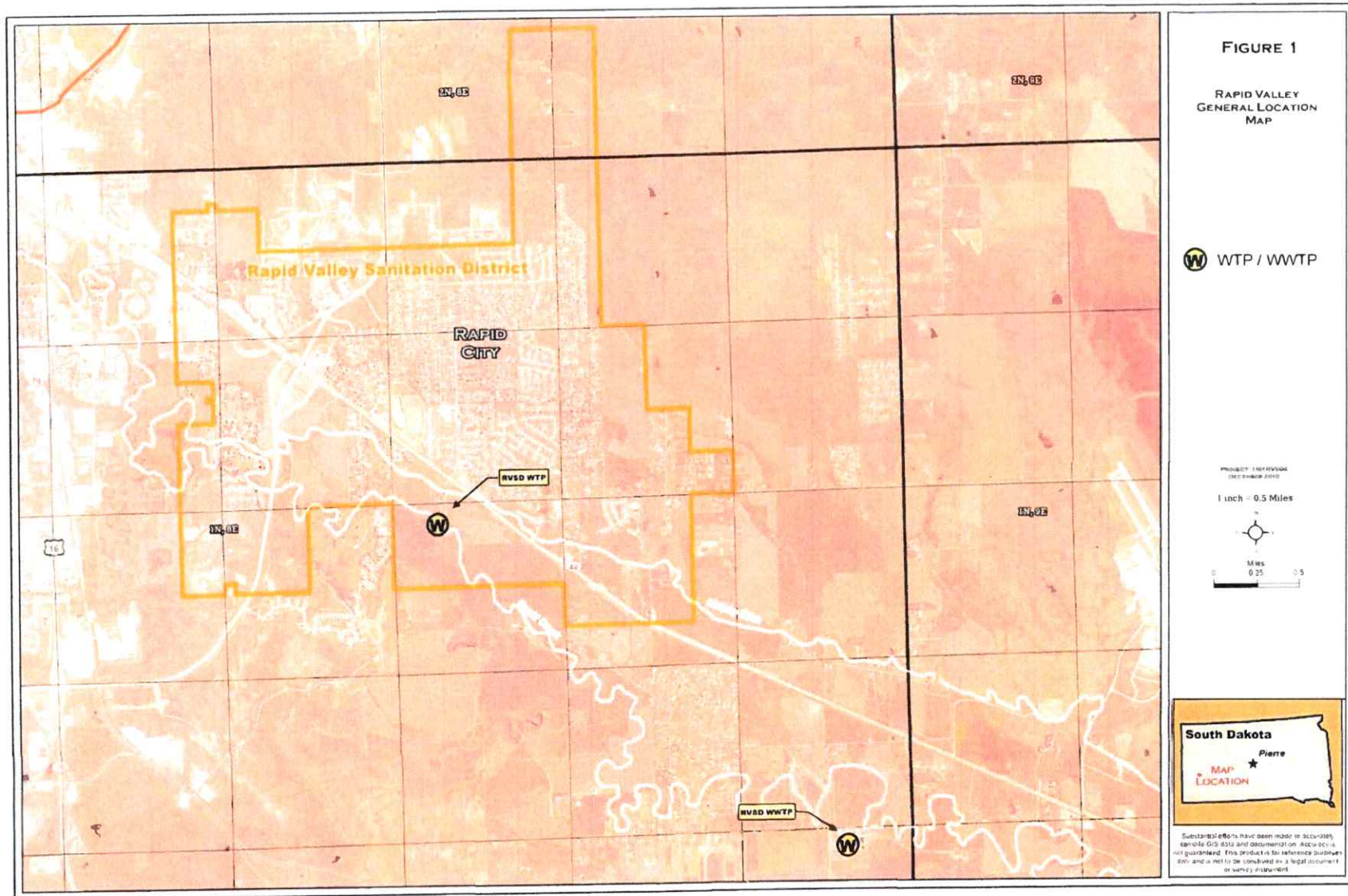
The Rapid Valley area has seen steady growth and has grown from approximately 1,800 customers in 1988 to 3,400 customers in 2009. The late 1990s housing boom in Rapid Valley increased customers at a rate of 140 per year; this growth has slowed in more recent years to an estimated 100 new customers per year. The area has been a popular location for new residential construction, and additional residential growth is expected in the undeveloped District area. The current customer base of 10,000 people is composed mainly of residential customers with commercial properties in the highway service areas.

The current District boundary includes approximately 3,850 acres with a 2009 service area of 1,700 acres or 44 percent of the possible system area. The recent development has been constructed at higher densities (3.0-3.5 dwelling units per acre) and typically uses more water during peak periods as compared to development during the 1960s, 1970s and 1980s. The continued growth has created challenges for the RVSD water system and storage facilities. The District has had difficulty providing adequate supply and water storage during peak water usage periods and continued growth. Drought conditions will further strain the water system and potentially cause water shortages.

2.2. MURPHY DITCH

The Murphy Ditch (also known as the Rapid Valley Ditch or Rapid Valley Water Company) diverts water from the north side of Rapid Creek at a point located in the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 8, Township 1 North, Range 8 East of the Black Hills P.M., in Pennington County. The headgate of the Ditch is located approximately two miles south and east of Rapid City, and approximately three-quarters of a mile downstream of the U.S. Geological Survey stream flow gage ID 06418900 (Rapid Creek below Sewage Treatment Plant near Rapid City). The Ditch extends from its headgate approximately 8 miles to the south and east. Irrigation water from the ditch is supplied to lands on both sides of Rapid Creek. Diversions from Rapid Creek can be measured at a rated weir located down-ditch from the headgate and above the first owner turnout.

The Murphy Ditch diverts water under two original water rights. Under Vested Water Right (Permit No. 1727-2 (April 6, 1878 priority date) the Murphy Ditch has the right to divert 17.0 c.f.s (**Appendix A**). This is the second most senior water right on Rapid Creek; the Leedy Ditch, located upstream within Rapid City, has the most senior right for 1.0 c.f.s, and a priority date of April 1, 1877. The Murphy Ditch's junior priority, under Permit No., 1727-2 (April 26, 1893 priority date) allows for diversion of an additional 3.0 c.f.s.



At times, the Murphy Ditch may also carry water diverted under several other permits, including Little Giant (Permit No. 653-2 for 2.4 c.f.s), Blanche Sedivy (Permit No. 1684-2 for 0.21 c.f.s), Warren Lamb Lumber (Permit No. 1461-2 for 1.25 c.f.s), Marty Rypkema (Permit No. 1784-2 for 0.71 c.f.s) and Jerry and Donna Olson (Permit No. 1788-2 for 0.50 c.f.s). These permits are for water in addition to the 17.0 c.f.s and 3.0 c.f.s rights of the Murphy Ditch.

At the time that the Murphy Ditch vested water right permit was confirmed in early 1991, specific lands were identified on which use of each of the Murphy Ditch vested water rights could occur. Note that some of these lands were corrected by Permit Nos. 2239-2, 2240-2, 2241-2, and 2242-2 later that same year. The permit issued for the subject right (17.0 c.f.s) identifies 1,148 irrigated acres. The interest that each stockholder owns in the subject right is equal to the number of permitted irrigated acres owned of those identified in the aforementioned permits.

The Murphy Ditch consists of an earthen channel over its entire course, and individual farmers are provided water via numerous turnouts. The Ditch is operated on an informal rotational basis whereby owners in the Ditch receive water in turn, based on their pro-rata interest. At times more than one owner may be provided water depending on the divertible flow rate at Rapid Creek. The ditch periodically receives inflow down-ditch of the diversion point on the river as natural drainage and/or return flows from lands lying to the north and west (further discussed below). Lands irrigated by the Hawthorne Ditch lie immediately above the Murphy Ditch and may contribute to these inflows.

2.3. PRIOR TRANSFERS OF THE 1878 MURPHY DITCH VESTED WATER RIGHT

There have been several transfers involving the subject water right since the early 1990s. Between 1991 and 2003, Rapid City transferred a total of 4.14 c.f.s for use in the City's municipal system. RVSD has transferred a total of 6.71 c.f.s for use in their municipal system (5.05 c.f.s. in 2006 and 1.66 c.f.s. in 2009). As part of several of the Rapid City transfers, a portion of the subject right was abandoned. We are not aware of any additional transfers to date.

2.4. UNTRANSFERRED PORTION OF THE 1878 MURPHY DITCH VESTED WATER RIGHT

We have compared information regarding the current stockholders in the Rapid Valley Water Company to the lands identified when the permit for the 1878 Murphy Ditch vested water right was confirmed, aerial photography, the Pennington County assessor's database, and our understanding of prior transfers. Mr. Mark Rath of the SDDENR was also consulted from time to time. From this information we have estimated the number of permitted acres each of the stockholders owns and with which Murphy Ditch vested water right priority we believe they are associated. **Table 1** and **Figure 2** provide our current understanding of owners of interest in the subject right. Those lands identified in **Table 1** as "irrigated" or "potentially irrigated" are the subject of this report. As shown in **Table 1** approximately 331 acres (29 percent) irrigated by the subject right remain untransferred and are available for use by RVSD following purchase and a transfer proceeding.

To date, out of the untransferred portion of the 1878 Murphy Ditch Vested Water Right, RVSD has secured contracts with stockholders Gravatt, Olsen, and Rypkema. This represents irrigation of approximately 90.6 acres or 7.9 percent of the 1878 Murphy Ditch Vested Water Right. These contracts along with prior transfers by RVSD of the 1878 Murphy Ditch Vested Water Right (489 acres, 42.6 percent) will result in ownership by RVSD of approximately 50.5 percent. As previously indicated, RVSD may continue to acquire additional interest from the remaining stockholders.

Table 1
1878 Murphy Ditch Vested Water Right Stockholders

Stockholder	Irrigated Acreage	Percent Ownership	Land/Water Right Status
Ahrlin	68.4	4.4%	Irrigated
Anderson	2	0.2%	Irrigated
Buckholz	5	0.4%	Irrigated
Gravatt ^[2]	45.6	5.5%	Irrigated
Lytle	45	3.9%	Irrigated
Olson ^[2]	9	0.8%	Irrigated
RVSD	489	42.6%	Transferred
Rapid City	322.3	28.1%	Transferred
Rapid Valley Fire	5	0.4%	Potentially Irrigated
Rypkema ^[2]	36	3.1%	Irrigated
Vessley	5	0.4%	Irrigated
Whiting	1	0.1%	Irrigated
Wileman	5	0.4%	Irrigated
Williams	104	9.1%	Irrigated
Abandoned	5.7	0.5%	Abandoned in Transfer
Total	1,148	100.0%	
Total Untransferred	331	28.8%	
Total Under Contract	90.6	7.9%	

Note:

[1] Based on documentation from confirmation of 1878 Murphy Ditch Vested Water Right permit.

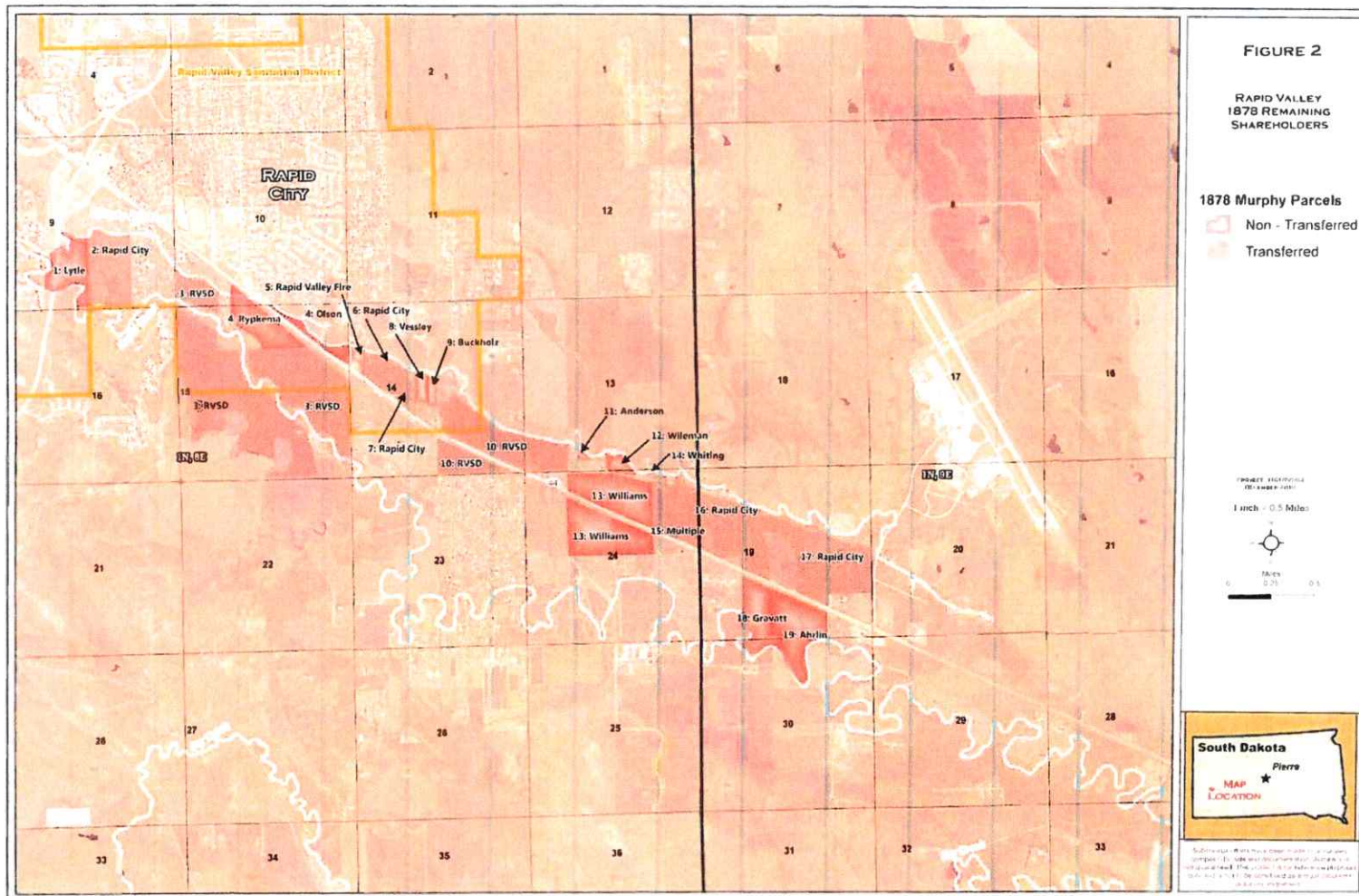
[2] Under contract as of the date of this report.

3. METHODOLOGY FOR ANALYSES

We have completed two prior transfers of the subject right with the assistance of the SDDENR on the Harney Peak Ranch and the Higgins Ranch. Based on this prior work, it is our understanding that the transferable yield of the subject right is calculated using a monthly comparison of the required ranch headgate delivery to meet the crop irrigation requirement and the pro rata portion of the available delivery from the ditch. The following describes the analyses used to determine transferable yield.

3.1. CROP IRRIGATION REQUIREMENT

An analysis was performed to determine the historical crop irrigation requirement under the Murphy Ditch over the period January 1950 through December 2004 (additional information regarding the study period used is provided in **Appendix B**). This analysis was performed on a monthly time-step for each year of the study period, requiring input data on monthly historical diversions, crop acreage and location of irrigated land, climate conditions, and soils.



The Modified Blaney-Criddle method was used to calculate the potential consumptive use of water by crops irrigated by the subject right (Soil Conservation Service, 1970). Modified Blaney-Criddle is a widely accepted technique and has been used extensively throughout the United States, including South Dakota and the Rapid Creek area. Historical climate data from the Rapid City weather station (NOAA Station 6937, Rapid City 4NW) were used in the Modified Blaney-Criddle analysis. In applying the Modified Blaney-Criddle method to develop the potential consumptive use for each crop, the crop growth stage coefficients (kc) were increased by 9.5 percent to reflect effects of elevation and aridity (Hill, et al., 1983; Burman, et al., 1982; Pochop, et al., 1984). Crop irrigation requirement was determined by subtracting from potential consumptive use the amount of precipitation effectively used by the crop.

3.2. REQUIRED HEADGATE DELIVERY

Required headgate delivery to meet crop irrigation requirement is equal to the crop irrigation requirement divided by the maximum farm efficiency. The maximum farm efficiency is dependent on farm-specific water application techniques, slope, soil types, water conveyance and control systems, tailwater collection systems, crop distributions, and irrigation management. Generally for flood irrigation, the starting point for farm efficiency is 50 percent. Efficiency can be increased or decreased from 50 percent based on farm-specific practices. For this analysis, we have assumed that untransferred farms under the Murphy Ditch have a maximum farm efficiency of 50 percent. We would not expect this number to change unless water users provided significant evidence to support increased or decreased efficiency.

3.3. PRO RATA DELIVERY

Pro rata deliveries are equal to the subject right diversions (less ditch loss) multiplied by a particular stockholders interest in the subject right.

Irrigation water has historically been supplied to the untransferred irrigated lands via the Murphy Ditch from Rapid Creek. We have assumed that no additional water supplies were used for irrigation of these lands. Monthly diversion records were obtained for the Murphy Ditch from previous engineering reports that addressed water right transfers from other properties and from several documents developed by the U.S. Bureau of Reclamation in relation to operation of Pactola Reservoir. The portion of these records that we believe to be an accurate representation of Murphy Ditch diversions generally cover the period from 1946 through about 1980, although there are several years during this period when data are not available. Detailed description of the estimation of diversion records is presented in **Appendix C**.

Previous engineering reports have estimated that approximately 11 percent of diversions through the Murphy Ditch are lost to seepage prior to delivery at farm headgates, i.e., 89 percent conveyance efficiency (Wright Water Engineers, 1990). A ditch loss of 11 percent has been used in the analyses for each of the prior transfers. For these reasons, we have assumed a ditch loss of 11 percent.

3.4. TRANSFERABLE YIELD

As previously described, it is our understanding that transferable yield is calculated using a monthly comparison of the required ranch headgate delivery to meet the crop irrigation requirement and the pro rata portion of the available delivery. Transferrable yield is the lesser of these two values. The following equations were used to determine transferable yield.

Transferable Yield

= Minimum of (Required Headgate Delivery & Pro Rata Delivery), on a monthly basis

$$\text{Required Headgate Delivery} = \frac{\text{Crop Irrigation Requirement}}{\text{Maximum Farm Efficiency}}$$

$$\text{Pro Rata Delivery} = \text{Ditch Diversions} \times \text{Conveyance Efficiency} \times \frac{\text{Permitted Acres Owned}}{\text{Total of Permitted Acres}}$$

The transferable yield calculation was performed for each of the stockholders listed in **Table 1** who own an untransferred interest in the subject right. For purposes of this analysis, we have assumed that the subject right was historically the only irrigation water supply for the remaining stockholders.

Crop irrigation requirement was calculated using a specific cropping pattern determined for each farm. A cropping pattern of 50 percent alfalfa/hay and 50 percent pasture grass was used when information was not available from the irrigator. The number of irrigated acres was assumed to be the same as the permitted acres. Detailed assumptions of farm specific calculations are presented in **Appendix D**.

4. RESULTS OF ANALYSES

4.1. CROP IRRIGATION REQUIREMENT

As shown in **Table 2** the unit crop irrigation requirements for alfalfa and pasture grass are 2.0 ac-ft per irrigated acre and 1.7 ac-ft per acre, respectively. Detailed results of calculations of potential consumptive use, effective precipitation, and irrigation water requirement are provided in **Appendix E** of this Report.

Table 2
Average Crop Irrigation Requirement for Alfalfa (1950 to 2004)
(ac-ft/acre)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Potential Consumptive Use	0.0	0.3	0.6	0.7	0.6	0.3	0.1	2.7
Effective Precipitation	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.7
Crop Irrigation Requirement	0.0	0.2	0.4	0.6	0.5	0.3	0.1	2.0

Notes:

[1] Climate station 6937 (Rapid City AP)

[2] SCS TR21 cropping coefficients with an elevation adjustment were used.

Table 3
Average Crop Irrigation Requirement for Pasture Grass (1950 to 2004)
(ac-ft/acre)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Potential Consumptive Use	0.1	0.3	0.5	0.6	0.5	0.3	0.1	2.4
Effective Precipitation	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.7
Crop Irrigation Requirement	0.1	0.2	0.3	0.5	0.4	0.2	0.1	1.7

Notes:

[1] Climate station 6937 (Rapid City AP)

[2] SCS TR21 cropping coefficients with an elevation adjustment were used.

4.2. REQUIRED HEADGATE DELIVERY

The required headgate delivery was calculated based on the crop irrigation requirement and the estimated maximum farm efficiency. As shown in **Table 4**, the annual required headgate delivery averaged 4.1 ac-ft per acre and 3.4 ac-ft per acre for alfalfa and pasture grass, respectively.

Table 4
Average Required Headgate Delivery (1950 to 2004)
(ac-ft/acre)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Alfalfa Hay	0.1	0.4	0.8	1.2	1.0	0.5	0.1	4.1
Pasture Grass	0.1	0.3	0.6	0.9	0.9	0.5	0.2	3.4

4.3. PRO RATA DELIVERY

Average historical diversions through the Murphy Ditch are presented in **Table 5**. Historical diversions averaged approximately 2,951 ac-ft per year from 1946 through 1980. Historical deliveries, after subtracting an estimated 11 percent to account for conveyance loss, averaged approximately 2.3 ac-ft per acre (**Table 5**).

Table 5
Subject Right
Average Diversions and Deliveries (1946 to 1980)

Water Supply	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Diversion (ac-ft)	140	348	403	533	690	506	331	2,951
Diversion (ac-ft/acre)	0.1	0.3	0.4	0.5	0.6	0.4	0.3	2.6
Delivery (ac-ft)	125	310	359	474	614	450	295	2,626
Delivery (ac-ft/acre)	0.1	0.3	0.3	0.4	0.5	0.4	0.3	2.3

4.4. TRANSFERABLE YIELD

Our estimates of historical diversions through the Murphy Ditch, deliveries to shareholders and irrigation needs on individual farms were used to determine that amount of water that could be transferred, i.e., the transferable yield from the untransferred portion of the water right. As shown in **Table 6**, transferable yield averaged approximately 703 ac-ft (4.3 c.f.s.) over the study period. Detailed results of farm specific calculations are presented in **Appendix D**.

The contracts secured, to date by RVSD, represent a transferable yield of approximately 194 ac-ft or 1.19 c.f.s. of the 1878 Murphy Ditch Vested Water Right. As previously indicated, RVSD may continue to acquire additional interest from the remaining stockholders.

Table 6
1878 Murphy Ditch Vested Water Right
Annual Transferable Yield
(in terms of Ranch Headgate Delivery)

Stockholder	Volume (ac-ft)	Rate (c.f.s.)
Ahrlin	148	0.90
Anderson	4	0.03
Buckholz	11	0.07
Gravatt ^[3]	99	0.60
Lytle	97	0.59
Olson ^[3]	19	0.12
Rapid Valley Fire	11	0.07
Rypkema ^[3]	76	0.47
Vessley	11	0.07
Whiting	2	0.01
Wileman	11	0.07
Williams	225	1.37
Total (untransferred)	703	4.30
Total (under contract)	194	1.19

Note:

- [1] Volume calculated on a monthly basis as the lesser of historical deliveries or deliveries required to fully satisfy irrigation requirements.
[2] Rate equal to pro rata ownership (acreage permitted out of 1,148 total Murphy Ditch acres).
[3] Under contract as of the date of this report.

5. FUTURE USE OF MURPHY DITCH WATER RIGHT

5.1. USE BY RVSD

The shares under contract as of the date of this report and any additional acquisitions of the Rapid Valley Water Company by RVSD will be transferred from the Murphy Ditch to an alternate point of diversion at the District water treatment facility (**Figure 1**). As a result of this transfer, the District's acquired interest in the Murphy Ditch would no longer be diverted for irrigation purposes at the historical place of use. Water use by the District may include municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use.

Water use by the District follows seasonal patterns typical of municipal systems (**Table 7**). Water use during the summer months is typically higher than other months of the year because of increased landscape irrigation. We have estimated that 5 percent of indoor use is consumptively used, i.e., 95 percent of water use returns to Rapid Creek via waste water treatment systems. We estimated that 80 percent of outdoor water use (lawn and other irrigation) is consumed, i.e., 20 percent of outdoor water use returns to Rapid Creek via subsurface drainage pathways.

Table 7 also shows the depletion and return percentages associated with total water use by the District. These percentages have been calculated by considering 1) the percentage of indoor and outdoor use for each month, and 2) a 5 percent and 80 percent consumptive factor for indoor and outdoor uses, respectively. We estimate that water uses by the District are on average 26 percent consumptive. The remaining 74 percent of water use by the District returns to Rapid Creek via waste water treatment facilities or subsurface drainage.

Consumptive water uses by the District are highest during the summer months due to outdoor irrigation. As a percentage of water availability, the consumptive percentage is highest in the month of August (48 percent of water deliveries); this coincides with the highest period of outdoor uses. Note that during all months, consumptive percentages for water use by the District are lower than the consumption rates that historically occurred when the Murphy Ditch rights were used for agricultural irrigation (approximately 50 percent).

Table 7
Average RVSD Monthly Water Use Pattern

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Total	6.0%	6.0%	6.0%	6.0%	7.0%	10.0%	12.0%	14.0%	12.0%	9.0%	6.0%	6.0%	100.0%
Indoor	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	72.0%
Outdoor	0.0%	0.0%	0.0%	0.0%	1.0%	4.0%	6.0%	8.0%	6.0%	3.0%	0.0%	0.0%	28.0%
Depletion %	5%	5%	5%	5%	16%	35%	43%	48%	43%	30%	5%	5%	26%
Return %	95%	95%	95%	95%	84%	65%	58%	52%	58%	70%	95%	95%	74%

5.2. SUMMARY

- The untransferred portion of the 1878 Murphy Ditch vested water right includes approximately 331 of the originally permitted acres.
- To date RVSD has secured contracts for approximately 90.6 acres of the untransferred portion of the 1878 Murphy Ditch vested water right (Gravatt, Olsen, Rypkema).
- RVSD may continue to acquire additional interest in the untransferred portion of the 1878 Murphy Ditch vested water right.
- The untransferred portion was historically associated with irrigation of permitted lands as described in **Table 1** and shown in **Figure 2**.
- A transfer of the Murphy Ditch water right to RVSD should be administered with a priority date based on the Murphy Ditch vested water right for natural flow (April 6, 1878).
- The majority of water that was historically delivered by the subject right occurred from April through October. Diversion of the water transferred by RVSD should be limited to April through October.
- Following a transfer to RVSD, diversions by the District should be limited to monthly and annual diversion amounts shown in (**Table 8**)
- The future maximum rate of diversion of the transferred water should not exceed the District's prorata interest in the subject right (**Table 6**). This will protect remaining shareholders in the ditch and other water right owners on Rapid Creek.
- The existing point of diversion for Murphy Ditch on Rapid Creek is in the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 8, Township 1 North, Range 8 East of the Black Hills P.M., in Pennington County. In the future, RVSD may divert the transferred water at a point in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, Township 1 North, Range 8 East of the Black Hills P.M., in Pennington County.
- Water transferred to RVSD will be for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use purposes and will not exceed the amount of water needed for the District's beneficial use.
- The water used by the District that is consumed will be less depletive than occurred historically under agricultural uses.
- Lands historically irrigated should no longer be irrigated with water from the Murphy Ditch. This will prevent an expansion of the use of the subject right over historical conditions and will protect other vested water right owners on Rapid Creek.
- RVSD should annually report to the SDNER the amount of water withdrawn each month.

Table 8
Volumetric Limit on Diversions (ac-ft)

Stockholder	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Ahrlin	6	18	21	28	37	27	11	148
Anderson	0	1	1	1	1	1	0	4
Buckholz	0	1	2	2	3	2	1	11
Gravatt	4	12	14	19	24	18	7	99
Lytle	4	12	14	19	24	18	7	97
Olson	1	2	3	4	5	4	1	19
Rapid Valley Fire	0	1	2	2	3	2	1	11
Rypkema	2	10	11	15	19	14	5	76
Vessley	0	1	2	2	3	2	1	11
Whiting	0	0	0	0	1	0	0	2
Wileman	0	1	2	2	3	2	1	11
Williams	9	28	32	43	56	41	16	225
Total	26	88	102	135	174	128	50	703

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- Personal Communication, Mr. Duane Scott, Rapid Creek Water Conservancy District, Rapid Creek Water Master.

Personal Communication, Mr. Kevin Hamm, Rapid Creek Water Conservancy District, Rapid Creek Water Master.

Personal Communication, Mr. Curt Anderson, U.S. Bureau of Reclamation, Pactola Reservoir.

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APPENDIX A

Water License No. 1727-2 Rapid Valley Water Company

PERMITS TRANSFERRING WATER AND ACREAGE

WATER RIGHT NO.1727-2, RAPID VALLEY WATER CO. INC. (MURPHY DITCH)

PRIORITY DATE: APRIL 6, 1878
LICENSED FOR: 17.0 CFS 1,148 AC

APRIL 26, 1893
3.0 CFS 189 AC

	REDUCED BY:	REMAINING:	PERMIT APPROVED
2142-2 CITY OF RAPID CITY (TYLER PROPERTY)	0.64 CFS 49 AC	16.36 CFS 1,099 AC	5-1-91
2142-2 AMENDED	0.62 CFS 49 AC	16.38 CFS 1,099 AC	
2199-2 CITY OF RAPID CITY (PELLE PROPERTY)	0.05 CFS 4 AC	16.33 CFS 1,095 AC	5-7-92
2201-2 CITY OF RAPID CITY (LONG PROPERTY)	0.13 CFS 10 AC	16.20 CFS 1,085 AC	5-7-92
2316-2 CITY OF RAPID CITY (MORRIS PROPERTY)	0.81 CFS 64 AC	15.39 CFS 1,021 AC	5-1-96
2399-2 CITY OF RAPID CITY (WILEMAN PROPERTY)	0.35 CFS 27.3 AC	15.04 CFS 993.7 AC	5-7-98
2469-2 CITY OF RAPID CITY (MURPHY PROPERTY)	0.34 CFS 27 AC	14.70 CFS 966.7 AC	12-5-01
2512-2 CITY OF RAPID CITY (CARLEY PROPERTY)	1.84 CFS 145 AC	12.86 CFS 821.7 AC	12-3-03
2586-2 Rapid Valley Sanitary Dist. (Harney Peak Ranch - David Lamb property)	5.05 CFS 368 AC	7.81 CFS 453.7 AC	8-23-06
2641-2 Rapid Valley Sanitary (Higgins Ranch)	1.66 CFS 121 AC	6.15 CFS 332 AC	

PRIORITY DATE:
LICENSED FOR:

APRIL 26, 1893
3.0 CFS 189 AC

2526-2 DONALD & VIRGENA JUNDT (STROMER PROPERTY)	0.71 CFS 50 AC	2.29 CFS 139 AC	3-2-05
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STATE OF SOUTH DAKOTA

VESTED RIGHT WATER LICENSE NO. 1727-2 FOR IRRIGATION

(1) Rapid Valley Water Company, Inc., of RR #2 Box 223, Rapid City, SD 57701 made Application No. 1727-2, January 7, 1980 for validation of a vested right claim to appropriate 20.0 cubic feet of water per second (cfs) from Rapid Creek, Pennington County, South Dakota for irrigation purposes.

Vested Water Right No. 1727-2 was validated December 5, 1990 with priority dates of **January 1, 1878 (for 17.0 cfs) and January 1, 1893 (for 3.0 cfs). Construction of the described water supply system and the application of water to beneficial use has been completed and complies with applicable provisions of South Dakota State Law.

**Vested Water Right No. 1727-2 was validated with priority dates of January 1, 1878 and January 1, 1893, however the affidavit of water use submitted with the vested right claim shows the actual priority dates to be April 6, 1878 and April 26, 1893. This vested right water license will reflect the priority dates specified on the affidavit.

(2) The applicant is entitled to divert 20.0 cubic feet of water per second for beneficial use. The location of the diversion point is in the SW 1/4 Section 8, T1N, R8E.

The location of the irrigated acreage is:
1878 PRIORITY DATE

Land Parcel Number	Legal Description	Acreage
1	NE1/4 SW1/4	S9-T1N-R8E 20
	SE1/4 SW1/4	S9-T1N-R8E 25
2	NW1/4 SE1/4	S9-T1N-R8E 29
	SW1/4 SE1/4	S9-T1N-R8E 35

3	SW1/4 SW1/4	S10-T1N-R8E	25
	NW1/4 NW1/4	S15-T1N-R8E	31
	SW1/4 NW1/4	S15-T1N-R8E	38
	NW1/4 SW1/4	S15-T1N-R8E	30
	SE1/4 NW1/4	S15-T1N-R8E	32
	NE1/4 SW1/4	S15-T1N-R8E	31
	SW1/4 NE1/4	S15-T1N-R8E	38
	NW1/4 SE1/4	S15-T1N-R8E	29
	SE1/4 NE1/4	S15-T1N-R8E	25
	NE1/4 SE1/4	S15-T1N-R8E	38
	SW1/4 SW1/4	S15-T1N-R8E	1
	SE1/4 SW1/4	S15-T1N-R8E	11
	SW1/4 SE1/4	S15-T1N-R8E	24
	SE1/4 SE1/4	S15-T1N-R8E	15
5	SW1/4 NW1/4	S14-T1N-R8E	5
6	SW1/4 NW1/4	S14-T1N-R8E	32
7	SE1/4 NW1/4	S14-T1N-R8E	6
	NE1/4 SW1/4	S14-T1N-R8E	4
8	SE1/4 NW1/4	S14-T1N-R8E	3
	NE1/4 SW1/4	S14-T1N-R8E	2
9	SE1/4 NW1/4	S14-T1N-R8E	3
	NE1/4 SW1/4	S14-T1N-R8E	2
10	NW1/4 SE1/4	S14-T1N-R8E	28
	SW1/4 SE1/4	S14-T1N-R8E	31
	SE1/4 SE1/4	S14-T1N-R8E	32
	NE1/4 SE1/4	S14-T1N-R8E	3
	SW1/4 SW1/4	S13-T1N-R8E	27
11	SE1/4 SW1/4	S13-T1N-R8E	2
12	SW1/4 SE1/4	S13-T1N-R8E	5
13	104 OF THE TOTAL 142 ACRES		
	NE1/4 NW1/4	S24-T1N-R8E -	36
	SE1/4 NW1/4	S24-T1N-R8E -	40
	NW1/4 NE1/4	S24-T1N-R8E -	32
	SW1/4 NE1/4	S24-T1N-R8E -	34
			104
14	NW1/4 NE1/4	S24-T1N-R8E	1

15	28 ACRES OF THE TOTAL 56 ACRES		
	NE1/4 NE1/4	S24-T1N-R8E - 31	
	SE1/4 NE1/4	S24-T1N-R8E - 25	
			28
16	NW1/4 NW1/4	S19-T1N-R9E	10
	SW1/4 NW1/4	S19-T1N-R9E	39
17	NE1/4 NW1/4	S19-T1N-R9E	2
	SE1/4 NW1/4	S19-T1N-R9E	32
	NE1/4 SW1/4	S19-T1N-R9E	10
	SW1/4 NE1/4	S19-T1N-R9E	25
	NW1/4 SE1/4	S19-T1N-R9E	24
	SW1/4 SE1/4	S19-T1N-R9E	2
	SE1/4 NE1/4	S19-T1N-R9E	11
	NE1/4 SE1/4	S19-T1N-R9E	39
18	✓ NE1/4 SW1/4	S19-T1N-R9E	12
	✓ SE1/4 SW1/4	S19-T1N-R9E	39
	✓ NE1/4 NW1/4	S30-T1N-R9E	12
19	✓ SW1/4 SE1/4	S19-T1N-R9E	31
	✓ NW1/4 NE1/4	S30-T1N-R9E	20
		Total	1103

1893 PRIORITY DATE

20	SE1/4 SE1/4	S19-T1N-R9E	14
	NE1/4 NE1/4	S30-T1N-R9E	12
21	NW1/4 SW1/4	S20-T1N-R9E	25
	SW1/4 SW1/4	S20-T1N-R9E	34
	NE1/4 SW1/4	S20-T1N-R9E	7
	SE1/4 SW1/4	S20-T1N-R9E	39
	NW1/4 NW1/4	S29-T1N-R9E	2
	NE1/4 NW1/4	S29-T1N-R9E	18
22	SW1/4 SE1/4	S20-T1N-R9E	18
	NW1/4 NE1/4	S29-T1N-R9E	20
		Total	189

Parcels # 18 & 19

63
-45.6 (2071-2)

217.4
+51
268.4 ac

Page 4

Vested Water Right License No. 1727-2

(3) Pursuant to Section 46-5-30.1, Rapid Valley Water Company, Inc of RR #2 Box 223, Rapid City, SD 57701 the holder and/or owner of Vested Water Right No. 1727-2 is issued a license to appropriate 20.0 cubic feet of water per second from Rapid Creek with priority dates of April 6, 1878 (for 17.0 cfs) and April 26, 1893 (for 3.0 cfs) from locations specified in (2) of this license. The water is to be used for irrigation purposes. This license is subject to any limitations, conditions or qualifications listed in Vested Water Right No. 1727-2 and subject to South Dakota Water Law.



JOHN HATCH, Chief Engineer
Water Rights Division
Department of Water and Natural
Resources

FEB 20 1991

DATE

APPENDIX B

Selection of Study Period

The study period of 1950 through 2004 was selected as part of our Harney Peak Analysis based on examination of historical climate and streamflow data and with the objective of representing conditions over a range of climatic and hydrologic conditions. To stay consistent with the Harney Peak analysis, we have again used the 1950 through 2004 study period.

The principal climate parameters influencing water supply (and demand for irrigation water) are precipitation and temperature. An index that combines these parameters is the Palmer Drought Severity Index (PDSI) (Palmer, 1965; Alley, 1984). The National Climatic Data Center (NCDC) has developed an archive of monthly PDSI values from 1895 to the present for the Rapid Creek basin in South Dakota. The PDSI indicates the severity of a wet or dry spell, and generally ranges from -10.0 (very dry) to +10.0 (very wet). Monthly PDSI values for the Rapid Creek basin since 1950 are shown in Figure B-1.

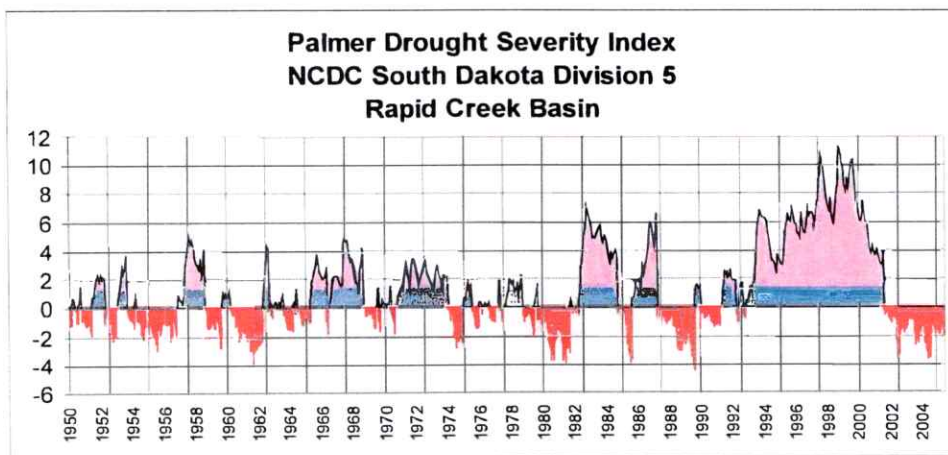


Figure B-1. Monthly PDSI Values for the Rapid Creek basin in South Dakota.

Based on our review of local climate and streamflow information, we believe the period extending from 1950 through 2004 is appropriate for evaluating water rights on Rapid Creek and represents sufficient natural variation in climatic and hydrologic conditions

APPENDIX C

Calculation of Average Historical Murphy Ditch Diversions

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

The amount of water diverted by ditches from Rapid Creek has periodically been recorded over time by the State, the Conservancy District, the Bureau of Reclamation, and possibly others. The purpose of measuring diversion amounts has been twofold: to assist the State in administration of natural flows in Rapid Creek according to the prior appropriation system, and to assist the State, Conservancy District, and Bureau of Reclamation in management and operation of Pactola Reservoir and storage water releases that provide supplemental water supplies to Conservancy District members.

Available streamflow records were examined for gages located on Rapid Creek above Pactola Reservoir, SD (U.S.G.S. ID 06410500), below Pactola Dam, SD (U.S.G.S. ID 06411500), above Canyon Lake near Rapid City, SD (U.S.G.S. ID 06412500), at Rapid City, SD (U.S.G.S. ID 06414000), and below Sewage Treatment Plant Pipeline near Rapid City (U.S.G.S. ID 06418900). Records for these gages are generally available back through 1955 or earlier. All of these gages are influenced by upstream reservoir and/or irrigation operations, although the gage above Pactola Reservoir is fairly indicative of natural hydrologic conditions. Streamflow records from all of the gages generally agree with indications of wet or dry periods as suggested by the PDSI.

Strict water rights administration of natural flows on Rapid Creek according to the prior appropriation system has not historically occurred. This has largely been due to the high level of historical cooperation among ditches and to some degree, the ability for many water right owners to receive contracted storage water. As opposed to many circumstances in an over-appropriated stream system, water users on Rapid Creek have historically been willing to share in times of shortages. Contracted storage releases have further eased the situation in times of reduced natural flow levels.

The intra- and inter-ditch cooperation has allowed considerable flexibility in use of limited supplies from Rapid Creek for irrigation. This resulted in a reduced need for measurement of diversion amounts. It is our opinion that this is reflected in the diversion records by a lack of information for several past years. It is our opinion that historical records must be carefully viewed as an approximation of the actual supply realized from the water rights.

The Rapid Valley Water Conservancy District was formed in 1948 and has historically operated under a contract with the U.S. Bureau of Reclamation for deliveries of water from Pactola and Deerfield Reservoirs to its member ditches. Pactola and Deerfield Reservoirs are part of the Rapid Valley Unit of the Pick Sloan Project. Combined, these reservoirs provide supplemental irrigation water to over 8,900 acres of farm land in the Conservancy District as well as municipal and industrial water to Rapid City.

The Conservancy District has, as members, all of the downstream ditches on Rapid Creek with the exception of the lands served by the senior priority in the Murphy Ditch (at the time of formation of the Conservancy District, owners in the Murphy Ditch elected not to become members because of their senior status and sufficient natural flows in Rapid Creek to meet their needs). Storage deliveries to member ditches of the Conservancy District are considered supplemental irrigation water supplies to the ditches own direct flow water rights. Supplemental water provided by the Conservancy District is not considered as part of the historical water supply that may be transferred to an alternate point of diversion.

Records of historical monthly diversions by the Murphy Ditch are presented in Table B-1. As shown, historical diversions for the Murphy Ditch averaged approximately 2,951 ac-ft per year from 1946 through 1980 (prior to any transfers out of the ditch).

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table C-1
Historical Diversion Records for Murphy Ditch (acre-feet)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
1946					994	614	404	2012
1947		421	547	517	730	1560	687	4462
1948	6	513	522	348	999	826	654	3868
1949		185	480	425	1130	876	220	3316
1950		34	1020	1150	798	673	300	3975
1951	314	902	470	297	803	84	51	2921
1952	101	998	393	555	1140	660	1	3848
1953			236	888	1030	1100		3254
1954			477	960	904	770		3111
1955								
1956		322	858	720	450	376		2726
1957		126	0	206	716	334		1382
1958		686	648	438	542	558		2872
1959		620	450	614	778	436		2898
1960								
1961								
1962								
1963		298	288	768	718	240		2312
1964		378	135	516	814	360		2203
1965		171	250	510	796	630		2357
1966		282	588	686	214	120		1890
1967		40	0	147	304	120		611
1968		210	96	242	606	130		1284
1969								
1970			229	294	307	93		923
1971		180	230	294	306	116		1126
1972		176	60	52	600	215		1103
1973		96	310	552	510	240		1708
1974		744	900	960	904	752		4260
1975		366	98	520	968	960		2912
1976		328	392	440	620	608		2388
1977		196	514	592	668	342		2312
1978		30	180	440	460	632		1742
1979		328	708	498	368	460		2362
1980		430	600	820	520	300		2670
Avg	140	348	403	533	690	506	331	2951

Notes:

1946-1950: "USDI Definite Plan Report - Rapid Valley Unit" Bureau of Reclamation

1951-1952: "WRIR 97-4288 - Streamflow Characteristics for Black Hills of South Dakota" Lisa Miller and Daniel Driscoll, USGS, 1993, Sec.B

1953-1980: "Status of Water Use on Rapid Creek" John Hamak, DWNr, SD, December, 1980, App. IV

No data available

APPENDIX D

Farm Specific Calculations of Transferable Yield

Murphy Ditch Remaining Transferable Yield

Owner

Ahrlin

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

68.4

0

% Ownership

6.0%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	2.8	12.1	22.6	35.6	32.1	17.2	5.3	127.7
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	5.6	24.2	45.2	71.1	64.2	34.5	10.6	255.5
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	7.4	18.5	21.4	28.3	36.6	26.8	17.6	156.5
Transferable Yield (in terms of Ranch Headgate Delivery)	5.6	18.5	21.4	28.3	36.6	26.8	10.6	147.8

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Anderson

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

2

0

% Ownership

0.2%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.1	0.4	0.7	1.0	0.9	0.5	0.2	3.7
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.2	0.7	1.3	2.1	1.9	1.0	0.3	7.5
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	0.2	0.5	0.6	0.8	1.1	0.8	0.5	4.6
Transferable Yield (in terms of Ranch Headgate Delivery)	0.2	0.5	0.6	0.8	1.1	0.8	0.3	4.3

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Buckholz

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

5

0

% Ownership

0.4%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.2	0.9	1.7	2.6	2.3	1.3	0.4	9.3
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.4	1.8	3.3	5.2	4.7	2.5	0.8	18.7
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	0.5	1.3	1.6	2.1	2.7	2.0	1.3	11.4
Transferable Yield (in terms of Ranch Headgate Delivery)	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Gravatt

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

45.6

0

% Ownership

4.0%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	1.9	8.1	15.1	23.7	21.4	11.5	3.5	85.2
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	3.8	16.1	30.1	47.4	42.8	23.0	7.1	170.3
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	4.9	12.3	14.2	18.8	24.4	17.9	11.7	104.3
Transferable Yield (in terms of Ranch Headgate Delivery)	3.8	12.3	14.2	18.8	24.4	17.9	7.1	98.5

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Lytle

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

45

0

% Ownership

3.9%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	1.9	7.9	14.9	23.4	21.1	11.3	3.5	84.0
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	3.7	15.9	29.7	46.8	42.2	22.7	7.0	168.1
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	4.9	12.1	14.1	18.6	24.1	17.7	11.5	103.0
Transferable Yield (in terms of Ranch Headgate Delivery)	3.7	12.1	14.1	18.6	24.1	17.7	7.0	97.2

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Olson

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

9

0

% Ownership

0.8%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 100%

Pasture Grass 0%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.3	1.8	3.4	5.2	4.6	2.4	0.6	18.4
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.5	3.6	6.8	10.4	9.2	4.9	1.3	36.7
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	1.0	2.4	2.8	3.7	4.8	3.5	2.3	20.6
Transferable Yield (in terms of Ranch Headgate Delivery)	0.5	2.4	2.8	3.7	4.8	3.5	1.3	19.1

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Rypkema

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

36

0

% Ownership

3.1%

0

Irrigation Practices

Efficiency

50%

Alfalfa Hay

100%

Pasture Grass

0%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	1.1	7.2	13.6	20.7	18.5	9.8	2.6	73.4
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	2.1	14.4	27.2	41.5	36.9	19.6	5.1	146.8
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	3.9	9.7	11.2	14.9	19.3	14.1	9.2	82.4
Transferable Yield (in terms of Ranch Headgate Delivery)	2.1	9.7	11.2	14.9	19.3	14.1	5.1	76.5

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Vessley

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

5

0

% Ownership

0.4%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.2	0.9	1.7	2.6	2.3	1.3	0.4	9.3
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.4	1.8	3.3	5.2	4.7	2.5	0.8	18.7
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	0.5	1.3	1.6	2.1	2.7	2.0	1.3	11.4
Transferable Yield (in terms of Ranch Headgate Delivery)	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Whiting

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

1

0

% Ownership

0.1%

0

Irrigation Practices

Efficiency

50%

Alfalfa Hay

100%

Pasture Grass

0%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.0	0.2	0.4	0.6	0.5	0.3	0.1	2.0
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.1	0.4	0.8	1.2	1.0	0.5	0.1	4.1
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	0.1	0.3	0.3	0.4	0.5	0.4	0.3	2.3
Transferable Yield (in terms of Ranch Headgate Delivery)	0.1	0.3	0.3	0.4	0.5	0.4	0.1	2.1

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Wileman

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

5

0

% Ownership

0.4%

0

Irrigation Practices

Efficiency

50%

Alfalfa Hay

100%

Pasture Grass

0%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	0.1	1.0	1.9	2.9	2.6	1.4	0.4	10.2
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	0.3	2.0	3.8	5.8	5.1	2.7	0.7	20.4
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	0.5	1.3	1.6	2.1	2.7	2.0	1.3	11.4
Transferable Yield (in terms of Ranch Headgate Delivery)	0.3	1.3	1.6	2.1	2.7	2.0	0.7	10.6

Note:

The above is estimated based on readily available data.

Murphy Ditch Remaining Transferable Yield

Owner

Williams

Water Rights Owned

Vested Water Right Priority

1878 Permit

1893 Permit

No. of Acres

104

0

% Ownership

9.1%

0

Irrigation Practices

Efficiency 50%

Alfalfa Hay 50%

Pasture Grass 50%

Estimated Transferable Yield (ac-ft)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Crop Irrigation Water Requirement	4.3	18.4	34.4	54.1	48.8	26.2	8.1	194.2
Required Ranch Headgate Delivery to Meet Crop Irrigation Water Requirement	8.6	36.7	68.7	108.1	97.6	52.4	16.2	388.4
Ranch Headgate Delivery (Prorata Portion of Available Diversions)	11.3	28.1	32.5	43.0	55.6	40.8	26.7	237.9
Transferable Yield (in terms of Ranch Headgate Delivery)	8.6	28.1	32.5	43.0	55.6	40.8	16.2	224.7

Note:

The above is estimated based on readily available data.

APPENDIX E

Detailed Results of Potential Consumptive Use Computations

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-1
Average Monthly Temperature (degrees F)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	9.0	29.8	25.0	38.0	50.4	63.9	66.9	67.7	58.4	53.7	32.0	28.5	43.6
1951	20.7	27.7	33.8	40.6	56.3	65.0	71.0	69.5	55.8	46.6	33.1	17.4	44.8
1952	22.5	26.8	25.8	50.2	56.2	69.0	71.6	72.4	67.1	50.2	34.3	30.0	48.0
1953	31.3	25.7	36.7	38.3	52.5	66.8	72.4	72.5	63.1	55.8	41.7	30.4	48.9
1954	20.1	41.2	27.7	45.9	54.2	63.7	77.7	72.5	63.2	46.7	42.6	32.3	49.0
1955	23.9	19.3	28.6	49.8	59.2	62.2	76.9	76.2	62.2	51.8	24.7	21.8	46.4
1956	23.0	24.1	34.1	39.1	56.7	72.8	72.0	69.5	63.0	53.4	33.1	29.8	47.6
1957	10.7	27.6	33.7	41.0	54.0	62.3	75.3	71.6	59.2	47.4	35.4	34.9	46.1
1958	31.9	21.9	30.6	44.0	61.8	62.3	67.1	74.7	63.8	52.3	37.2	27.0	47.9
1959	20.6	21.7	37.9	43.3	53.7	70.1	73.8	75.7	58.8	44.5	27.9	34.2	46.8
1960	23.9	19.1	28.0	47.5	56.9	65.6	76.8	72.4	63.6	51.8	36.9	25.0	47.3
1961	27.3	33.2	39.4	41.8	55.7	71.3	73.1	77.2	55.6	49.8	34.9	23.0	48.5
1962	19.3	24.1	28.6	49.1	58.3	65.3	69.2	71.1	60.2	52.9	40.6	30.1	47.4
1963	12.3	30.2	39.7	44.5	57.0	68.1	74.4	73.7	66.5	59.4	39.6	22.7	49.0
1964	28.4	28.0	29.9	46.3	58.5	64.9	76.7	69.4	59.0	51.6	33.7	18.9	47.1
1965	25.4	25.6	21.2	47.0	54.7	64.5	72.1	70.7	49.7	54.7	38.2	33.3	46.4
1966	14.1	19.3	35.0	38.6	56.0	65.3	76.6	65.9	61.3	48.6	34.6	26.7	45.2
1967	27.9	27.5	35.2	44.0	49.8	60.0	70.6	70.6	63.4	50.1	34.6	22.5	46.3
1968	23.4	27.4	40.4	42.6	50.8	63.0	69.1	67.0	59.8	51.0	35.5	18.5	45.7
1969	15.9	25.4	27.8	49.6	57.4	59.8	71.0	73.7	64.8	40.6	38.7	28.2	46.1
1970	17.8	30.8	27.4	39.2	55.6	65.5	72.7	73.8	59.1	44.1	34.2	21.8	45.2
1971	17.5	22.6	32.6	46.0	53.6	66.3	68.0	73.8	57.4	46.1	34.5	23.3	45.1
1972	17.5	24.0	36.5	43.6	55.1	64.6	65.6	69.1	59.4	43.8	31.0	18.6	44.1
1973	26.7	28.8	37.4	42.8	53.7	64.7	70.7	74.2	57.1	51.3	32.3	25.3	47.1
1974	21.9	32.4	37.6	47.1	53.8	66.6	77.3	67.6	57.6	51.7	36.4	28.9	48.3
1975	23.7	17.6	27.6	40.5	54.0	62.2	74.7	70.3	58.5	49.2	33.8	29.4	45.1
1976	23.8	34.6	34.4	46.9	55.3	64.3	72.7	72.6	63.3	45.4	31.7	26.8	47.7
1977	12.7	34.5	36.4	49.5	60.2	69.0	73.4	66.0	61.0	48.8	33.3	21.8	47.2
1978	11.0	15.3	35.4	45.2	55.0	65.0	71.1	69.7	66.2	50.5	29.2	17.0	44.2
1979	7.4	16.7	35.4	44.4	53.6	65.3	70.4	68.5	66.3	50.8	33.0	33.1	45.4
1980	21.0	27.0	31.5	48.9	57.4	67.0	74.9	68.5	61.6	48.8	39.2	30.2	48.0
1981	32.6	29.3	40.0	51.5	54.9	64.9	71.9	70.0	63.5	47.7	40.4	25.8	49.4
1982	12.1	24.2	33.0	42.1	53.3	59.6	70.7	70.2	58.7	47.2	32.7	28.6	44.4
1983	32.1	37.3	36.4	40.7	52.0	63.1	73.7	78.0	60.8	49.4	34.9	8.1	47.2
1984	28.0	36.1	34.2	43.8	53.6	62.8	72.2	74.8	57.2	47.2	37.4	21.4	47.4
1985	21.6	23.8	35.9	52.0	61.8	62.1	74.6	69.0	55.5	47.3	16.0	21.0	45.0
1986	29.8	21.5	43.0	44.2	54.9	67.6	70.8	69.6	54.9	48.7	30.6	30.5	47.2
1987	31.0	32.4	32.6	51.4	59.4	67.1	75.4	68.1	61.4	47.1	40.3	28.9	49.6
1988	21.6	26.9	35.5	47.1	59.9	75.6	76.0	72.5	60.4	49.6	36.3	28.4	49.2
1989	28.7	14.4	31.1	45.8	55.3	64.0	77.0	73.1	61.0	48.8	36.4	19.4	46.2
1990	32.3	28.9	36.4	45.0	53.2	66.6	71.7	73.7	65.9	48.2	40.4	17.7	48.3
1991	18.3	35.9	38.4	46.3	56.6	67.2	72.9	74.0	61.1	46.4	30.0	32.7	48.3
1992	33.6	36.3	40.8	47.1	57.4	62.6	64.3	65.8	62.6	49.2	32.4	19.0	47.6
1993	16.0	15.1	37.6	43.5	56.1	60.3	65.1	68.6	56.6	48.2	32.4	31.4	44.3
1994	22.4	19.8	40.5	46.0	60.2	68.5	70.7	73.3	65.4	49.7	35.5	30.3	48.5
1995	29.2	31.8	33.2	40.3	51.8	62.8	70.6	73.6	60.0	46.5	33.7	25.4	46.6
1996	14.9	27.3	26.2	43.3	50.5	65.5	70.8	73.2	59.8	47.7	24.3	17.9	43.4
1997	18.1	28.8	36.7	38.7	52.8	66.3	70.9	68.7	62.5	48.6	33.2	30.3	46.3
1998	24.3	34.9	27.9	46.2	56.2	58.7	72.7	72.3	67.0	47.8	36.4	26.8	47.6
1999	25.6	36.6	36.3	42.6	53.0	62.6	71.3	71.4	55.6	49.9	41.7	33.3	48.3
2000	26.2	33.2	38.6	43.0	56.0	62.1	73.6	74.4	63.4	49.8	27.0	16.7	47.0
2001	29.7	16.9	34.3	46.0	56.2	64.1	74.8	74.4	62.5	47.8	39.4	28.9	47.9
2002	27.3	31.1	23.1	45.4	53.1	71.0	79.5	72.6	63.0	40.2	37.0	31.0	47.9
2003	26.2	22.6	35.8	48.8	56.0	63.2	78.2	77.6	60.4	52.8	28.8	29.4	48.3
2004	22.1	27.8	40.6	49.0	57.5	63.3	73.6	68.6	63.1	50.2	37.2	31.3	48.7
Average	22.5	27.0	33.8	44.8	55.4	65.0	72.5	71.5	60.9	49.1	34.4	25.9	46.9

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-2
Total Monthly Precipitation (inches)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.3	0.1	2.7	1.6	2.4	0.9	1.6	2.7	2.8	0.4	0.4	0.0	15.9
1951	0.1	0.1	1.0	0.5	1.9	3.0	1.6	2.9	1.5	0.9	0.2	0.5	14.2
1952	0.0	0.7	0.8	0.3	3.8	3.0	1.5	0.7	0.2	0.0	0.2	0.1	11.2
1953	0.8	2.5	0.7	2.8	1.7	4.1	1.3	0.9	0.4	0.2	0.8	0.2	16.2
1954	0.2	0.3	2.3	0.3	2.7	3.2	1.2	2.1	0.2	1.9	0.6	0.3	15.3
1955	0.5	0.9	0.6	1.6	1.7	2.1	2.1	1.7	3.1	0.3	0.4	0.7	15.5
1956	0.5	0.5	0.8	1.7	2.1	1.3	2.3	3.2	0.3	0.1	1.5	0.4	14.5
1957	0.4	0.3	0.7	2.1	7.1	3.4	2.0	1.0	0.7	1.3	0.4	0.0	19.3
1958	0.4	0.8	1.1	3.0	1.0	3.9	4.5	0.3	0.0	0.2	0.4	0.4	16.1
1959	0.4	0.6	0.6	1.9	3.3	2.8	0.7	0.4	2.4	0.2	1.2	0.3	14.6
1960	0.2	0.9	0.8	1.2	2.2	2.2	0.7	1.2	0.7	0.0	0.4	0.8	11.2
1961	0.1	0.2	0.8	1.5	1.3	0.8	2.1	0.4	1.0	0.9	0.4	0.5	10.0
1962	0.5	1.0	1.3	0.7	6.9	4.0	4.5	1.0	0.7	1.6	0.1	0.2	22.5
1963	1.0	0.9	1.6	3.8	1.2	5.5	2.0	1.3	1.2	0.8	0.1	0.3	19.8
1964	0.4	0.8	0.6	1.2	2.5	4.7	0.8	1.9	0.7	0.5	0.3	0.8	15.2
1965	0.6	0.2	0.5	1.5	7.0	3.6	0.6	1.5	1.5	0.6	0.2	0.1	17.7
1966	0.2	1.0	1.8	2.5	0.3	1.3	3.9	3.2	2.8	1.5	1.0	0.8	20.4
1967	0.5	0.6	0.8	5.2	3.2	6.8	1.1	1.0	2.1	0.3	0.3	0.9	22.6
1968	0.4	0.4	0.2	1.8	1.7	7.0	2.4	2.5	0.9	0.1	0.5	0.6	18.5
1969	0.1	0.7	0.7	1.6	2.2	2.0	6.1	0.3	0.4	0.9	0.4	0.6	15.9
1970	0.7	0.5	1.5	4.6	2.4	2.2	1.0	0.7	1.6	1.2	0.8	0.6	17.9
1971	1.2	1.0	1.3	2.9	3.7	1.9	1.5	0.5	2.3	2.0	0.8	0.2	19.2
1972	0.2	0.4	0.5	2.8	3.3	4.1	1.7	2.5	0.2	0.8	0.4	0.3	17.2
1973	0.1	0.3	2.7	2.7	2.4	0.6	1.5	0.7	1.4	1.4	0.7	0.5	15.1
1974	0.2	0.3	0.3	1.6	1.3	1.1	0.7	1.4	0.9	1.2	0.1	0.1	9.1
1975	1.1	0.4	2.5	1.4	1.2	5.6	1.6	0.9	0.0	0.7	0.6	1.7	17.5
1976	0.3	0.5	0.3	2.7	2.7	4.8	1.1	1.3	0.3	0.2	0.6	0.4	15.2
1977	0.8	0.3	2.6	1.6	2.5	1.8	3.0	1.8	2.9	1.1	0.8	0.4	19.4
1978	0.2	0.8	0.4	2.2	3.1	2.0	4.1	1.4	0.2	0.3	0.6	0.3	15.6
1979	0.5	0.3	0.5	0.3	1.2	3.6	4.1	2.3	0.1	0.9	0.2	0.1	14.0
1980	0.2	0.5	0.9	1.1	1.6	4.8	1.8	2.4	0.5	2.3	0.6	0.7	17.2
1981	0.1	0.1	0.1	0.3	2.8	1.9	4.5	1.7	0.2	1.8	0.2	0.4	14.1
1982	0.4	0.4	1.4	0.7	6.5	2.9	1.8	4.8	2.7	3.8	0.3	0.4	26.0
1983	0.3	0.2	0.8	1.0	2.2	3.0	1.9	2.4	0.3	1.7	1.1	0.5	15.5
1984	0.1	0.2	0.7	3.1	1.6	4.7	1.6	1.0	0.7	0.7	0.5	0.4	15.2
1985	0.5	0.1	1.6	0.3	1.2	1.6	1.0	1.9	1.6	1.0	2.2	0.8	13.6
1986	0.5	0.9	0.9	4.7	1.4	4.6	0.9	1.3	3.1	1.6	1.4	0.0	21.4
1987	0.0	1.7	1.1	0.0	3.4	1.4	0.8	2.4	0.7	0.3	0.3	0.3	12.4
1988	0.2	0.3	0.5	0.6	3.3	1.1	0.4	2.0	0.6	0.8	0.8	0.5	10.9
1989	0.0	0.3	1.0	1.5	1.4	1.0	0.8	1.7	3.1	1.5	0.4	0.8	13.6
1990	0.2	0.4	1.2	0.8	4.9	1.4	1.9	1.9	2.4	0.6	0.4	0.3	16.5
1991	0.3	0.8	0.6	3.0	4.4	3.3	2.0	0.6	0.6	1.0	0.7	0.0	17.3
1992	0.3	0.2	1.9	0.7	2.5	2.2	3.3	0.5	0.4	0.7	0.4	0.6	13.5
1993	0.7	0.6	0.8	3.1	2.2	3.4	4.3	1.2	1.5	0.9	0.7	0.5	19.8
1994	0.5	0.7	0.4	1.2	1.5	0.7	0.6	0.9	0.3	2.8	0.7	0.4	10.5
1995	0.1	0.6	0.8	2.6	4.0	4.5	2.9	0.5	0.9	2.4	0.4	0.1	19.7
1996	0.9	0.1	1.1	1.6	8.2	1.2	0.5	1.9	1.6	1.1	0.1	1.3	19.4
1997	0.7	0.3	0.2	4.8	5.4	3.4	3.7	3.9	0.8	0.5	0.2	0.1	23.8
1998	0.2	1.2	1.3	0.3	2.3	5.6	1.3	1.4	1.5	5.6	1.1	0.1	21.9
1999	0.2	0.0	1.3	2.5	3.7	5.2	3.7	0.5	0.9	0.1	0.4	0.2	18.7
2000	0.2	0.2	1.4	4.0	2.4	1.6	2.1	0.7	0.5	1.5	0.5	0.1	15.0
2001	0.2	0.2	0.4	2.2	1.7	3.6	2.5	1.6	0.9	1.0	0.1	0.0	14.3
2002	0.3	0.4	1.4	1.6	2.1	0.8	1.1	1.9	2.7	1.0	0.3	0.4	14.0
2003	0.7	0.7	1.6	2.3	2.3	2.8	1.0	1.0	1.5	0.8	0.9	0.5	16.1
2004	0.5	0.8	1.1	0.8	2.1	1.4	2.5	1.4	2.9	1.6	0.5	0.3	15.7
Average	0.4	0.5	1.0	1.9	2.8	2.9	2.0	1.5	1.2	1.1	0.6	0.4	16.4

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-3
Effective Precipitation (Ac-ft/Acre)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.6
1951	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.7
1952	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.6
1953	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.5
1954	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.2	0.0	0.1	0.0	0.0	0.7
1955	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.8
1956	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.6
1957	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.8
1958	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.7
1959	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.6
1960	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.5
1961	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.4
1962	0.0	0.0	0.0	0.0	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.0	1.1
1963	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.8
1964	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.7
1965	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.8
1966	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.0	0.0	0.0	0.8
1967	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.8
1968	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.2	0.1	0.0	0.0	0.0	0.9
1969	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.8
1970	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.5
1971	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.7
1972	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.8
1973	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.5
1974	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4
1975	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.6
1976	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.7
1977	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.9
1978	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.7
1979	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.8
1980	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.2	0.0	0.1	0.0	0.0	0.8
1981	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.8
1982	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.3	0.2	0.1	0.0	0.0	1.1
1983	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.7
1984	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.6
1985	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.5
1986	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.2	0.0	0.0	0.0	0.8
1987	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.6
1988	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.5
1989	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.6
1990	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.8
1991	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.8
1992	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.6
1993	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.8
1994	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.4
1995	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.1	0.1	0.0	0.0	0.8
1996	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.6
1997	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.0	1.0
1998	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.9
1999	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.0	0.1	0.0	0.0	0.0	0.8
2000	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.5
2001	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.8
2002	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.6
2003	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.6
2004	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.7
Average	0.00	0.00	0.00	0.01	0.14	0.19	0.15	0.11	0.07	0.03	0.00	0.00	0.7

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-4
Potential Consumptive Use – Alfalfa
(Ac-ft/Acre)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.3
1951	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.6	0.3	0.1	0.0	0.0	2.6
1952	0.0	0.0	0.0	0.1	0.4	0.7	0.7	0.6	0.4	0.1	0.0	0.0	3.0
1953	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.6	0.4	0.1	0.0	0.0	2.7
1954	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.6	0.4	0.1	0.0	0.0	2.8
1955	0.0	0.0	0.0	0.1	0.4	0.5	0.8	0.7	0.4	0.1	0.0	0.0	3.1
1956	0.0	0.0	0.0	0.0	0.4	0.7	0.7	0.6	0.4	0.1	0.0	0.0	2.9
1957	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.6	0.3	0.1	0.0	0.0	2.6
1958	0.0	0.0	0.0	0.1	0.5	0.5	0.6	0.7	0.4	0.1	0.0	0.0	2.8
1959	0.0	0.0	0.0	0.0	0.3	0.7	0.8	0.7	0.3	0.1	0.0	0.0	2.8
1960	0.0	0.0	0.0	0.1	0.4	0.6	0.8	0.6	0.4	0.1	0.0	0.0	3.0
1961	0.0	0.0	0.0	0.0	0.4	0.7	0.7	0.7	0.3	0.1	0.0	0.0	2.9
1962	0.0	0.0	0.0	0.1	0.4	0.6	0.6	0.6	0.3	0.1	0.0	0.0	2.8
1963	0.0	0.0	0.0	0.0	0.4	0.6	0.8	0.7	0.4	0.1	0.0	0.0	3.0
1964	0.0	0.0	0.0	0.1	0.4	0.6	0.8	0.6	0.3	0.1	0.0	0.0	2.9
1965	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.6	0.2	0.1	0.0	0.0	2.6
1966	0.0	0.0	0.0	0.0	0.3	0.6	0.8	0.5	0.3	0.1	0.0	0.0	2.7
1967	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.6	0.4	0.1	0.0	0.0	2.4
1968	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.3
1969	0.0	0.0	0.0	0.1	0.4	0.5	0.7	0.7	0.4	0.1	0.0	0.0	2.8
1970	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.7	0.3	0.1	0.0	0.0	2.7
1971	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.7	0.3	0.1	0.0	0.0	2.6
1972	0.0	0.0	0.0	0.0	0.4	0.6	0.6	0.6	0.3	0.1	0.0	0.0	2.5
1973	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.7	0.3	0.1	0.0	0.0	2.6
1974	0.0	0.0	0.0	0.0	0.3	0.6	0.8	0.5	0.3	0.1	0.0	0.0	2.7
1975	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.6	0.3	0.1	0.0	0.0	2.6
1976	0.0	0.0	0.0	0.0	0.4	0.5	0.7	0.6	0.4	0.1	0.0	0.0	2.8
1977	0.0	0.0	0.0	0.1	0.4	0.7	0.7	0.5	0.3	0.1	0.0	0.0	2.9
1978	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.6	0.4	0.1	0.0	0.0	2.7
1979	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.6	0.4	0.1	0.0	0.0	2.6
1980	0.0	0.0	0.0	0.1	0.4	0.6	0.8	0.6	0.3	0.1	0.0	0.0	2.9
1981	0.0	0.0	0.0	0.2	0.4	0.6	0.7	0.6	0.4	0.1	0.0	0.0	2.9
1982	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.6	0.3	0.1	0.0	0.0	2.4
1983	0.0	0.0	0.0	0.0	0.2	0.5	0.8	0.8	0.3	0.1	0.0	0.0	2.7
1984	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.7	0.3	0.1	0.0	0.0	2.6
1985	0.0	0.0	0.0	0.2	0.5	0.5	0.8	0.6	0.3	0.1	0.0	0.0	2.9
1986	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.6	0.3	0.1	0.0	0.0	2.6
1987	0.0	0.0	0.0	0.2	0.4	0.6	0.8	0.6	0.3	0.1	0.0	0.0	3.0
1988	0.0	0.0	0.0	0.1	0.4	0.8	0.8	0.6	0.3	0.1	0.0	0.0	3.2
1989	0.0	0.0	0.0	0.0	0.4	0.5	0.8	0.7	0.3	0.1	0.0	0.0	2.8
1990	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.7	0.4	0.1	0.0	0.0	2.8
1991	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.7	0.3	0.1	0.0	0.0	2.9
1992	0.0	0.0	0.0	0.1	0.4	0.5	0.5	0.5	0.4	0.1	0.0	0.0	2.5
1993	0.0	0.0	0.0	0.0	0.4	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.3
1994	0.0	0.0	0.0	0.1	0.4	0.6	0.7	0.7	0.4	0.1	0.0	0.0	3.0
1995	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.7	0.3	0.1	0.0	0.0	2.5
1996	0.0	0.0	0.0	0.0	0.2	0.6	0.7	0.7	0.3	0.1	0.0	0.0	2.5
1997	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.6	0.4	0.1	0.0	0.0	2.6
1998	0.0	0.0	0.0	0.0	0.4	0.4	0.7	0.6	0.4	0.1	0.0	0.0	2.7
1999	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.6	0.3	0.1	0.0	0.0	2.5
2000	0.0	0.0	0.0	0.0	0.4	0.5	0.7	0.7	0.4	0.1	0.0	0.0	2.8
2001	0.0	0.0	0.0	0.0	0.4	0.5	0.8	0.7	0.4	0.1	0.0	0.0	2.9
2002	0.0	0.0	0.0	0.0	0.3	0.7	0.9	0.6	0.4	0.1	0.0	0.0	3.0
2003	0.0	0.0	0.0	0.1	0.4	0.5	0.9	0.7	0.3	0.1	0.0	0.0	3.1
2004	0.0	0.0	0.0	0.1	0.4	0.5	0.8	0.6	0.4	0.1	0.0	0.0	2.8
Average	0.00	0.00	0.00	0.04	0.34	0.57	0.73	0.62	0.34	0.10	0.00	0.00	2.7

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-5
Potential Consumptive Use – Pasture Grass
(Ac-ft/Acre)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.3	0.2	0.0	0.0	2.1
1951	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.5	0.2	0.1	0.0	0.0	2.2
1952	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.1	0.0	0.0	2.6
1953	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.5	0.3	0.2	0.0	0.0	2.5
1954	0.0	0.0	0.0	0.1	0.3	0.4	0.7	0.5	0.3	0.1	0.0	0.0	2.5
1955	0.0	0.0	0.0	0.2	0.4	0.4	0.7	0.6	0.3	0.1	0.0	0.0	2.7
1956	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.5	0.3	0.2	0.0	0.0	2.5
1957	0.0	0.0	0.0	0.0	0.3	0.4	0.7	0.5	0.3	0.1	0.0	0.0	2.3
1958	0.0	0.0	0.0	0.1	0.4	0.4	0.5	0.6	0.3	0.2	0.0	0.0	2.5
1959	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.5
1960	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.5	0.3	0.2	0.0	0.0	2.6
1961	0.0	0.0	0.0	0.1	0.3	0.6	0.6	0.6	0.2	0.1	0.0	0.0	2.5
1962	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.5	0.3	0.2	0.0	0.0	2.5
1963	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.4	0.2	0.0	0.0	2.8
1964	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.5	0.3	0.1	0.0	0.0	2.5
1965	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.5	0.2	0.2	0.0	0.0	2.3
1966	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.4	0.3	0.1	0.0	0.0	2.3
1967	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.5	0.3	0.1	0.0	0.0	2.2
1968	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.3	0.1	0.0	0.0	2.1
1969	0.0	0.0	0.0	0.2	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.4
1970	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.3
1971	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.6	0.3	0.1	0.0	0.0	2.3
1972	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.5	0.3	0.1	0.0	0.0	2.1
1973	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.3
1974	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.5	0.3	0.2	0.0	0.0	2.5
1975	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.5	0.3	0.1	0.0	0.0	2.3
1976	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.5	0.3	0.1	0.0	0.0	2.4
1977	0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.4	0.3	0.1	0.0	0.0	2.5
1978	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.5	0.4	0.1	0.0	0.0	2.4
1979	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.5	0.4	0.1	0.0	0.0	2.4
1980	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.5
1981	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.5
1982	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.5	0.3	0.1	0.0	0.0	2.1
1983	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.4
1984	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.3
1985	0.0	0.0	0.0	0.2	0.4	0.4	0.6	0.5	0.2	0.1	0.0	0.0	2.5
1986	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.5	0.2	0.1	0.0	0.0	2.3
1987	0.0	0.0	0.0	0.2	0.4	0.5	0.7	0.5	0.3	0.1	0.0	0.0	2.6
1988	0.0	0.0	0.0	0.1	0.4	0.7	0.7	0.5	0.3	0.1	0.0	0.0	2.8
1989	0.0	0.0	0.0	0.1	0.3	0.4	0.7	0.6	0.3	0.1	0.0	0.0	2.5
1990	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.4	0.1	0.0	0.0	2.5
1991	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.5
1992	0.0	0.0	0.0	0.2	0.3	0.4	0.5	0.4	0.3	0.1	0.0	0.0	2.2
1993	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.5	0.3	0.1	0.0	0.0	2.1
1994	0.0	0.0	0.0	0.1	0.4	0.5	0.6	0.6	0.4	0.1	0.0	0.0	2.6
1995	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.2
1996	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.6	0.3	0.1	0.0	0.0	2.3
1997	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.2
1998	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.5	0.4	0.1	0.0	0.0	2.4
1999	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.5	0.2	0.2	0.0	0.0	2.2
2000	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.4
2001	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.5
2002	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.5	0.3	0.0	0.0	0.0	2.6
2003	0.0	0.0	0.0	0.2	0.3	0.4	0.7	0.6	0.3	0.1	0.0	0.0	2.7
2004	0.0	0.0	0.0	0.2	0.3	0.4	0.6	0.5	0.3	0.1	0.0	0.0	2.5
Average	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.4

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-6
Crop Irrigation Requirement – Alfalfa
(Ac-ft/Acre)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.4	0.2	0.1	0.0	0.0	1.7
1951	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.4	0.2	0.1	0.0	0.0	1.8
1952	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.4	0.1	0.0	0.0	2.4
1953	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.6	0.4	0.1	0.0	0.0	2.2
1954	0.0	0.0	0.0	0.0	0.2	0.3	0.7	0.5	0.4	0.0	0.0	0.0	2.2
1955	0.0	0.0	0.0	0.1	0.3	0.4	0.7	0.6	0.2	0.1	0.0	0.0	2.3
1956	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.4	0.4	0.1	0.0	0.0	2.3
1957	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.5	0.3	0.1	0.0	0.0	1.8
1958	0.0	0.0	0.0	0.0	0.4	0.3	0.3	0.7	0.4	0.1	0.0	0.0	2.2
1959	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.7	0.2	0.1	0.0	0.0	2.3
1960	0.0	0.0	0.0	0.1	0.3	0.4	0.8	0.5	0.3	0.1	0.0	0.0	2.5
1961	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.7	0.2	0.1	0.0	0.0	2.5
1962	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.5	0.3	0.1	0.0	0.0	1.7
1963	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.6	0.3	0.1	0.0	0.0	2.2
1964	0.0	0.0	0.0	0.0	0.3	0.3	0.8	0.4	0.3	0.1	0.0	0.0	2.1
1965	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.5	0.1	0.1	0.0	0.0	1.7
1966	0.0	0.0	0.0	0.0	0.3	0.5	0.5	0.3	0.2	0.1	0.0	0.0	1.9
1967	0.0	0.0	0.0	0.0	0.1	0.1	0.6	0.5	0.2	0.1	0.0	0.0	1.6
1968	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.4	0.3	0.1	0.0	0.0	1.5
1969	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.6	0.4	0.1	0.0	0.0	2.0
1970	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.6	0.2	0.0	0.0	0.0	2.2
1971	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.6	0.2	0.0	0.0	0.0	1.9
1972	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.4	0.3	0.1	0.0	0.0	1.7
1973	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.6	0.2	0.1	0.0	0.0	2.2
1974	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.4	0.2	0.1	0.0	0.0	2.3
1975	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.5	0.3	0.1	0.0	0.0	2.0
1976	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.5	0.4	0.1	0.0	0.0	2.1
1977	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.4	0.2	0.1	0.0	0.0	2.1
1978	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.5	0.4	0.1	0.0	0.0	2.0
1979	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.4	0.4	0.1	0.0	0.0	1.9
1980	0.0	0.0	0.0	0.1	0.3	0.3	0.6	0.4	0.3	0.0	0.0	0.0	2.1
1981	0.0	0.0	0.0	0.2	0.2	0.4	0.4	0.5	0.4	0.0	0.0	0.0	2.1
1982	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.3	0.2	0.0	0.0	0.0	1.3
1983	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.6	0.3	0.1	0.0	0.0	2.0
1984	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.6	0.2	0.1	0.0	0.0	2.0
1985	0.0	0.0	0.0	0.2	0.4	0.4	0.7	0.4	0.2	0.1	0.0	0.0	2.3
1986	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.5	0.1	0.0	0.0	0.0	1.8
1987	0.0	0.0	0.0	0.2	0.2	0.5	0.7	0.4	0.3	0.1	0.0	0.0	2.4
1988	0.0	0.0	0.0	0.1	0.2	0.7	0.8	0.5	0.3	0.1	0.0	0.0	2.7
1989	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.5	0.2	0.1	0.0	0.0	2.3
1990	0.0	0.0	0.0	0.0	0.1	0.5	0.6	0.5	0.3	0.1	0.0	0.0	2.0
1991	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.1
1992	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.5	0.3	0.1	0.0	0.0	1.9
1993	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.5	0.2	0.1	0.0	0.0	1.5
1994	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.6	0.4	0.0	0.0	0.0	2.6
1995	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.6	0.3	0.0	0.0	0.0	1.7
1996	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.5	0.2	0.1	0.0	0.0	1.9
1997	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.3	0.3	0.1	0.0	0.0	1.6
1998	0.0	0.0	0.0	0.0	0.2	0.1	0.6	0.5	0.3	0.0	0.0	0.0	1.9
1999	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.2	0.1	0.0	0.0	1.6
2000	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.6	0.3	0.1	0.0	0.0	2.2
2001	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.6	0.3	0.1	0.0	0.0	2.1
2002	0.0	0.0	0.0	0.0	0.2	0.6	0.8	0.5	0.2	0.0	0.0	0.0	2.4
2003	0.0	0.0	0.0	0.0	0.2	0.3	0.8	0.7	0.2	0.1	0.0	0.0	2.4
2004	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.5	0.2	0.1	0.0	0.0	2.1
Average	0.00	0.00	0.00	0.03	0.20	0.38	0.58	0.51	0.27	0.07	0.00	0.00	2.0

Notes: Rapid City Weather Station (No. 6937)

Engineering Report
Transfer of Water Rights 1878 Murphy Ditch Vested Water Right

Table E-7
Crop Irrigation Requirement – Pasture Grass
(Ac-ft/Acre)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
1950	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.3	0.1	0.1	0.0	0.0	1.4
1951	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.3	0.2	0.1	0.0	0.0	1.5
1952	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.5	0.4	0.1	0.0	0.0	2.1
1953	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.3	0.2	0.0	0.0	1.9
1954	0.0	0.0	0.0	0.1	0.1	0.2	0.6	0.4	0.3	0.0	0.0	0.0	1.8
1955	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.5	0.1	0.1	0.0	0.0	1.9
1956	0.0	0.0	0.0	0.0	0.2	0.5	0.4	0.3	0.3	0.2	0.0	0.0	1.9
1957	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.2	0.1	0.0	0.0	1.5
1958	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.6	0.3	0.2	0.0	0.0	1.8
1959	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.6	0.1	0.1	0.0	0.0	1.8
1960	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.5	0.3	0.2	0.0	0.0	2.1
1961	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.6	0.2	0.1	0.0	0.0	2.1
1962	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.4	0.3	0.1	0.0	0.0	1.4
1963	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.3	0.2	0.0	0.0	1.9
1964	0.0	0.0	0.0	0.1	0.2	0.2	0.6	0.4	0.2	0.1	0.0	0.0	1.8
1965	0.0	0.0	0.0	0.1	0.0	0.2	0.6	0.4	0.1	0.2	0.0	0.0	1.5
1966	0.0	0.0	0.0	0.0	0.3	0.4	0.4	0.2	0.1	0.1	0.0	0.0	1.5
1967	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.4	0.2	0.1	0.0	0.0	1.3
1968	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.3	0.2	0.1	0.0	0.0	1.3
1969	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.5	0.3	0.0	0.0	0.0	1.6
1970	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.2	0.0	0.0	0.0	1.8
1971	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.5	0.1	0.0	0.0	0.0	1.6
1972	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.3	0.0	0.0	0.0	1.3
1973	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.5	0.2	0.1	0.0	0.0	1.8
1974	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.4	0.2	0.1	0.0	0.0	2.0
1975	0.0	0.0	0.0	0.0	0.2	0.1	0.5	0.4	0.3	0.1	0.0	0.0	1.7
1976	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.3	0.1	0.0	0.0	1.7
1977	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.3	0.1	0.1	0.0	0.0	1.7
1978	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.4	0.1	0.0	0.0	1.7
1979	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.1	0.0	0.0	1.6
1980	0.0	0.0	0.0	0.1	0.2	0.2	0.5	0.3	0.3	0.0	0.0	0.0	1.7
1981	0.0	0.0	0.0	0.2	0.1	0.3	0.3	0.4	0.3	0.0	0.0	0.0	1.7
1982	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.1	0.0	0.0	0.0	1.0
1983	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.3	0.1	0.0	0.0	1.7
1984	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.2	0.1	0.0	0.0	1.6
1985	0.0	0.0	0.0	0.2	0.3	0.3	0.6	0.4	0.1	0.1	0.0	0.0	1.9
1986	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.4	0.1	0.0	0.0	0.0	1.5
1987	0.0	0.0	0.0	0.2	0.2	0.4	0.6	0.3	0.3	0.1	0.0	0.0	2.0
1988	0.0	0.0	0.0	0.1	0.2	0.6	0.6	0.4	0.3	0.1	0.0	0.0	2.3
1989	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.4	0.1	0.1	0.0	0.0	1.9
1990	0.0	0.0	0.0	0.1	0.0	0.4	0.4	0.4	0.2	0.1	0.0	0.0	1.7
1991	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.3	0.1	0.0	0.0	1.7
1992	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.3	0.1	0.0	0.0	1.6
1993	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.4	0.2	0.1	0.0	0.0	1.2
1994	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.5	0.3	0.0	0.0	0.0	2.2
1995	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.2	0.0	0.0	0.0	1.4
1996	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.4	0.2	0.1	0.0	0.0	1.6
1997	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.3	0.1	0.0	0.0	1.2
1998	0.0	0.0	0.0	0.1	0.2	0.1	0.5	0.4	0.3	0.0	0.0	0.0	1.6
1999	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.2	0.2	0.0	0.0	1.4
2000	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.3	0.1	0.0	0.0	1.8
2001	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.3	0.1	0.0	0.0	1.7
2002	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.4	0.2	0.0	0.0	0.0	2.0
2003	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.6	0.2	0.1	0.0	0.0	2.0
2004	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.2	0.1	0.0	0.0	1.7
Average	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.4	0.2	0.1	0.0	0.0	1.7

Notes: Rapid City Weather Station (No. 6937)



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ENGINEERS, INC.

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Our company is devoted to serving our clients, developing staff, effectively using technology, communicating effectively, continuously improving, and contributing to our community.

We foster a challenging, stimulating, and fulfilling work experience.

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Agriculture and Natural Resources

Date February 4th 2025

RECEIVED OF Rapid Valley Sanitary District-Water Service C/O Rusty Schmidt Manager 4611 Teak Drive Rapid City SD 57703

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

Fee for Application for Permit No. <u>2885-2</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>100.00</u>
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>2885-2</u>	\$ <u>200.00</u>
Fee for Filing Transfer Form _____	\$ _____
Fee for _____	\$ _____
Fee for Issuing New Well Driller's License No. _____	\$ _____
Fee for Renewal of Well Driller's License No. _____	\$ _____
Fee for Issuing Well Pump Installer's License No. _____	\$ _____
Fee for Renewal of Well Pump Installer's License No. _____	\$ _____
(Any Other Work Provided by Law)	
TOTAL	\$ <u>300.00</u>

By Eric Groeland

Chief Engineer

Dewell, Amanda

From: rschmidt@rvsd.com
Sent: Tuesday, February 18, 2025 4:57 PM
To: Dewell, Amanda
Subject: RE: [EXT] Ahrlin/Gravatt shares RVSD app

Amanda, that will work
thank you

***Rusty Schmidt/General Manager
Rapid Valley Sanitary District-Water service
P-605-393-1050/F-605-393-1051
Rschmidt@rvsd.com***



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From: Dewell, Amanda <Amanda.Dewell@state.sd.us>
Sent: Tuesday, February 18, 2025 3:55 PM
To: rschmidt@rvsd.com
Subject: FW: Ahrlin/Gravatt shares RVSD app

Rusty,

I apologize, Nakaila was kind enough to share with me her notes from Mark that I was not privy to. It appears that back in 2019 Mark factored for ditch losses, decreasing the allotted rates by 11%. This would leave us 0.8 cfs for your application. Please confirm that you are in agreement with proceeding with the application for 147.8 ac-ft & 0.8 cfs.

Thank you,

Amanda Dewell
DANR - Water Rights Program
Permitting Administrator
Main Phone: 605 773-3352
Website: danr.sd.gov



From: Steen, Nakaila <Nakaila.Steen@state.sd.us>
Sent: Tuesday, February 18, 2025 4:50 PM
To: Dewell, Amanda <Amanda.Dewell@state.sd.us>
Subject: RE: Ahrlin/Gravatt shares RVSD app

Think it needs to be 0.8 cfs for 11% ditch loss to be accounted for

Engineering Report
Transfer of Water Rights - 1878 Murphy Ditch Vested Water Right
page 10

Table 6
1878 Murphy Ditch Vested Water Right
Annual Transferable Yield
(in terms of Ranch Headgate Delivery)

Stockholder	Volume (ac-ft)	Rate (c.f.s.)	Rate PERCENTAGE
Ahrlin	148	0.90	0.80
Anderson	4	0.03	0.03
Buckholz	11	0.07	0.06
Gravatt [3]	99	0.60	0.53
Lytle	97	0.59	0.53
Olson [3]	19	0.12	0.11
Rapid Valley Fire	11	0.07	
Rypkema [3]	76	0.47	0.42
Vessley	11	0.07	0.06
Whiting	2	0.01	0.01
Wileman	11	0.07	0.06
Williams	225	1.37	1.22
Total (untransferred)	703	4.30	3.89
Total (under contract)	194	1.19	

MPL
12-26-19

Not Included in Calculations

Note:

- [1] Volume calculated on a monthly basis as the lesser of historical deliveries or deliveries required to fully satisfy irrigation requirements.
[2] Rate equal to pro rata ownership (acreage permitted out of 1,148 total Murphy Ditch acres.
[3] Under contract as of the date of this report.

5. FUTURE USE OF MURPHY DITCH WATER RIGHT

From: Dewell, Amanda <Amanda.Dewell@state.sd.us>
Sent: Tuesday, February 18, 2025 3:49 PM
To: rschmidt@rvsd.com
Cc: Steen, Nakaila <Nakaila.Steen@state.sd.us>
Subject: Ahrlin/Gravatt shares RVSD app

Rusty,

As discussed, Water Rights is comfortable moving forward with RVSD's application, including Ahrlin's shares in Parcel 19 and the remaining Gravatt shares in Parcel 18, based on full ownership of the authorized acres being held by Mr. Simunek, who is agreeable to the transfer.

Please see the attached revised application, increasing the amount of water claimed to 147.8 ac-ft & 0.9 cfs.

Amanda Dewell

DANR - Water Rights Program

Permitting Administrator

Main Phone: 605 773-3352

Website: danr.sd.gov



WATER RIGHTS PROGRAM -- FILE DOCUMENTATION

NAME & ADDRESS: Rusty Schmidt, Rapid Vally Sanitary District

DATE: 02/05/2025

TELEPHONE: 605-393-1050

RE: Gravatt Shares from Parcel #18 (VR No. 1727-2)

COMMENTS:

In reviewing the Leonard Rice report submitted with Permit App No. 2885-2, transferring off shares of VR No. 1727-2 (aka Murphy Ditch) from previously irrigated acres, it was found that while the Ahrlin shares in Parcel 19 were able to be transferred, the remaining Gravatt shares in Parcel 18 might not be appurtenant to the land as would be the case in standard irrigation permits.

I called Rusty to explain the situation and ask that we wait under after February 21, 2025, to confer with retired & seasonally employed staff engineer, Mark Rath.

Rusty was agreeable to waiting for Mark to weigh in, saying that if Gravatt's shares could be obtained, he would like to do so; however, if it didn't work out that way we would proceed with the application for solely the Ahrlin shares.



Amanda Dewell
Water Rights Program

After talking w/ Mark Rath, he advised that Ahrlin & Gravatt shares could all be xfered off to RVSD based on Simunek's ownership.

Rusty asked that w/ the inclusion of Gravatt's shares the ac-ft & cfs be increased to 147.8 & 0.8 respectively, as outlined in the Leonard Rice Report.

2/18/25



Dewell, Amanda

From: Dewell, Amanda
Sent: Wednesday, February 5, 2025 9:16 AM
To: water@rvsd.com
Cc: Steen, Nakaila; Hullinger, Brittan
Subject: RVSD water permit application
Attachments: RVSD map_2885-3.pdf

Good morning,

I'm currently reviewing the application submitted by RVSD for the transfer of Ahrlin's shares (Parcel #19) from VR No. 1727-2, as well as the change in diversion point location. In reviewing the Leonard Rice report, I noticed a discrepancy that I wanted to address.

In Table 1 of the report, it lists 68.4 acres as being irrigated by Ahrlin. With that, I am wondering if a portion of Parcel #18 (Gravatt) should not also be included?

VR No. 1727-2 itemizes Parcel #19 as follows:

SW ¼ SE ¼ Sec 19-T1N-R9E – 31 acres

NW ¼ NE ¼ Sec 30-T1N-R9E – 20 acres

VR No. 1727-2 itemizes Parcel #18 as follows:

NE ¼ SE ¼ Sec 19-T1N-R9E – 12 acres

SE ¼ SW ¼ Sec 19-T1N-R9E – 39 acres

NE ¼ NW ¼ Sec 30-T1N-R9E – 12 acres

To avoid any confusion, I would ask that a map outlining the acres that irrigation is being transferred off be submit. I've attached a pdf of the area for you to mark up and return to myself.

Thank you,

Amanda Dewell

DANR - Water Rights Program

Permitting Administrator

Main Phone: 605 773-3352

Website: danr.sd.gov



Dewell, Amanda

From: rschmidt@rvsd.com
Sent: Wednesday, February 5, 2025 12:54 PM
To: Dewell, Amanda
Cc: water@rvsd.com
Subject: RE: [EXT] RVSD water permit application
Attachments: BP-70C31_20250205_092358.pdf; page 8 LRE.PNG; simunek property.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Amanda, I attached permit 2671-2 which is a portion of the Gravatt transfer back in 2011. I do not have an agreement to purchase any more of Gravatts allocated water right so I am not sure we would be able to add in any portion of his irrigated property. If I am understanding this correctly. I attached page 8 of the report as I think the reason why table 1 shows 68.4 AF is because this is the permitted acres and the report assumed it was the same as irrigated acres. However I would not be opposed to be allowed the entire 68.4 acres that falls within the Arhlin permitted property if that is what proves to be correct. Your map is attached of the irrigated property general location.

Thanks for your help

Rusty Schmidt/General Manager
Rapid Valley Sanitary District-Water service
P-605-393-1050/F-605-393-1051
Rschmidt@rvsd.com



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Rodriguez, Rachel

From: rschmidt@rvsd.com
Sent: Tuesday, February 4, 2025 2:47 PM
To: Rodriguez, Rachel
Subject: RE: [EXT] Water Permit Application - Transfer Ahrlin 1727-2 to Rapid Valley Sanitary District
Attachments: murphy app simunek.pdf

Rachel, I added the cfs .66 and as for marking municipal, Mr. Duvall on the last Murphy permit directed me to the definition of terms SDCL 46-1-6 and #17 was the more valid choice (water distribution system)

I copied it below, but I used to always check the municipal box as well. Let me know your thoughts as I am ok either way.

(17) "Water distribution system," a system of piping, valves, storage tanks, pumps, and appurtenances by which water is conveyed for domestic **or municipal** use by a common distribution system, including a municipality as defined in § 9-1-1, a nonprofit rural water supply company as defined in § 10-36A-1, a water user district as defined in § 46A-9-2, a sanitary district as defined in chapter 34A-5, or homes, including mobile homes as defined in § 32-3-1, and manufactured homes as defined in § 34-34A-1.1 supplied by a common distribution system;

Thanks

Rusty Schmidt/General Manager
Rapid Valley Sanitary District-Water service
P-605-393-1050/F-605-393-1051
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From: Rodriguez, Rachel <Rachel.Rodriguez@state.sd.us>
Sent: Tuesday, February 4, 2025 11:05 AM
To: rschmidt@rvsd.com
Subject: Water Permit Application - Transfer Ahrlin 1727-2 to Rapid Valley Sanitary District

Rodriguez, Rachel

From: rschmidt@rvsd.com
Sent: Tuesday, January 28, 2025 9:50 AM
To: Duvall, Ron
Cc: Steen, Nakaila; Dewell, Amanda; Rodriguez, Rachel
Subject: RE: [EXT] Murphy ditch
Attachments: diversion point map.pdf; 2011 Transfer of Water Rights.pdf; Application for Nonirrigation Permit_Simunek.pdf

Ron, see attached application, we will send a check today with a printed application.
Thanks

***Rusty Schmidt/General Manager
Rapid Valley Sanitary District-Water service
P-605-393-1050/F-605-393-1051
Rschmidt@rvsd.com***



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From: Duvall, Ron <Ron.Duvall@state.sd.us>
Sent: Monday, January 27, 2025 3:32 PM
To: rschmidt@rvsd.com
Cc: Steen, Nakaila <Nakaila.Steen@state.sd.us>; Dewell, Amanda <Amanda.Dewell@state.sd.us>; Rodriguez, Rachel <Rachel.Rodriguez@state.sd.us>
Subject: RE: Murphy ditch

Rusty,

I am not seeing anything on our end being submitted. Please go ahead and mail the paper copy. Assuming this involves a change of use like the Little Giant and South Side ditch applications, the fee is the same -- \$100.00 application fee, plus \$200.00 license fee.

Thank you,

Ron Duvall
Dept. of Agriculture & Natural Resources
Office of Water, Water Rights Program
605.773.3352
danr.sd.gov



DANR
SOUTH DAKOTA

From: rschmidt@rvsd.com <rschmidt@rvsd.com>
Sent: Monday, January 27, 2025 4:02 PM
To: Duvall, Ron <Ron.Duvall@state.sd.us>
Cc: Steen, Nakaila <Nakaila.Steen@state.sd.us>
Subject: [EXT] Murphy ditch

Ron, I submitted a application for Non irrigation permit today through the SDDANR website, not sure it actually got submitted, nothing happed when I hit submit?. If you could let me know I can always mail a paper copy. Attached are supporting documentation.

Nakaila and I been discussing this water rights last year and I was able to come to an agreement with the owner to move forward on the transfer.

Thank you for your help

Rusty Schmidt/General Manager
Rapid Valley Sanitary District-Water service
P-605-393-1050/F-605-393-1051
Rschmidt@rvsd.com



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**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**RECOMMENDATION OF ACTING CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2885-2, Rapid Valley Sanitary District**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Acting Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 2885-2, Rapid Valley Sanitary District – water service, c/o Rusty Schmidt, Manager, 4611 Teak Drive, Rapid City SD 57703.

The Chief Engineer is recommending APPROVAL of Application No. 2885-2 because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use, and 3) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. Permit No. 2885-2 is limited to a diversion rate of 0.8 cubic feet of water per second for a total annual volume of 147.8 acre feet of water. The Rapid Valley Sanitary District shall measure diversions at the District's water treatment plant. The total monthly diversion shall not exceed the amount listed on the following table.

Monthly Volume Limitation (acre-feet)

Month	Volume Limitation (acre-feet)
April	5.6
May	18.5
June	21.4
July	28.3
August	36.6
September	26.8
October	10.6
TOTAL:	147.8

2. The Rapid Valley Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn each month as measured at the District's water treatment plant.
3. Permit No. 2885-2 authorizes diversion of only natural flow water by the Rapid Valley Sanitary District and does not include any right to stored irrigation water available under contract from Pactola Reservoir and Deerfield Reservoir.

(continued)

Recommendation for Water Permit Application No. 2885-2, Rapid Valley Sanitary District

4. The Water Management Board retains jurisdiction of Permit No. 2885-2 in the event that changes occur in the system that require adjustments to be made in the monthly or total annual volumes authorized by Permit No. 2885-2.
5. Diversion under Permit No. 2885-2 may not interfere with existing water rights in effect prior to approval of No. 2885-2 or any domestic rights.
6. The amount of water with an April 6, 1878, priority date which may be appropriated under Vested Water Right No. 1727-2, is reduced by 0.8 cfs.
7. The permit holder, Rapid Valley Sanitary District, shall permanently render inoperable the structural means of diverting water to the land which is no longer subject to Vested Water Right No. 1727-2. This work shall be completed prior to the permit holder's diversion of the transferred water to beneficial use by the district. The permit holder must notify the Chief Engineer to schedule an inspection. This transfer is subject to the Chief Engineer's approval that the works are rendered inoperable. This qualification does not grant access to property owned by third parties for making structural changes. The permit holder is responsible for ensuring that access is obtained from such third parties for making structural changes. The permit holder is also responsible for ensuring that such third parties are notified that inspections will occur.

See report on application for additional information.

A handwritten signature in blue ink, appearing to read "Mark Mayer", with a stylized flourish at the end.

Mark Mayer, PE
Director of Office of Water

March 18, 2025

Report to the Chief Engineer
On Water Permit Application No. 2885-2
Rapid Valley Sanitary District – Water Service

March 14, 2025

Water Permit Application No. 2885-2 proposes to transfer a portion of Rapid Valley Water Company (aka Murphy Ditch) stockholders/landowners use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 for irrigation use via Murphy Ditch to use by the Rapid Valley Sanitary District (RVSD) in its water distribution system. The transfer is for Rapid Creek water historically used for the irrigation of 68.4 acres in the SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 19, and NE $\frac{1}{4}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 30; all in T1N-R9E under the Ahrlin and Gravatt shares in a portion of Parcel No. 18 and Parcel No. 19 as identified in the Leonard Rice Engineers analysis (Leonard Rice Engineers, Inc., 2011). The portion of Rapid Creek natural flows to be transferred to RVSD is 0.8 cubic feet of water per second (cfs) with an annual volume limitation of 147.8 acre-feet of water.

The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 8-T1N-R8E. This permit changes the diversion point for 0.8 cfs to a permanent diversion point for use by RVSD located in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ (Lot 3R) of Section 15-T1N-R8E. This application does not authorize any new water to be appropriated from Rapid Creek. If approved, Water Permit Application No. 2885-2 will retain the April 6, 1878, priority date established by the Murphy Ditch vested right for natural flow from Rapid Creek. The site of interest is located on the southeastern outskirts of Rapid City, SD.

REVIEW OF METHODOLOGY

Many previous City of Rapid City and RVSD transfers of Rapid Creek water from irrigation use to municipal use have been completed under South Dakota Codified Law (SDCL) 46-5-34.1 (Water Rights, 2025).

SDCL 46-5-34.1. Transfer of irrigation rights apart from land--Restricted purposes--Protection of other users. *The provisions of SDCL 46-5-33 and 46-5-34 notwithstanding, irrigation rights may be transferred apart from the land to which they are appurtenant if they are transferred for domestic use or use within a water distribution system. Such irrigation rights may be transferred or leased in whole or in part and may be acquired only through the exercise of powers possessed independently of this section. No transfer, however, may be approved by the Water Management Board unless the transfer can be made without detriment to existing rights having a priority date before July 1, 1978, or to individual domestic users. No land which has had an irrigation right transferred from it pursuant to this section, may qualify for another irrigation right from any water source.*

A 2002 Water Management Board decision on Vested Water Right No. 2479-2 pertains to this application. In 1987, Lone Tree Ditch Company filed a vested water right claim and as a result, the Board validated Vested Water Right No. 2038-2 in 1988. In 1990, Lone Tree Ditch Company

became aware that a number of acres had been inadvertently omitted from the validation completed in 1988. Therefore, Lone Tree Ditch Company filed Vested Water Right Claim No. 2479-2 for the additional acres. In 2002, during the hearing for the validation of Vested Water Right No. 2479-2, Lone Tree Ditch Company's attorney successfully argued that based on a 1974 South Dakota Supreme Court ruling (*Jewett v. Redwater Ditch Co*) that Lone Tree Ditch Company is a stock-share irrigation company (established in corporate by-laws), holds a pre-1907 water right, and that the water right is not appurtenant to the land (SD Supreme Court, 1974). In the case of the stock-share ditch companies with pre-1907 water rights, the Board's decision allows the Chief Engineer to regulate the maximum diversion rate and where the water is taken but not where it is used. The Board determined that Lone Tree Ditch Company had continued to practice the allocation of irrigation water based upon the number of shares held by individual stockholders rather than the number of acres irrigated. As referenced in Conclusion of Law #3 in the water right file for Vested Water Right No. 2479-2, the Board concluded that pre-1907 water rights held by ditch companies are not appurtenant to any particular land unless the by-laws or organization of the company so provide (Water Rights, 2025). If the pre-1907 water rights are not appurtenant to the land, then SDCL 46-5-34.1 is not applicable for these types of applications.

APPLICABLE STATUTES

SDCL 46-2A-12. Amendment of permit or license--When granted. *An amendment of an existing permit or license may be granted for a change in use, a change in point of diversion or other change only if the change does not unlawfully impair existing rights and is for a beneficial use and in the public interest.*

SDCL 46-5-30.4. Amendment of permits or rights. *Subject to the limitations in SDCL 46-5-33 and 46-5-34 governing changes in irrigation rights from one parcel of land to another, any water permit or right holder may apply for a change of use of the water, a change of location of the use or other amendment to the permit or right. Permits or rights may be amended pursuant to the procedure contained in chapter 46-2A. Priority shall be retained upon amendment. An amendment of a water permit or right may not increase the rate of diversion or increase the volume of water to be appropriated under the original water permit or right. The amendment may not impair existing rights.*

Both SDCL 46-2A-12 and SDCL 46-5-30.4 allow existing rights to be amended but do not allow the amendment to impair existing water right/permit holders and domestic uses. In the case of Water Permit Application No. 2885-2, RVSD is proposing to transfer a portion of Vested Water Right No. 1727-2, a pre-1907 water right, held by Rapid Valley Water Company (aka Murphy Ditch). The Rapid Valley Water Company is incorporated and is a stock-share irrigation ditch company with water being delivered based upon the number of shares the irrigator holds (Williams, 2019).

DISCUSSION

The applicant's proposed methodology in determining the transferable yield is to calculate the pro rata share of water delivered to the shareholder's farm turnout. The pro rata deliveries are equal to the ditch company's total authorized diversion for the Rapid Valley Water Company's April 6, 1878, priority right (Vested Right No. 1727-2), less ditch carriage loss, times the shareholder's interest in the authorized diversion. The volume of water which can be diverted to RVSD's water system is 147.8 acre-feet annually with the monthly totals shown in Table 1 (Leonard Rice Engineers, Inc, 2011).

Table 1. 1878 Murphy Ditch Vested Water Right Transferable Volume to the Rapid Valley Sanitary District

Month	Volume Limitation (acre-feet)
April	5.6
May	18.5
June	21.4
July	28.3
August	36.6
September	26.8
October	10.6
TOTAL:	147.8

Return flows attributed to the inefficiency of flood irrigation have historically returned to Rapid Creek and would have been available for use by downstream water rights and domestic use. The RVSD pipes its wastewater to Rapid City's Water Reclamation Facility for treatment with the effluent being discharged back to Rapid Creek. Like the irrigation return flows, this treated effluent will continue to be available for downstream existing water uses (Leonard Rice Engineers, Inc, 2011). If in the future the Sanitary District stops returning effluent to the reclamation facility, or if Water Reclamation Facility stops returning effluent to Rapid Creek, the diversion proposed by this application will need to be recalculated to reflect that condition.

Calculations using accepted scientific methods and available climatic and cropping data in the engineering analysis submitted with the application were analyzed to ensure that there is no unlawful impairment on existing water rights/permits and domestic use (Leonard Rice Engineers, Inc, 2011). The applicant is proposing a transferable diversion rate of 0.8 cfs. If this application is approved, it would not be expected to impair existing water rights/permits and domestic use. To protect existing rights from being unlawfully impaired, the transferable diversion rate is based on the pro-rata share of the ditch diversion rate decreased by an 11 percent carriage loss attributed to seepage lost from the irrigation ditch prior to delivery at the farm headgates. This carriage loss is to remain as part of the ditch's authorized diversion rate and is consistent with previous Murphy Ditch irrigation use to municipal use transfers by both the City of Rapid City and the RVSD (Leonard Rice Engineers, Inc, 2011).

If this transfer is approved, the diversion rate authorized by the April 6, 1878, priority date of Vested Water Right No. 1727-2, Rapid Valley Water Company, should be decreased by 0.8 cfs

due to the transfer. The water available for transfer is only from the natural flow in Rapid Creek and does not include water stored in or stored water released from Deerfield or Pactola Reservoirs.

If approved, Water Permit Application No. 2885-2 should contain the following qualifications:

- The Water Management Board retains the jurisdiction of Permit No. 2885-2 in the event additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit No. 2885-2;
- Rapid Valley Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn each month at the District's water treatment plant diversion point.

REVIEW OF EXISTING WATER RIGHTS

Currently, there are 100 water rights/permits, collectively authorized to divert up to 262.74 cfs from Rapid Creek between Pactola Reservoir and the confluence with the Cheyenne River, plus two pending applications – Water Permit Application No. 2883-2 requesting to transfer 0.396 cfs (69.3 acre-feet) from Little Giant Ditch and Water Permit Application No. 2884-2 requesting to transfer 0.765 cfs (109.68 acre-feet) from South Side Ditch, with the Rapid Creek water from both applications previously used for irrigation to be transferred to use in the RVSD water distribution system (Water Rights, 2025). Additionally, there are two future use permits, both held by the City of Rapid City (each with reservation areas upstream of RVSD and Murphy Ditch's diversion points), collectively reserving a total of 8,197 acre-feet of water from multiple sources, including Rapid Creek. Between the existing Murphy Ditch diversion point and the proposed RVSD diversion point, there are 17 existing water rights/permits appropriating approximately 26.56 cfs. If Water Permit Application Nos. 2883-2 and 2884-2 are approved, there will be 19 existing water rights/permits appropriating approximately 27.72 cfs between the existing Murphy Ditch diversion point and the proposed RVSD diversion point.

Downstream of the RVSD's proposed diversion point to the confluence of Rapid Creek with the Cheyenne River, there are 26 existing water rights/permits appropriating approximately 87.53 cfs. If Water Permit Application Nos. 2883-2 and 2884-2 are approved, the 26 downstream existing water rights/permits would be authorized to appropriate approximately 86.37 cfs, as Little Giant Ditch and South Side Ditch's respective permits will be reduced by the transferrable amount (Water Rights, 2025).

Existing water rights/permits may be amended under SDCL 46-2A-12 and 46-5-30.4, but amendments do not allow impairment to water right/permit holders or domestic users. The engineering analysis submitted with Water Permit Application No. 2885-2 demonstrates the portion of the Murphy Ditch water right historically associated with irrigation of the Ahrlin and Gravatt properties can be transferred to the RVSD without unlawfully impairing existing rights (Leonard Rice Engineers, Inc, 2011). This author concurs.

CONCLUSIONS

1. Water Permit Application No. 2885-2 proposes to transfer a portion of Rapid Valley Water Company (aka Murphy Ditch) stockholders/landowners use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 for irrigation use via Murphy Ditch to use by the RVSD in its water distribution system. The site of interest is located on the southeastern outskirts of Rapid City, SD.
2. Existing water rights/permits may be amended under SDCL 46-2A-12 and 46-5-30.4, but amendments are not allowed to cause impairment to water right/permit holders or domestic users with adequate wells.
3. The transfer is for Rapid Creek water historically used for the irrigation of 68.4 acres under the Ahrlin and Gravatt shares in a portion of Parcel No. 18 and Parcel No. 19 as identified in the Leonard Rice Engineers analysis (Leonard Rice Engineers, Inc., 2011). The portion of Rapid Creek natural flows to be transferred to RVSD is 0.8 cfs with an annual volume limitation of 147.8 acre-feet of water in accordance with the following table:

1878 Murphy Ditch Vested Water Right Transferable Volume to the Rapid Valley Sanitary District

Month	Volume Limitation (acre-feet)
April	5.6
May	18.5
June	21.4
July	28.3
August	36.6
September	26.8
October	10.6
TOTAL:	147.8

4. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE ¼ SW ¼ of Section 8-T1N-R8E. This permit changes the diversion point for 0.8 cfs to a permanent diversion point for use by RVSD located in the NE ¼ NW ¼ (Lot 3R) Section 15-T1N-R8E. This application does not authorize any new water to be appropriated from Rapid Creek. If approved, Water Permit Application No. 2885-2 will retain the April 6, 1878, priority date established by the Murphy Ditch vested right for natural flow from Rapid Creek.
5. The Leonard Rice Engineers Inc. analysis submitted with the application demonstrates this water right can be transferred without impairing existing rights. This author concurs.

6. If approved, the diversion rate authorized by the April 6, 1878, priority date of Water Right No. 1727-2, Rapid Valley Water Company, should be decreased by 0.8 cfs due to the transfer.
7. If approved, Water Permit Application No. 2885-2 should contain the following qualifications:
 - The Water Management Board retains the jurisdiction of Permit No. 2885-2 in the event that additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit No. 2885-2;
 - Rapid Valley Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn each month at the District's water treatment plant diversion point.

Nakaila Steen

Nakaila Steen
Natural Resources Engineer II
SD DANR - Water Rights Program

References

- Leonard Rice Engineers, Inc. 2011. Engineering Report Transfer of Water Rights - 1878 Murphy Ditch Vested Water Right. Leonard Rice Engineers, Inc. in association with Cetec Engineering, Inc.
- SD Supreme Court. 1974. O.A. Jewett et al. v. Redwater Irrigating Association and the State Water Resources Commission of the State of South Dakota.
- Water Rights, 2025. Water Right/Permit Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, South Dakota.
- Williams, 2019. Mark Rath's personal communication via December 12, 2019 telephone call with Jeep Williams, President of Rapid Valley Water Company, concerning operation and billing for Rapid Valley Water Company.



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.**

March 25, 2025

Rapid Valley Sanitary District
c/o Rusty Schmidt
4611 Teak Drive
Rapid City SD 57703

Dear Mr. Schmidt:

Water Permit Application No. 2885-2 for water distribution system use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Rapid City Journal printed in Rapid City SD (see contact information). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Rachel Rodriguez

Rachel Rodriguez
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

NOTICE OF APPLICATION NO. 2885-2 TO CHANGE WATER USE AND MOVE PUMPING LOCATION

Notice is given that Rapid Valley Sanitary District – Water Service, 4611 Teak Drive, Rapid City SD 57703, has filed an application to transfer a portion of Rapid Valley Water Company (aka Murphy Ditch) stockholder/landowner's use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 from irrigation use via Murphy Ditch to use by the Rapid Valley Sanitary District (RVSD) in its water distribution system. The transfer is for Rapid Creek water historically used for irrigation of 68.4 acres located in the SE 1/4 SW 1/4, SW 1/4 SE 1/4 Section 19, NE 1/4 NW 1/4, NW 1/4 NE 1/4 Section 30; all in T1N-R9E, under the Ahrlin and Gravatt shares in Parcel Nos. 18 & 19. The portion of Rapid Creek natural flows to be transferred to RVSD is 0.8 cubic feet of water per second (cfs) with an annual volume limitation of 147.8 acre-feet of water. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE 1/4 SW 1/4 Section 8-T1N-R8E. This application also requests to change the diversion point for 0.8 cfs (147.8 acre-feet) to a permanent diversion point used by RVSD located in the NE 1/4 NW 1/4 (Lot 3R) Section 15-T1N-R8E. This application does not authorize any new water to be appropriated from Rapid Creek. If approved, this permit will retain the April 6, 1878, priority date established by the Murphy Ditch vested water right for natural flow from Rapid Creek. This site is located on the southeastern outskirts of Rapid City SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2885-2 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by April 14, 2025.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by April 14, 2025.

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 recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the

recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of_

Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Monday, March 24, 2025 3:48 PM
To: rvsd@rapidnet.com
Subject: RE: [EXT] 2885-2 Rapid Valley Sanitary District - Public Notice
Attachments: 2885-2 Rec.pdf; 2885-2 Ltr.pdf; 2885-2 PublicNotice.pdf; RC Journal Info.pdf

I was waiting for the other email from the Column. However, they have sent it directly to you. Please see attached documents.

Yes, I have received both affidavits for 2883-2 and 2884-2.

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



From: rvsd@rapidnet.com <rvsd@rapidnet.com>
Sent: Monday, March 24, 2025 3:40 PM
To: rschmidt@rvsd.com; Rodriguez, Rachel <Rachel.Rodriguez@state.sd.us>
Subject: RE: [EXT] 2885-2 Rapid Valley Sanitary District - Public Notice

Hi Rachel,

Can you send us a copy of the notice, the link to click on the notice won't load and we are not able to view it. Also, did you receive the affidavits for the publications for the 2883-2 and 2884-2

From: rschmidt@rvsd.com <rschmidt@rvsd.com>
Sent: Monday, March 24, 2025 1:38 PM
To: water@rvsd.com
Subject: FW: 2885-2 Rapid Valley Sanitary District - Public Notice

fyi

From: Karlee Sams <leelegals@column.us>
Sent: Monday, March 24, 2025 11:56 AM
To: Rodriguez, Rachel <rachel.rodriguez@state.sd.us>
Cc: rschmidt@rvsd.com
Subject: Re: 2885-2 Rapid Valley Sanitary District - Public Notice

Rodriguez, Rachel

From: Karlee Sams <leelegals@column.us>
Sent: Monday, March 24, 2025 12:56 PM
To: Rodriguez, Rachel
Cc: rschmidt@rvsd.com
Subject: Re: [EXT] 2885-2 Rapid Valley Sanitary District - Public Notice

Good Afternoon!

Your notice is scheduled to be published in the The Rapid City Journal on April 3, 2025. Your Notice ID is: Q9lhJErLxeQomQVI8oBg

You will be receiving a notification from Column Support with your proof. If you don't see it, check your spam folder and any email restrictions you may have.

For the fastest and most reliable placement process, use column.us to quickly place notices yourself, get proofs, view pricing, and access your invoices and affidavits. Visit our [help center](#) for tips, or sign up for one of our [training webinars](#).

If you have any questions or concerns, please don't hesitate to let us know so we can look into it!

—
Karlee Sams

Did you know that you can place your legal ad in minutes? Next time, visit column.us/place to submit your ad and follow the steps! More information [here](#).

How did I do? 



On March 24, 2025 at 10:44 AM EDT rachel.rodriquez@state.sd.us wrote:

Attached is a notice to be published on April 3, 2025.

Rapid Valley Sanitary District – Water Service, Rusty Schmidt, 4611 Teak Drive, Rapid City SD 57703, rschmidt@rvsd.com has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol Ave, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us

Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Monday, March 24, 2025 9:45 AM
To: RCY Legals
Subject: 2885-2 Rapid Valley Sanitary District - Public Notice
Attachments: 2885-2 public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on April 3, 2025.

Rapid Valley Sanitary District – Water Service, Rusty Schmidt, 4611 Teak Drive, Rapid City SD 57703, rschmidt@rvsd.com has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol Ave, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



AFFIDAVIT OF PUBLICATION

Rapid Valley Sanitary District

State of New Jersey, County of Burlington, ss:

I, Kevin McGillivray, of lawful age, being duly sworn upon oath depose and say that I am an agent of Column Software, PBC, duly appointed and authorized agent of the Publisher of The Rapid City Journal, a corporation of Rapid City, South Dakota, a legal and daily newspaper printed and published in Rapid City, in said County of Pennington, and has full and personal knowledge of all the facts herein stated as follows: that said newspaper is and at all of the times herein mentioned has been a legal and daily newspaper with a bonafide paid circulation of at least Two Hundred copies daily, and has been printed and published for at least one year prior to the first date of the published notice. This affidavit is a true and corrected copy of notice which appeared in said newspaper on the following dates.

Publication Dates:

- Apr 3, 2025

NOTICE ID: Q9lhJErlXeQomQVI8oBg

NOTICE NAME: 2885-2 Rapid Valley Sanitary District

TOTAL AD COST: \$91.39

Kevin McGillivray

Agent

VERIFICATION

State of New Jersey
County of Burlington

LIZA ORTIZ
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires November 27, 2028

Signed or attested before me on this: 04/04/2025

Liza Ortiz

Notary Public

Notarized remotely online using communication technology via Proof.

**NOTICE OF APPLICATION NO. 2885-2 TO CHANGE WATER USE
AND MOVE PUMPING LOCATION**

Notice is given that Rapid Valley Sanitary District – Water Service, 4611 Teak Drive, Rapid City SD 57703, has filed an application to transfer a portion of Rapid Valley Water Company (aka Murphy Ditch) stockholder/landowner's use of Rapid Creek natural flows a ppropriated under Vested Water Right No. 1727-2 from irrigation use via Murphy Ditch to use by the Rapid Valley Sanitary District (RVSD) in its water distribution system. The transfer is for Rapid Creek water historically used for irrigation of 68.4 acres located in the SE 1/4 SW 1/4, SW 1/4 SE 1/4 Section 19, NE 1/4 NW 1/4, NW 1/4 NE 1/4 Section 30; all in T1N-R9E, under the Ahrlin and Gravatt shares in Parcel Nos. 18 & 19. The portion of Rapid Creek natural flows to be transferred to RVSD is 0.8 cubic feet of water per second (cfs) with an annual volume limitation of 147.8 acre-feet of water. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE 1/4 SW 1/4 Section 8-T1N-R8E. This application also requests to change the diversion point for 0.8 cfs (147.8 acre-feet) to a permanent diversion point used by RVSD located in the NE 1/4 NW 1/4 (Lot 3R) Section 15-T1N-R8E. This application does not authorize any new water to be appropriated from Rapid Creek. If approved, this permit will retain the April 6, 1878, priority date established by the Murphy Ditch vested water right for natural flow from Rapid Creek. This site is located on the southeastern outskirts of Rapid City SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2885-2 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by April 14, 2025.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by April 14, 2025.

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 recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

(Published April 3, 2025 for a total approximate cost of \$91.39 and may be viewed for free at www.sdpublicnotices.com)
Legal No: COL-SD-2195



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

MAY 06 2025

Rapid Valley Sanitary District – Water Service
c/o Rusty Schmidt, Manager
4611 Teak Drive
Rapid City SD 57703

Dear Mr. Schmidt:

Enclosed is Water Permit No. 2885-2 authorizing construction of the 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,

Mark Mayer, PE
Director of Office of Water

enclosures



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
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PIERRE SD 57501-3182
danr.sd.gov

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

**Affidavit of Public Notice
Posting on DANR Website**

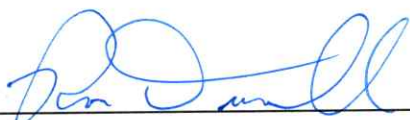
Pursuant to SDCL § 46-2A-4, public notice of the following application was posted on the DANR web site at <https://danr.sd.gov/public>. The posted public notice is the same notice as published in the pertinent newspaper(s) and a copy of the public notice is maintained in the application file. If the application is contested, the posting is moved to the DANR contested case website at <https://danr.sd.gov/public/ContestedCase.aspx> until final action is taken on the application pursuant to SDCL § 46-2A-4.

Application No.: 2885-2

Name of Applicant: Rapid Valley Sanitary District-Water Service, Rusty Schmidt

Date of Posting: 4/1/2025

Date of Removal: 5/6/2025

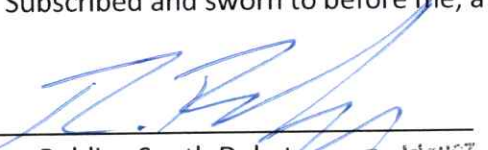


Ron Duvall, Engineer III

5/6/2025

Date

Subscribed and sworn to before me, a notary public, this 16th day of May, 2025.



Notary Public - South Dakota
My commission expires: **My Commission Expires May 16, 2029**



(SEAL)

2005-2

RECEIVED

MAY 29 2025

Water Rights
Program

Form 10

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

Date 5-29-2025

TO: Water Rights Program, DANR
523 E. Capitol
Pierre, SD 57501-3181

FROM: Rapid Valley Sanitary District
(name)
4611 TEAK DR.
(address)
Rapid City S.D. 57703
(city, state, zip)

605-393-1050
(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. 2885-2 states that the water use system is to be constructed by

na, and water is to be put to beneficial use by na.
(date) (date)

The water use system was completed on 5-29-2025.
(date)

Applying the water to beneficial use was completed on 5-29-2025.
(date)

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

[Signature]
(signature)







