

WATER PERMIT NO. 2807-2

Name of Applicant: **Rapid Valley Sanitary District**

Address: **4611 Teak Dr, Rapid City SD 57703**

Phone: **605 381-2904**

Amount of Water Claimed: **97 AF**

Total Acres:

Source of Water Supply: **Murphy Ditch – Rapid Creek**

Water to be used for:

County: **Pennington**

Type of Waste Disposal System:

Location:

PRIORITY

Date Received: **10-11-19**

Application/License Fee: **\$ 300**

Corrected Application Received:

Period of Annual Use: **April 1- October 31**

Remarks: **transfer Lytle to Rapid Valley Sanitary District**

Diversion Point:

Land to be Irrigated:

Depth of Well:

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **10-16-19**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 2807-2**

Date of first receipt of application October 11, 2019.

The Water Management Board approved Water Permit No. 2807-2 on February 26, 2020 for Rapid Valley Sanitary District-Water Service, 4611 Teak Dr, 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. 2807-2 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 Murphy Ditch from irrigation to use by the District for use in its water distribution system. The transfer is for Rapid Creek water historically used for the irrigation of 45 acres of Lytle property in Section 9-T1N-R8E. The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with annual volume limitation of 97.3 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 0.53 cfs to a permanent diversion point for use by the Sanitary District located in the NE 1/4 NW 1/4 Section 15-T1N-R8E. This permit does not authorize any new water appropriation from Rapid Creek.

2. The water appropriated shall be used for the purpose of municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use 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 from which applicant may claim right is April 6, 1878 (established by the Murphy Ditch vested water right for natural flow from Rapid Creek).
5. 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. 2807-2 is limited to a diversion rate of 0.53 cubic feet of water per second for a total annual volume of 97.3 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	Acre feet
April	3.7
May	12.1
June	14.1
July	18.6
Aug	24.1
Sept	17.7
Oct	7.0
Totals	97.3

(continued)

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. 2807-2 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. 2807-2 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. 2807-2.
5. Diversion under Permit No. 2807-2 may not interfere with existing water rights in effect prior to approval of No. 2807-2 or any domestic rights.
6. The amount of water with a April 6, 1878, priority date which may be appropriated under Vested Water Right No. 1727-2, is reduced by 0.53 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 responsible for ensuring that access is obtained from such third parties and that such third parties are also notified that inspections will occur.

WATER MANAGEMENT BOARD

By: Jeanne Goodman

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

FEB 28 2020

date



Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2807-2</u>	(office use only) Hydrologic Unit <u>10120110</u>
	Basin <u>Upper Cheyenne</u>	
	Newspaper <u>Rapid City Journal</u>	

PAID

OCT 11 2019

Ck# 024949

RECEIVED

OCT 11 2019

WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water Within The State Of 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)

☐ 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 Lytle shares to Rapid Valley Sanitary District at an alternate point of diversion located at District intake station. Change of use from irrigation to suburban housing/municipal use.

1. Name to Appear on Water Permit Rapid Valley Sanitary District-Water Service

Mailing Address 4611 Teak Dr. Rapid City SD 57703
(Address) (City) (State) (Zip Code)

Phone 605 3931050 Mobile (605) 381-2904 Email rschmidt@rvsd.com

2. Amount of water claimed 0.53 *CFS or 97 **GPM and 97 ***AF or _____ 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)

3. Source of water supply murphy ditch 1878 vested water rights (NE 1/4 NW 1/4)

4. Location of point of diversion 735' south & 1,375' east of NW corner, sec. 15, T1N, R8E 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 above? ☐ Yes ☐ No

If "Yes," where will water be used? na

(example - NW1/4 section 12-T104N-R53W)

5. County or counties where water will be used Pennington6. Annual period during which water is to be used April-October

7. 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)

Refer to attached report prepared by Leonard Rice Engineers dated June 2011. Specifically pages 5, 10, 12, and Appendix D.

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.

Supplemental Information

(type or print)

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

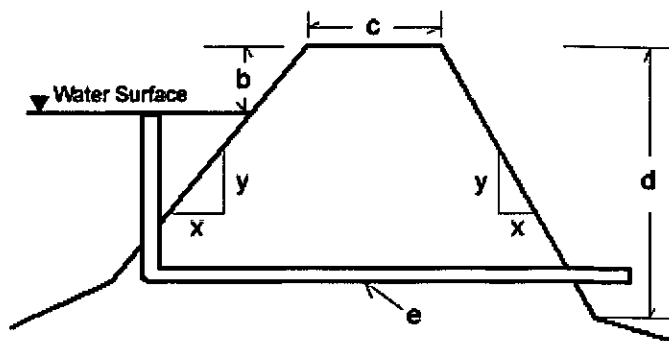
3. Dugout Information

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

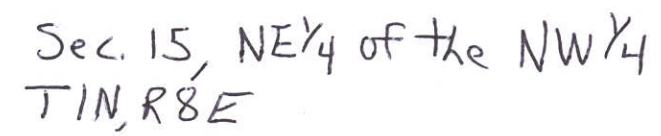
4. Water Storage Dams

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:

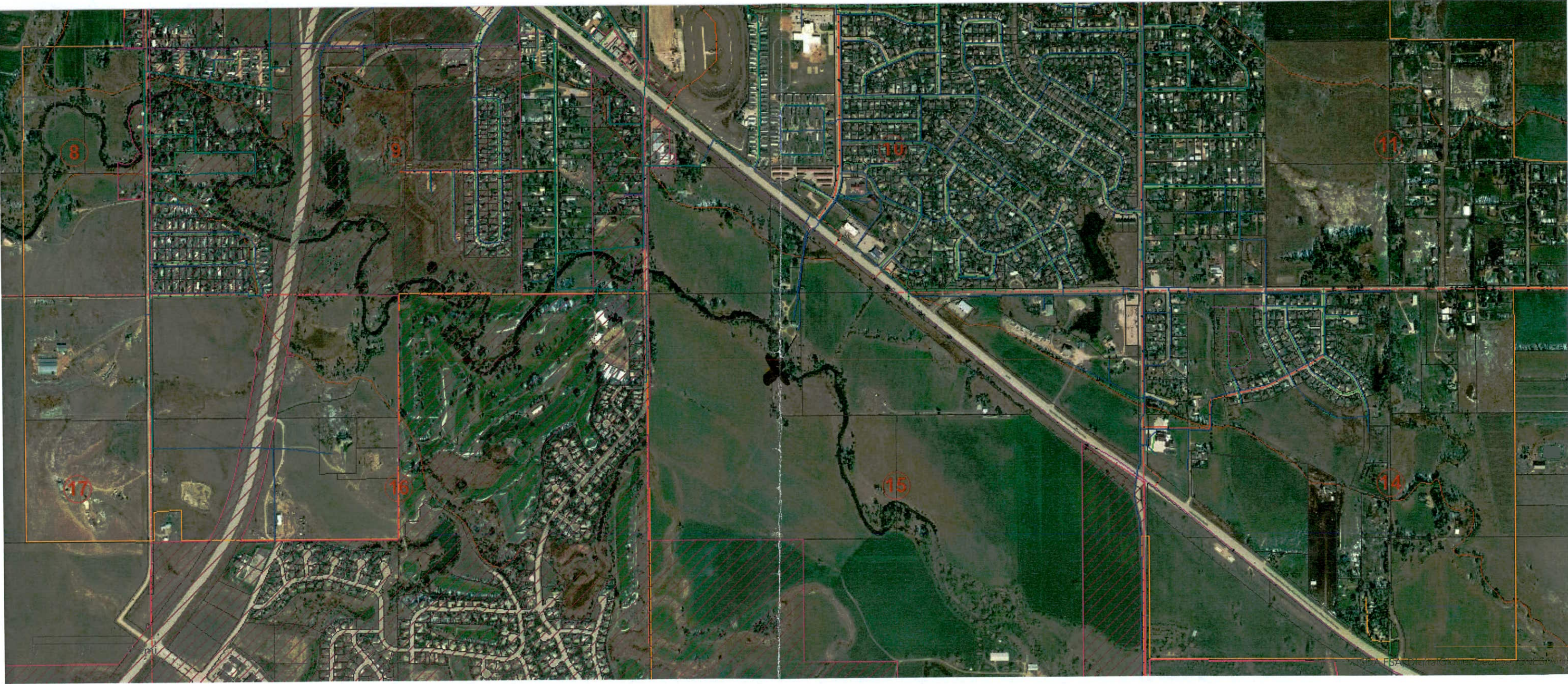


- b) Freeboard ____
- c) Crest Width ____
Crest Length ____
- d) Height ____
- e) Primary Outlet Capacity ____
If pipe, diameter ____
- f) Secondary Spillway Capacity ____
Spillway Width ____
- g) X & Y Slope (e.g. 3 to 1 is a typical slope)
Upstream ____
Downstream ____
- h) Surface Area of Impoundment ____
- i) Storage ____ Acre Feet
- j) Drainage Area Above Dam ____ Acres



Details | Edit Basemap |

Share | Print | Measure Bookmarks ▾ Find address or place



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date October 11, 20 19

RECEIVED OF Rapid Valley Sanitary District 4611 Teak Dr. Rapid City SD 57703

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

Fee for Application for Permit No. <u>1727-2</u> to Appropriate Water, to construct and to put water to beneficial use	500	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>1727-2</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	700 00

No. **09215**

By

Jeanne Goodman
Chief Engineer

24m

February 28, 2020

PAYMENT REQUEST FORM

PAYEE: Rapid Valley Sanitary District-Water Services
c/o Rusty Schmidt, Manager
4611 Teak Dr
Rapid City SD 57703

FROM: DENR Water Rights Program
523 E. Capitol Ave
Pierre, SD 57501-3181

DESCRIPTION OF SERVICE, PRODUCE OR TRANSFER

Refund-Over Payment of Application/License Fee

AMOUNT: \$400.00

FUNDING SOURCE:

GENERAL: X

FEDERAL:

OTHER:

COMMENTS:

AUTHORIZATION:



I declare and affirm under the penalties of perjury that this claim is in all things, true and correct.
I further agree to comply with the provisions of the Civil Rights Act of 1964 and regulations issued
thereunder relating to nondiscrimination in federal assisted programs.

WATER RIGHTS SALE AGREEMENT

Section 1.

PARTIES:

The parties to this Water Rights Sale Agreement (the "Agreement") are Yasmeeen Dream, LLC, of Rapid City, South Dakota (the "Sellers"), and Rapid Valley Sanitary District, a governmental subdivision of the state of South Dakota and a public body, corporate and politic in accordance with SDCL § 34A-514, Rapid City, South Dakota (the "Buyer").

Section 2.

PURPOSE:

The Buyer owns and operates a water supply and delivery system near Rapid City, South Dakota, and wishes to purchase the 1878 Murphy Ditch priority water rights owned by the Sellers appurtenant to the real property described in Section 3 hereof to use in its business owned by the Sellers. The Sellers agree to sell and the Buyer agrees to purchase water rights related thereto. The parties agree that the Sellers are not selling and the Buyer is not purchasing any real property, under the terms of this Agreement. The Sellers intend to affect a like-kind exchange and the Buyer agrees to so cooperate with the Sellers in such like-kind exchange.

NOW, THEREFORE, for good and valuable consideration and based upon the mutual covenants and conditions contained in this Agreement, the receipt and sufficiency of which are hereby acknowledged by both parties, the Sellers and Buyer agree that:

Section 3.

PROPERTY:

Sellers convey all right, title and interest in and to Sellers Water Right(s) No. _____ (1878 Murphy Ditch Priority, also referenced as Water Right No. _____), which water right(s) are issued by the State of South Dakota (hereafter Water Rights), some of which are appurtenant to the real property described as follows:

Tract A in the E1/2SW1/4 and the W1/2SE1/4 also Lot 2 of Tract A NE1/4SW1/4 (described in deed recorded in Book 101, Page 9092 as Lot 2 of Tract A SW14) of Section 9, Township 1 North, Range 8 East of B.H.M., except Lot 1 of Well Addition and Lot 3 of Tract A and Less Lot H1, Pennington County, South Dakota

Section 4.

CONSIDERATION:

As total consideration for the Water Rights sold by the Sellers to the Buyer, the Buyer shall pay to the sellers 1 dollar (the sale price).

Section 5.

POSSESSION:

The Buyer shall assume possession of the Water Rights at closing.

Section 6.

TAXES:

The Buyer shall not be required to assume or pay any of the real estate taxes assessed against the Real Property.

Section 7.

TITLE:

7.1 Sellers shall sell, assign and transfer to Buyer all of their rights, title and interest in and to its Water Rights as described in this Agreement and shall do all things necessary to accomplish such transfer of title in accordance with applicable local, state and federal law and regulations.

7.2 Sellers shall sign, execute and transfer such documents as may be necessary to accomplish such transfer, including, but not limited to the transfer forms required by the state of South Dakota, as well as such Certificates and Resolutions required by Buyer to evidence such transfer free and clear of all liens, claims and encumbrances whatsoever.

Section 8.

APPLICATION TO DENR:

Buyer shall apply for the transfer of the Water Rights from Sellers as soon as reasonably possible upon execution of this Agreement. Sellers agree to cooperate with Buyer, and Sellers and Buyer agree to work in good faith to take all action reasonably necessary to effectuate and complete such transfer to Buyer at time of Closing, subject to the terms and conditions of this Agreement. Buyer will be responsible for the costs of removal of any physical diversion structures to the extent such removal is required by the State of South Dakota. Buyer will contact and work with Sellers in order to complete such removal.

Section 9.

SELLERS REPRESENTATIONS:

The Sellers warrant and represent that:

- (a) The Water Rights are free and clear of all liens, security interests, mortgages, pledges, encumbrances, ditch fees, taxes and assessments, and charges or claims of any nature whatsoever.

- (b) The Water Rights are in good standing with the state of South Dakota and have not been forfeited or abandoned and are not subject to judgement, suit, lien, receivership or any other encumbrance whatsoever.
- (c) They have no knowledge of any outstanding judgements against them that would in any manner affect the consummation of this transaction or constitute any cloud upon the title to the Water Rights.
- (d) They have no knowledge of any pending litigation, proceedings, or investigations, or any threats of litigation, proceedings or investigations, or any threats of litigation, proceedings or investigations, which might result in any cloud upon the title to the Water Rights.
- (e) According to the official records of the State of South Dakota, Sellers warrant that they own all right, title, and interest in and to the Water Rights to be conveyed to Buyer.

Section 10.

BUYER'S REPRESENTATIONS:

The Buyer represents, warrants and covenants with the Sellers that:

- (a) It is a quasi-governmental entity duly existing and organized in accordance with the laws of the state of South Dakota;
- (b) The Buyer has been duly authorized by its board of directors and any other persons, including members, who may be required to approve this transaction to enter into this Agreement and to perform all of the terms and provisions of this Agreement;
- (c) The Buyer shall submit a certified copy of such board of director's minutes to Sellers prior to Closing;

Section 11.

CLOSING:

Subject to prior approval by DENR and such other administrative review as is required by law, Closing shall take place at Pennington Title Company, Rapid City, South Dakota on _____, or as the parties may agree. Buyer shall pay all closing costs and all professional fees (not to exceed \$5,000.00), incurred by Seller in this transaction. However, in the event that additional professional fees are incurred due to unforeseen legal matter not anticipated by the parties, said sum will be modified to cover such expense, not including any such expense arising out of an adversarial dispute based upon alleged violation(s) of the terms of the contract by either party.

Section 12.

INDEMNIFICATION:

The Sellers shall indemnify and hold the Buyer harmless from any and all liabilities, actions, causes of actions, demands, or claims of any kind or character arising out of or related to the Water Rights prior to the Closing, including a reasonable attorneys fee for any litigation to which the Buyer is made a party or threatened to be made a party.

The Buyer shall indemnify and hold the Sellers harmless from any and all liabilities, actions, causes of actions, demands, or claims of any kind or character arising out of or related to the Water Rights subsequent to the Closing, including a reasonable attorneys fee for any litigation to which the Sellers is made a party or threatened to be made a party.

Section 13.

DEFAULT:

13.1 If either party shall default in any of the terms, covenants, conditions, and obligations of this Agreement assumed by it, the other party shall have the right to declare a default under the terms of this Agreement. The non-defaulting party shall give the defaulting party thirty (30) days (which shall include weekends) notice of the nature of such default. If the defaulting party fails to cure such default within such thirty (30) day period (which shall include weekends), then the non-defaulting party shall have all rights and remedies permitted and allowed under the laws of the state of South Dakota.

Section 14.

TIME:

Time is of the essence of this Agreement.

Section 15.

NOTICES:

All notices or other communications hereunder shall be in writing and shall be deemed given if delivered personally or by commercial messenger or courier service, or mailed by registered or certified mail (return receipt requested) or send via facsimile (with knowledge of complete transmission) to the parties at the following address (or at such other address for a party as shall be specified by like notice); provided, however, that notices send by mail will not be deemed given until received:

If to Sellers:

Yasmeen Dream, LLC
Attention: Hani Shafai
520 Kansas City Street, Suite 101
Rapid City, SD 57701 (605) 348-0538

If to Buyers:

Rapid Valley Sanitary District
Attention: Mr. Rusty Schmidt
4611 Teak Drive
Rapid City, SD 57703 (605) 393-1050

Section 16.

CONFIDENTIALITY:

Both Sellers and Buyer agree that all of the terms, covenants, conditions, and obligations of this Agreement, but particularly the sale price, are confidential, and shall not be disclosed by either party to any third party excepts such engineers, water experts, lawyers, accountants; and others that require the information in the opinion of the Sellers or Buyer.

Section 17.

INTEGRATION:

This writing constitutes the entire Agreement between the parties and there are no other oral or collateral agreements or understandings of any kind or character except those contained herein.

Section 18.

BINDING EFFECT:

This Agreement shall supersede any previous agreement(s) between the parties and shall be binding upon the heirs, administrators, executors, successors, and assigns of the respective parties hereto.

Section 19.

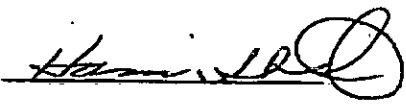
HEADINGS:

The headings used for each paragraph herein are for descriptive purposes only.

Dated this 4th day of Sep., 2019.

SELLERS:

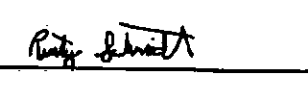
Yasmeen Dream, LLC

By: 

Hani Shafai, Managing Member

BUYER:

Rapid Valley Sanitary District – Water Service

By: 

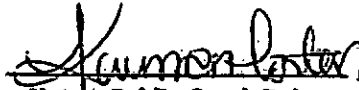
Rusty Schmidt General Manager

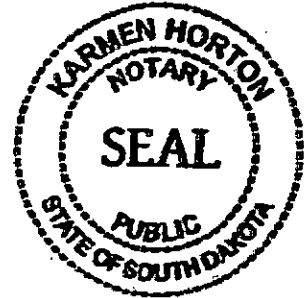
STATE OF SOUTH DAKOTA)
)ss
COUNTY OF PENNINGTON)

On this the 4th day of September, 2019, before me, the undersigned notary public, personally appeared Hani Shafai, Managing Member of Yasmeen Dream, LLC, known to me or

satisfactorily proven to be the persons whose names are subscribed to the within instrument, as Sellers, and acknowledged that they executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.


Notary Public, South Dakota



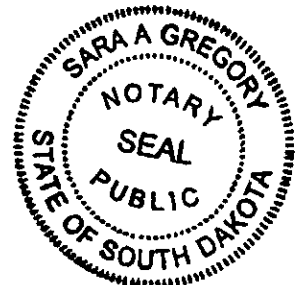
My Commission Expires: OCTOBER 25, 2024
(SEAL)

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF PENNINGTON)

On this the 5 day of September, 2019, before me, the undersigned notary public, personally appeared Rusty Schmidt, who acknowledged himself to be the General Manager of Rapid Valley Sanitary District – Water Service, a duly existing and organized governmental entity, and that he as such General Manager, being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the entity by himself as such General Manager.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.


Notary Public, South Dakota



My Commission Expires: 8/1/2025
(SEAL)



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

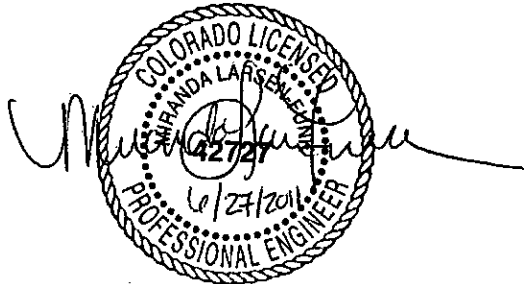
June 2011

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

The following members of the Leonard Rice Engineers, Inc. staff contributed to the preparation of this report:

Principal in Charge
Senior Project Engineer
Staff Engineer
Data Processor

Edward J. Armbruster, P.E.
Miranda C. Larsen-Funk, P.E.
Billy Mihelich, E.I.T.
Anita Rodlin

Theodore F. Schultz, P.E.
CETEC Engineering, Inc.

Table of Contents

Executive Summary	1
1. Introduction.....	2
2. Background	2
2.1. Rapid Valley Sanitary District	2
2.2. Murphy Ditch.....	2
2.3. Prior Transfers of the 1878 Murphy Ditch Vested Water Right.....	4
2.4. Untransferred Portion of the 1878 Murphy Ditch Vested Water Right	4
3. Methodology for Analyses.....	5
3.1. Crop Irrigation Requirement.....	5
3.2. Required Headgate Delivery.....	7
3.3. Pro Rata Delivery	7
3.4. Transferable Yield	7
4. Results of Analyses.....	8
4.1. Crop Irrigation Requirement.....	8
4.2. Required Headgate Delivery.....	9
4.3. Pro Rata Delivery	9
4.4. Transferable Yield	9
5. Future Use of Murphy Ditch Water Right.....	10
5.1. Use by RVSD	10
5.2. Summary	11
6. References	13

List of Figures

Figure 1. Rapid Valley Sanitary District General Location Map	3
Figure 2: Permitted 1878 Murphy Ditch Parcels	6

List of Tables

Table 1 - 1878 Murphy Ditch Vested Water Right Stockholders.....	5
Table 2 - Average Crop Irrigation Requirement for Alfalfa (1950 to 2004)	8
Table 3 - Average Crop Irrigation Requirement for Pasture Grass (1950 to 2004)	8
Table 4 - Average Required Headgate Delivery (1950 to 2004)	9
Table 5 - Subject Right Average Diversions and Deliveries (1946 to 1980)	9
Table 6 - 1878 Murphy Ditch Vested Water Right Annual Transferable Yield.....	10
Table 7 - Average RVSD Monthly Water Use Pattern.....	11
Table 8 - Volumetric Limit on Diversions (ac-ft).....	12

Appendices

APPENDIX A - Water License No. 1727-2 Rapid Valley Water Company

APPENDIX B - Selection of Study Period

APPENDIX C - Calculation of Average Historical Murphy Ditch Diversions

APPENDIX D - Farm Specific Calculations of Transferable Yield

APPENDIX E - Detailed Results of Potential Consumptive Use Computations

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.

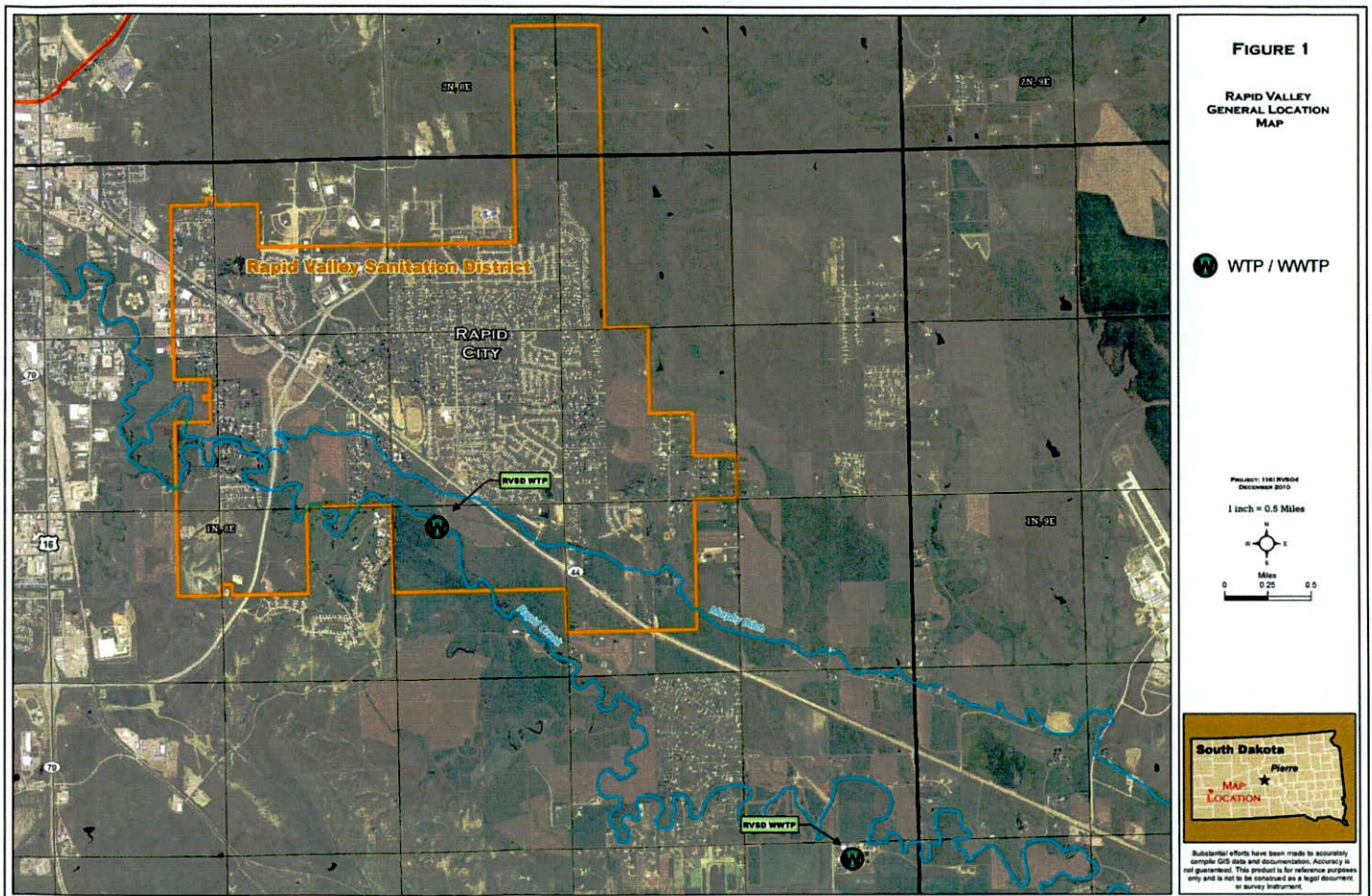
The Rapid Valley area has seen steady growth and has grown from approximately 1,800 customers in 1988 to 3,400 customers in 2009. The late 1990s housing boom in Rapid Valley increased customers at a rate of 140 per year; this growth has slowed in more recent years to an estimated 100 new customers per 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% ^{6h}	Irrigated
Anderson	2	0.2%	Irrigated
Buckholz	5	0.4%	Irrigated
Gravatt ^[2]	45.6	5.5% ^{4g}	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.

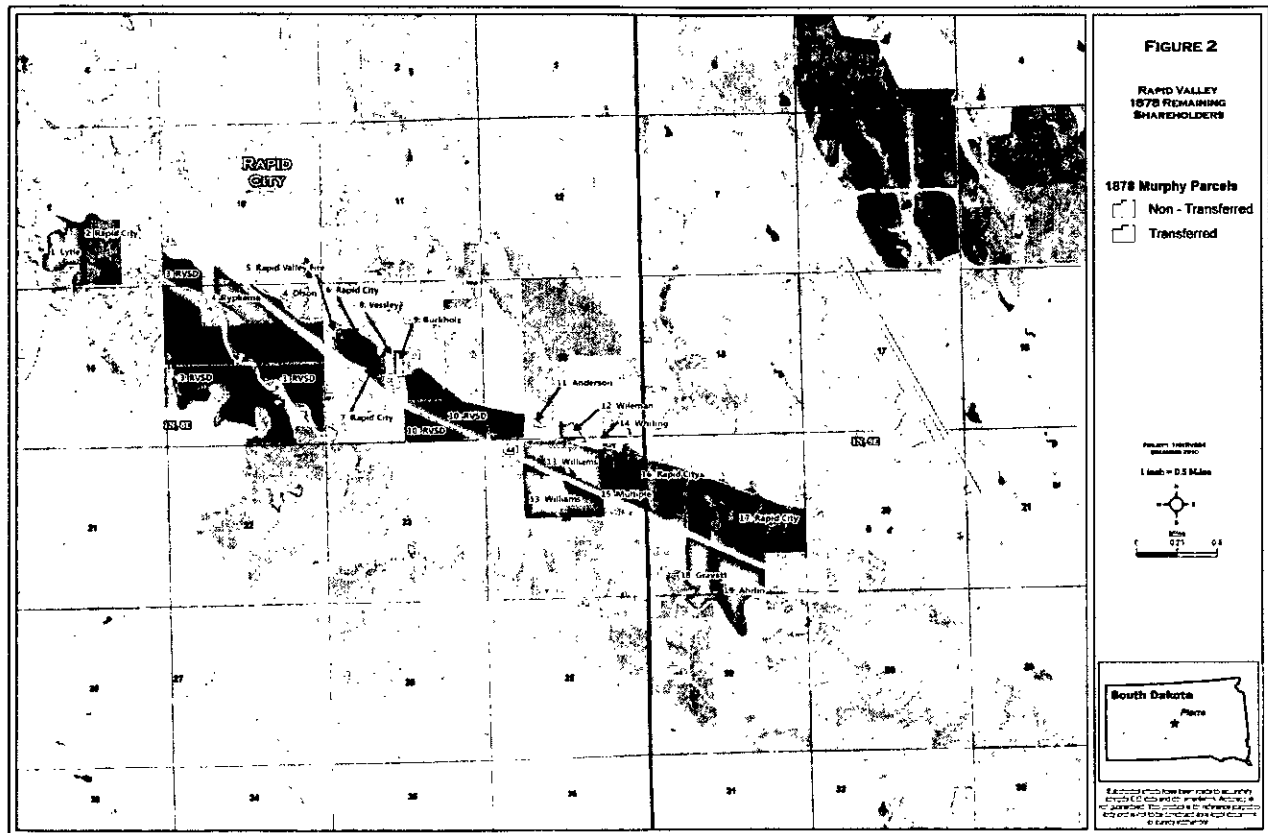
[2] Under contract as of the date of this report.

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 transferrable yield from the untransferred portion of the water right. As shown in **Table 6**, transferrable 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.)	Rate Percent of 11%
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	

MUR
12-26-19

Not Included - Rapid Valley Fire

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 ¼ of the SW ¼ 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 ¼ NW ¼ 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

DO NOT USE THIS TABLE
MDL 10-30-2019

714

703

SEE
FILE NO 2807-3
FOR FILE DOCUMENTATION
LOW FLOWING REPLACEMENT
OF TABLE NO 8. MDL 10-30-2019

2019 Updated Table 8 to show additional decimal to clarify rounding errors.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Ahrlin	5.6	18.5	21.4	28.3	36.6	26.8	10.6	147.8
Anderson	0.2	0.5	0.6	0.8	1.1	0.8	0.3	4.3
Buckholz	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Gravatt	3.8	12.3	14.2	18.8	24.4	17.9	7.1	98.5
Lytle	3.7	12.1	14.1	18.6	24.1	17.7	7.0	97.2
Olson	0.5	2.4	2.8	3.7	4.8	3.5	1.3	19.1
Rapid Valley Fire	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Rypkema	2.1	9.7	11.2	14.9	19.3	14.1	5.1	76.5
Vessley	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Whiting	0.1	0.3	0.3	0.4	0.5	0.4	0.1	2.1
Wileman	0.3	1.3	1.6	2.1	2.7	2.0	0.7	10.6
Williams	8.6	28.1	32.5	43.0	55.6	40.8	16.2	224.7
Total	25.7	88.0	101.9	134.7	174.4	127.9	50.0	702.5

The monthly and annual volumes for Rapid Valley Fire was specifically not included in the total.

6. REFERENCES

- Alley, W.M. 1984. The Palmer Drought Severity Index: Limitations and Assumptions. *Journal of Climate and Applied Meteorology*, 23: 1100-1109.
- Anderson, M.T., D.G. Driscoll and J.E. Williamson, 1998. Ground-Water and Surface-Water Interactions along Rapid Creek near Rapid City, South Dakota. U.S. Geological Survey, Water Resources Investigations Report 98-4214.
- Brown and Caldwell, 2003. Technical Report for M.P. Carley Property Water Rights Transfer.
- Burman, et al. 1982. Statistical and Numerical Representation of Irrigation Water Requirements. *Trans. ASAE*, Volume 25.
- Colorado State University, 1998. Irrigation – Tailwater Recovery for Surface Irrigation. Technical Bulletin 4.709. Colorado State University Cooperative Extension.
- Glover, R.E., 1960. Groundwater Movement. Engineering Monograph No. 31. U.S. Bureau of Reclamation.
- Glover, R.E., 1960. Study of Groundwater Movement. Technical Memorandum 657. U.S. Bureau of Reclamation.
- Hill, et al. 1983. Comparison of Equations Used for Estimating Agricultural Crop Evapotranspiration with Field Research. U.S. Bureau of Reclamation.
- Hortness, J.E. and D.G. Driscoll. 1998. Streamflow Losses in the Black Hills of Western South Dakota. U.S. Geological Survey Water Resources Investigations Report 98-4116.
- Jensen, M.E., R.D. Burman, and R.G. Allen (ed). 1990. Evapotranspiration and Irrigation Water Requirements. American Society of Civil Engineers, Eng. Pract. Manual No. 70. 332 p.
- Leonard Rice Engineers, Inc. and Cetec Engineering, Inc. 2005. Engineering Report: Transfer of Lamb Property Water Rights – 1878 Murphy Ditch Priority.
- Leonard Rice Engineers, Inc. and Cetec Engineering, Inc. 2009. Engineering Report: Transfer of Higgins Property Water Rights – 1878 Murphy Ditch Priority.
- National Drought Mitigation Center. 1996. Drought Indices. University of Nebraska. Lincoln, NE. <http://enso.unl.edu/ndmc/enigma/indices/htm>
- NOAA – Climate Data, Rapid City (No. 6937)
- Palmer, W.C. 1965. Meteorological Drought. Research Paper No. 45, U.S. Department of Commerce Weather Bureau, Washington, D.C.
- Pochop, et al. 1984. Elevation – A Bias Error in SCS Blaney-Criddle ET Estimates. *Trans. ASCE*.
- Personal Communication, Mr. Mark Rath, South Dakota Department of Environment and Natural Resources.
- Personal Communication, Mr. Steve Murphy, Murphy Ditch Superintendent (Ditch Rider).
- 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.

Soil Conservation Service. 1967. Irrigation Water Requirements Technical Release No. 21, April 1967, revised September 1970.

U.S. Department of Agriculture. 1988. Colorado Irrigation Guide. Soil Conservation Service. December, 1988.

U.S. Bureau of Reclamation, 1990. Rapid Valley Water Management Study. Belle Fourche Projects Office. Great Plains Region, Newell, South Dakota.

Wright Water Engineers, Inc. 1990. Engineering Report for Transfer of Tyler Property Share of Validated 1878 Murphy Ditch Company.

Wright Water Engineers, Inc. 1992. Engineering Report for Transfer of Strommer Property Portion of Southside Ditch Water Rights

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
---	----------------	-----------------	--------

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

Page 2
Vested Water Right License No. 1727-2

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

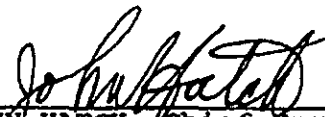
20	SE1/4 SE1/4	S19-T1N-R9E	14
	NE1/4 NE1/4	S30-T1N-R9E	12
21	NW1/4 SW1/4	S20-T1N-R9E	25
	SW1/4 SW1/4	S20-T1N-R9E	34
	NE1/4 SW1/4	S20-T1N-R9E	7
	SE1/4 SW1/4	S20-T1N-R9E	39
	NW1/4 NW1/4	S29-T1N-R9E	2
	NE1/4 NW1/4	S29-T1N-R9E	18
22	SW1/4 SE1/4	S20-T1N-R9E	18
	NW1/4 NE1/4	S29-T1N-R9E	20

	Total		189

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.

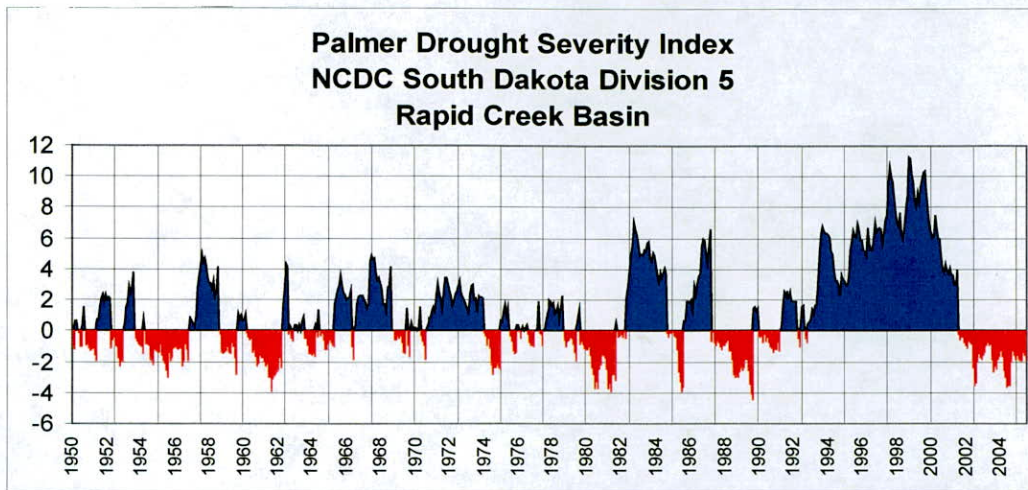


Figure B-1. Monthly PDSI Values for the Rapid Creek basin in South Dakota.

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).

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	Scp	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)



LeonardRice
ENGINEERS, INC.

Leonard Rice Engineers, Inc. provides consulting services related to planning, management, and development of water at the highest level of technical excellence that is professional, ethical, and profitable.

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.

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)

Water Rights Program - DENR

Conversation or File Documentation

Name of Person: *Rapid Valley Water Company - James Williams, President* **File No.** 1727-2

Address: *8005 Morris Lane, Rapid City SD 57703* **County:** *Pennington*

Date: *June 11, 2019* **Telephone:** *605-415-6900*

RE: *Confirmation that Murphy Ditch Irrigation Ditch Company is the same entity as Rapid Valley Water Company the holder of record for Vested Water Right No. 1727-2.*

Comments: *I called James (Jeep) Williams, the president of the Murphy Irrigation Ditch Company. I said that Rusty Schmidt with the Rapid Valley Sanitary District had sent us a copy of a letter he (Mr. Williams) had sent to Mr. Schmidt confirming that Yasmeen Dream was the shareholder for in the and held 41 shares in Murphy Ditch. I asked Mr. Williams to confirm that the Murphy Irrigation Ditch Company was the same entity as Rapid Valley Water Company. Mr. Williams confirmed that they were the same entity.*



Mark D Rath

Natural Resources Engineer III

MURPHY IRRIGATION DITCH COMPANY

8005 Morris Lane, Rapid City, SD 57703

May 13, 2019

Rusty Schmidt
Rapid Valley Sanitary District
4611 Teak Drive
Rapid City, SD 57703

RE: Murphy Ditch Water Rights

Mr. Schmidt -

Yasmeen Dream, LLC is the current owner of the real property described as:

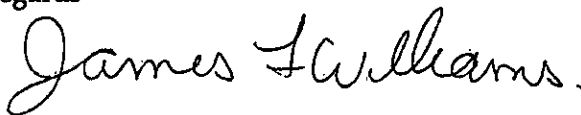
Tract A in the E1/2SW1/4 and the W1/2SE1/4 also Lot 2 of Tract A NE1/4SW1/4 (described in deed recorded in Book 101, Page 9092 as Lot 2 of Tract A SW14) of Section 9, Township 1 North, Range 8 East of B.H.M., except Lot 1 of Well Addition and Lot 3 of Tract A and Less Lot H1, Pennington County, South Dakota.

On December 28th, 2016, Joseph M Lytle and Winona M Lytle conveyed all rights, title and interests in the above described real estate including all water and mineral rights. The water rights include 41 Miner Inches of 1878 Murphy Ditch Vested Water Rights.

Yasmeen Dream, LLC has been using the water rights to water alfalfa hay fields and trees.

I hope this information is helpful. Please contact me if you need any additional information

Regards -



Murphy Ditch Water
Jeep Williams
President

DOCUMENT PREPARED BY:

Edward C. Carpenter

P.O. Box 290

Rapid City, SD 57709

(605) 343-2410

****RETURN TO****

1ST AMERICAN

FA 126845

QUIT CLAIM DEED

Joseph M. Lytle and Winona M. Lytle, husband and wife, Grantors, of 3125 Lytle Lane, Rapid City, SD 57703, Pennington County, South Dakota, for and in consideration of One Dollar (\$1.00) and other good and valuable consideration, conveys and quit claims to Yasmeen Dream, LLC, Grantee, of 528 Kansas City Street, Rapid City, SD, 57701, all right, title and interest in the following described real estate in the County of Pennington, in the State of South Dakota, including all water and mineral rights:

DESCRIPTION

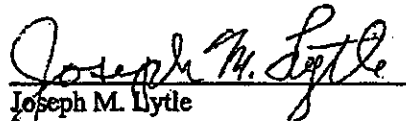
Tract A in the E1/2 SW1/4 and the W1/2 SE ¼ also Lot 2 of Tract A NE1/4 SW1/4 (described in Deed recorded in Book 101, Page 9092 as Lot 2 of Tract A SW1/4) of Section 9, Township 1 North, Range 8 East of the B.H.M., except Lot 1 of Well Addition and Lot 3 of Tract A, and less Lot H1, Pennington County, South Dakota. Subject to Permanent Easements described as Lots PE1 and PE2 of said Tract A.

Grantors reserve a life estate only in Lot 2 of Tract A of the NE1/4 SW1/4 of Section 9, Township 1 North, Range 8 East of the B.H.M. consisting of 0.516 acres ±, so long as either Joseph M. Lytle or Winona M. Lytle live and reside thereon.

Subject to covenants, restrictions, rights-of-way, and easements of record, if any.

TRANSFER FEE \$ _____

Dated this 28 day of December, 2016.


Joseph M. Lytle

Rath, Mark

From: rusty schmidt <rschmidt@rvsd.com>
Sent: Wednesday, October 30, 2019 12:01 PM
To: Rath, Mark
Subject: FW: [EXT] Clarification to LRE Report
Attachments: Table 8 without rounding.xlsx

Mark, Leonard Rice response below and attached table.
Thanks

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

From: Dustin Dale [mailto:Dustin.Dale@ae2s.com]
Sent: Tuesday, October 29, 2019 5:05 PM
To: rusty schmidt <rschmidt@rvsd.com>
Subject: FW: Clarification to LRE Report

We can discuss tomorrow. I did talk with Greg this afternoon and he provides a good summary of our conversation below.

Thank you,
Dustin

From: Greg Roush <greg.roush@lrewater.com>
Sent: Tuesday, October 29, 2019 3:33 PM
To: Dustin Dale <Dustin.Dale@ae2s.com>
Cc: Mike Plante <mike.plante@lrewater.com>; Dave Colvin <dave.colvin@lrewater.com>
Subject: Clarification to LRE Report

Dustin,

I reviewed our Engineering Report titled Transfer of Water Rights 1878 Murphy Ditch Vested Water Right, prepared for Rapid Valley Sanitary District in Association with Cetec Engineering, Inc. dated June 2011 to provide clarification to some questions raised by the State. As stated on the phone the Engineers that prepared the report no longer work at LRE. I have reviewed our backup files and have the following response to the issues we discussed. My answers are based on the information that we had acquired back in 2011. It's our understanding that additional transfers of water rights and other information maybe available now that was not available then.

Regarding Table 6 of the report, the issue was the Volume listed for Stockholders when totaled did not equal the total volume listed in the table. The annual volumes for shareholders when added up equals 714 AF vs amount shown of 703 AF. Review of the backup spreadsheets showed the volume for Rapid Valley Fire, 11 AF, was specifically not included in the total. The reason for excluding Rapid Valley Fire Volume from the total was not found in the back up material, but may of had something to do with the Land Status being "Potentially Irrigated".

Regarding Table 8 the issue was the annual totals did not add up to 703 AF. Again as with Table 6, the volume for Rapid Valley Fire was not included in the totals. The other issue was the monthly values were rounded and when adding up the rounded monthly values they didn't equal total shown. A copy of Table 8 is attached with the monthly and annual values rounded to the nearest 0.1 AF versus nearest 1 AF to show the effects of rounding.

In checking the spreadsheets supporting the report tables, I found another typo correction for Table 1 regarding Percent Ownership. It didn't have any impact on the results as the correct percentages were used in the calculations. At some point prior the the final report there was a revision made for the Gravatt and Ahrlin Irrigated Acreage however the Percent Ownership values were not updated. In Table 1 Ahrlin percent ownership should read as 6.0% and Gravatt should read as 4.0%.

Hope this helps address questions you and RVSD are getting from the State. Let us know if you could use some subconsulting assistance with upcoming water right transfers with RVSD and associated negotiations with State officials.

Take care,
Greg

Greg Roush, P.E.
Principal/COO

Leonard Rice Engineers, Inc.

Office [303-455-9589](tel:303-455-9589)
Direct [303-867-7651](tel:303-867-7651)
Web www.lrewater.com

Click to find us on [Facebook](#), [LinkedIn](#) and [Google+](#)

****CONFIDENTIALITY NOTICE:**

This email message is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy all copies of the original message. Thank you.

2019 Updated Table 8 to show additional decimal to clarify rounding errors.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Ahrlin	5.6	18.5	21.4	28.3	36.6	26.8	10.6	147.8
Anderson	0.2	0.5	0.6	0.8	1.1	0.8	0.3	4.3
Buckholz	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Gravatt	3.8	12.3	14.2	18.8	24.4	17.9	7.1	98.5
Lytle	3.7	12.1	14.1	18.6	24.1	17.7	7.0	97.2
Olson	0.5	2.4	2.8	3.7	4.8	3.5	1.3	19.1
Rapid Valley Fire	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Rypkema	2.1	9.7	11.2	14.9	19.3	14.1	5.1	76.5
Vessley	0.4	1.3	1.6	2.1	2.7	2.0	0.8	10.8
Whiting	0.1	0.3	0.3	0.4	0.5	0.4	0.1	2.1
Wileman	0.3	1.3	1.6	2.1	2.7	2.0	0.7	10.6
Williams	8.6	28.1	32.5	43.0	55.6	40.8	16.2	224.7
Total	25.7	88.0	101.9	134.7	174.4	127.9	50.0	702.5

The monthly and annual volumes for Rapid Valley Fire was specifically not included in the total.

Water Rights Program - DENR

File Documentation

File No. 2807-2

County: *Pennington*

Name of Person: Rapid Valley Water Company - *Jeep Williams, President*

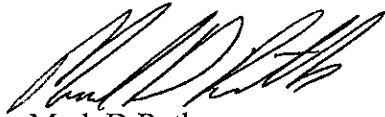
Address: *8005 Morris Lane, Rapid City SD 57703*

Date: *12-17-2019* **Telephone:** *605-545-1274 or 605-415-6900*

RE: *Operation and billing of water for Rapid Valley Water Company*

Comments:

I called Mr. Williams about how the ditch company operates and bills out for water deliveries. He indicated Rapid Valley Water Company is an incorporated share company and the company bills out and delivers water based upon the number of inches the individual shareholder owns.



Mark D Rath

Natural Resources Engineer III

Water Rights Program - DENR

File Documentation

County: Pennington

Name of Person: Rusty Schmidt, Manager Rapid Valley Sanitary District

File: 2807-2

Address: 4611 Teak Dr, Rapid City SD 57703

Date: 12-26-2019

RE: Discussion concerning water right transfers specific to return water and carriage loss.

Comments: I called Rusty Schmidt about the RVSD's water right transfer application. I told him during my review of the Leonard Rice Engineers' report for the water right transfers, it did not include an 11% ditch carriage loss for the diversion rate requested. I told him this would cut the amount requested in the application from 0.59 cfs to 0.53 cfs. I explained that this would be consistent to what had been approved in previous transfers. Mr. Schmidt agreed to the change in the requested diversion rate.

He asked me if I had received his email with the Leonard Rice Engineers update to Table 8 to replace the Table 8 in their 2011 engineering report. I confirmed I had received it.

I asked him how the Sanitary District was having their waste water treated. He confirmed the Sanitary District effluent was collected and piped to the Rapid City water treatment plan for treatment and the effluent was returned to Rapid Creek.



Mark D Rath

Natural Resources Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2807-2, Rapid Valley Sanitary District**

Pursuant to SDCL 46 - 2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2807-2, Rapid Valley Sanitary District, c/o Rusty Schmidt, Manager, 4611 Teak Drive, Rapid City SD 57703.

The Chief Engineer is recommending APPROVAL of Application No. 2807-2 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 with the following qualifications:

1. Permit No. 2807-2 is limited to a diversion rate of 0.53 cubic feet of water per second for a total annual volume of 97.2 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	Acre feet
April	3.7
May	12.1
June	14.1
July	18.6
Aug	24.1
Sept	17.7
Oct	7.0
Totals	97.3

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. 2807-2 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)

4. The Water Management Board retains jurisdiction of Permit No. 2807-2 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. 2807-2.
5. Diversion under Permit No. 2807-2 may not interfere with existing water rights in effect prior to approval of No. 2807-2 or any domestic rights.
6. The amount of water with a April 6, 1878, priority date which may be appropriated under Vested Water Right No. 1727-2, is reduced by 0.53 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 responsible for ensuring that access is obtained from such third parties and that such third parties are also notified that inspections will occur.

See report on application for additional information.

A handwritten signature in black ink, reading "Jeanne Goodman". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jeanne Goodman, Chief Engineer

January 17, 2020

REPORT ON WATER PERMIT APPLICATION NO. 2807-2

Rapid Valley Sanitary District

December 27, 2019

Application No. 2807-3, proposes 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 Murphy Ditch to the Rapid Valley Sanitary District. The transfer is for Rapid Creek water historically used for irrigation of 45 acres of Lytle property, with the property and shares currently held by Yasmeen Dream, LLC (Murphy, 2019). The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with an annual volume limitation of 97.3-acre feet of water.

Historically, the 0.53 cfs from Murphy Ditch has been used to irrigate 45 acres located in Section 9 -T1N-R8E. 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 proposes to move the existing diversion point for 0.53 cfs to a new diversion point approximately 3.5 stream miles downstream to the Sanitary District's pump site located in the NE 1/4 NW 1/4 Section 15-T1N-R8E. This application does not authorize any new water appropriation from Rapid Creek. This application, if approved, will retain the April 6, 1878, priority date established by the Murphy Ditch vested right for natural flow. The proposed diversion will be located just east of Rapid City in Pennington County.

Review of Methodology

Most previous Rapid Valley Sanitary District and City of Rapid City transfers of Rapid Creek water from irrigation to municipal use were done under South Dakota Codified Law (SDCL) 46-5-34.1.

SDCL 46-5-34.1. Transfer of irrigation rights apart from land--Restricted purposes--Protection of other users. The provisions of §§ 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.

However, a 2002 Water Management Board decision altered how some pre-1907 water rights were to be treated. In that case the Lone Tree Ditch Company became aware in 1999 that several acres had been inadvertently omitted from the validation of Vested Water Right No. 2038-2 in 1988. The Lone Tree Ditch Company filed Vested Water Right Claim No. 2479-2 for the additional acres. In 2002, during the hearing for 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 the Lone Tree Ditch Company is a stock-share irrigation company (established in corporate by-laws), owns a pre-1907 water right, and 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 2002 decision allows the Chief Engineer to regulate the maximum diversion rate and location 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, the Board concluded that pre-1907 water rights held by ditch companies may not be appurtenant to any land unless the by-laws or organization of the company so provide (Water Rights, 2019). If the pre-1907 water rights are not appurtenant to the land, 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 §§ 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 rights. In the case of Water Permit Application No. 2807-2, Rapid Valley Sanitary District 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).

The applicant's proposed methodology in determining the transferable yield is to calculate the pro-rata share of water delivered to the shareholders farm turnout. The pro rata deliveries are equal to the total ditch company's total authorized diversion for the Rapid Valley Water Company's April 6, 1878, priority right, less ditch carriage loss, times the shareholder's interest in the authorized diversion. The volume of water which can be diverted to Rapid Valley Sanitary District's water system is 97.3 ac-ft 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 Limit (ac-ft)
April	3.7
May	12.1
June	14.1
July	18.6
August	24.1
September	17.7
October	7.0
Total	97.3

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. The Rapid Valley Sanitary District pipes its waste water to the Rapid City waste water treatment plant 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 use (Leonard Rice. 2011). If in the future the Rapid Valley Sanitary District stops returning effluent to Rapid Creek, the diversion proposed by this application will need to be recalculated to reflect that condition.

Review of Existing Water Rights

There are a total of 100 existing water rights/permits appropriating 263.71 cfs from Rapid Creek from its headwaters in southern Lawrence County to its confluence with the Cheyenne River in eastern Pennington County. There are 12 existing water rights/permits appropriating 20.13 cfs located between the existing Murphy Ditch diversion point and the proposed Sanitary District diversion point. Downstream of the proposed diversion point to the confluence of Rapid Creek

with the Cheyenne River there are 27 existing water rights/permits appropriating 85.92 cfs. Existing rights may be amended under SDCL 46-2A-12 and SDCL 46-5-30.4 but the amendments do not allow impairment to existing rights. The engineering analysis submitted with this application demonstrates the portion of the Murphy Ditch water right historically associated with irrigation of the Lytle property can be transferred to the Rapid Valley Sanitary District without unlawfully impairing existing rights (Leonard Rice Engineers, Inc. 2011).

Discussion

The applicant is proposing a transferable diversion rate of 0.53 cfs. If this application is approved, it would not be expected to unlawfully impair existing rights, including 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 authorized diversion rate and is consistent with previous Murphy Ditch transfers by both the City of Rapid City and the Rapid Valley Sanitary District (Leonard Rice Engineers, Inc. 2011).

If this transfer is approved, the diversion rate authorized by the April 6, 1878, priority date of Water Right Nos. 1727-2, Rapid Valley Water Company, should be decreased by 0.53 cubic feet of water per second (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 the Deerfield or Pactola reservoirs.

If approved the Water Permit No. 2807-2 should contain the following qualifications:

- The Water Management Board retains jurisdiction of Permit No. 2807-2 in the event additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit no. 2807-2.
- The 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.

Conclusions

1. This application proposes 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 Murphy Ditch.
2. Existing rights may be amended under SDCL 46-2A-12 and SDCL 46-5-30.4, but the amendments do not allow impairment to existing rights.
3. The transfer is for Rapid Creek water historically used for irrigation of 45 acres of Lytle property, with the property and shares currently held by Yasmeen Dream, LLC.

4. The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with an annual volume limitation of 97.3-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 Limit (ac-ft)
April	3.7
May	12.1
June	14.1
July	18.6
August	24.1
September	17.7
October	7.0
Total	97.3

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 Nos. 1727-2, Rapid Valley Water Company, should be decreased by 0.53 cubic feet of water per second (cfs) due to the transfer.
7. If approved, the Water Permit No. 2807-2 should contain the following qualifications:
- The Water Management Board retains jurisdiction of Permit No. 2807-2 in the event that additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit no. 2807-2.
 - The 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.



Mark D. Rath
Natural Resources Engineer III

References

1. USGS. 2019. United States Geological Survey, National Water Information System – Stream Gaging Station Network for South Dakota.
2. Water Rights. 2019. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
3. Williams. 2019. Personal communication via December 12, 2019, telephone call with Jeep Williams, President of the Rapid Valley Water Company, concerning operation and billing for Rapid Valley Water Company.
4. 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.
5. 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.
6. Murphy. 2019. Murphy Irrigation Ditch Company's May 13, 2019, letter to Rapid Valley Sanitary District addressing Yasmeem Dream ownership of Lytle property and the associated shares of 41 miners' inches of 1878 Murphy Ditch Vested Water Rights.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

January 21, 2020

Dan Coon
City of Rapid City
300 6th Street
Rapid City SD 57701

Dear Mr. Coon:

Enclosed is the report, recommendation and public notice for Water Permit Application No. 2807-2 filed by the Rapid Valley Sanitary District. The applications propose to transfer the use of a portion of Rapid Creek natural flows diverted from Murphy Ditch from irrigation to use by the District in its water distribution system. The public notice is scheduled to be published January 29, 2020 in the Rapid City Journal for a hearing to be held before the Water Management Board on February 26, 2020.

This information is being sent to the city's due to your continuing interest in Rapid Creek water right issues. If you have any questions regarding DENR's review of the application, please contact Aaron Mark Rath at (605) 773-3352.

Sincerely,

Eric Gronlund
Water Rights Program, DENR
(605) 773-3352

enclosures

Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, January 22, 2020 3:28 PM
To: Coon Dan (Dan.Coon@rcgov.org)
Subject: Water Permit Application No. 2807-2
Attachments: Application 2807-2.pdf

Dan,
Attached is a letter, report and chief engineers recommendation for Water Permit Application No. 2807-2, Rapid Valley Sanitary District. Paper copies to you are in the mail today.

Karen Schlaak
SD DENR, Water Rights Program
(605) 773-3352



Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, January 22, 2020 3:22 PM
To: 'rschmidt@rvsd.com'
Subject: Water Permit Application No. 2807-2
Attachments: 2807-2.pdf

Rusty,

Attached is the report, chief engineers recommendation and information regarding the public notice for Water Permit Application No. 2807-2. As stated in the letter, is it important for you to contact the Rapid City Journal to authorize publication and arrange for payment ASAP in order for the notice to be published next week on January 29th. Paper copies to you in the mail today.

Karen Schlaak

SD DENR, Water Rights Program
(605) 773-3352



Jan 29 L5827

NOTICE OF APPLICATION

NO. 2807-2

Notice is given that Rapid Valley Sanitary District, c/o Rusty Schmidt, Manager, 4611 Teak Dr., 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 Murphy Ditch from irrigation to use by the District for use in its water distribution system. The transfer is for Rapid Creek water historically used for the irrigation of 45 acres of Lytle property in Section 9-T1N-R8E. The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with annual volume limitation of 97.2 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 0.53 cfs to a permanent diversion point for use by the Sanitary District located in the NE 1/4 NW 1/4 Section 15-T1N-R8E. This application does not authorize any new water appropriation from Rapid Creek. This application, if approved, will retain the April 6, 1878, priority date established by the Murphy Ditch vested right for natural flow from Rapid Creek.

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

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends Approval of Application No. 2807-2 with qualifications because 1) existing rights will not be unlawfully impaired, 2) It is a beneficial use of water, and 3) It is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://enr.sd.gov/public> or contact Eric Gronlund for this information, or other information, at the Water Rights Program address provided below.

The Water Management Board will consider this application at 10:00 am, CST, February 26, 2020 in the Matthew Training Center, Joe Foss Bldg, 523 E. Capitol Ave. Pierre SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing.

Any interested person who intends to participate in the hearing shall file a petition to oppose or support the application and the petition shall be filed with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 14, 2020.

Affidavit of Publication

STATE OF SOUTH DAKOTA

County of Pennington

SS:

RECEIVED

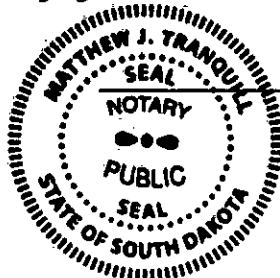
JAN 31 2020

WATER RIGHTS PROGRAM

Sheri Sponder being first duly sworn, upon his/her oath says: That he/she is now and was at all time hereinafter mentioned, an employee of the RAPID CITY JOURNAL, a corporation of Rapid City, South Dakota, the owner and publisher of the RAPID CITY JOURNAL, 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 in the English language, at and within an office maintained by the owner and publisher thereof, at Rapid City, in said Pennington County, and has been admitted to the United States mail under the second class mailing privilege for at least one year prior to the publication herein mentioned; that the advertisement, a printed copy of which, taken from said Rapid City Journal, the paper in which the same was published, is attached to this sheet and made a part of this affidavit, was published in said paper once each day for one successive day, the first publication there of being on the 29th day of Jan 2020 that the fees charged for the publication there of are 123 dollars and 38 cents.

Sheri Sponder

Subscribed and sworn to before me this 29th day of January, 2020.



Matthew J. Tranquill

Notary public

December 5, 2025

My commission expires

The petition may be informal but shall be in writing and shall include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. The hearing is an adversary proceeding and any party has the right to be present at the hearing and to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing and decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

The February 26, 2020 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any person who has filed a petition to oppose or support the application. The request for an automatic delay must be filed by February 14, 2020. If an automatic delay is requested, the hearing will be rescheduled for a future Board meeting and personal notice will be provided to all petitioners regarding the time, date and location.

Notice is given to individuals with disabilities that this hearing is being held in a physically accessible place. Please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing. The telephone number for making arrangements is (605) 773-3352.

Under SDCL 1-26-17(7) notices must state that "if the amount in controversy exceeds \$2,500.00 or if a property right may be terminated, any party to the contested case may require the agency to use the Office of Hearing Examiners by giving notice of the request to the agency no later than ten days after service of a notice of hearing

Issued pursuant to SDCL 1-26-17. This is a Notice of Hearing, service is being provided by publication, and the applicable date to give notice to the Chief Engineer is February 10, 2020. However, since this particular matter is a water permit application and not a monetary controversy in excess of \$2,500.00 or termination of a property right the Chief Engineer disputes the applicability of this provision and maintains that the hearing must be conducted by the Board.

As applicable, the following provides the legal authority and jurisdiction under which the hearing will be held and the particular statutes and rules pertaining to this application: SDCL 1-26-16 thru 1-26-28; SDCL 46-1-1 thru 46-1-9, 46-1-13 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-1 thru 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21, 46-2A-23; 46-5-1.1, 46-5-2 thru 46-5-25, 46-5-30.2 thru 46-5-30.4, 46-5-31, 46-5-32 thru 46-5-34.1, 46-5-38 thru 46-5-39, 46-5-46, 46-5-47, 46-5-49; 46-6-1 thru 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-21, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:25:02; 74:02:01:35:01.

Hunter Roberts, Secretary
Department of Environment and
Natural Resources

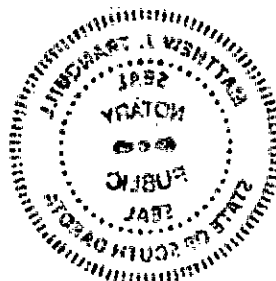
(Published once at the total approximate
cost of \$123.38)

IN THE _____ COURT
COUNTY OF PENNINGTON

**Publisher's and Attorney's
Affidavit**

Filed in the office of _____ on
the _____ day of _____
20 _____

Attorney for _____



Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, January 22, 2020 3:01 PM
To: RCY Legals (legals@rapidcityjournal.com)
Subject: 2807-2, Rapid Valley Sanitary District
Attachments: 2807-2public.wmb1.docx; FORM8.FRM.doc

Attached is a notice to be published on January 29, 2020.

Rapid Valley Sanitary District, Rusty Schmidt, Mgr, 4611 Teak Dr., Rapid City SD 57703 (605 393-1050 or 605 381-2904) has been notified to contact you to authorize publication and arrange for payment.

Email: rschmidt@rvsd.com

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

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

Karen Schlaak

SD DENR, Water Rights Program
(605) 773-3352





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

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

January 21, 2020

Rapid Valley Sanitary District
c/o Rusty Schmidt, Manager
4611 Teak Dr
Rapid City SD 57703

Dear Mr. Schmidt:

Water Permit Application No. 2807-2 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 (Ph # 605 394-8336). 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,

Eric Gronlund
Natural Resources Engineer
(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. 2807-2

Notice is given that Rapid Valley Sanitary District, c/o Rusty Schmidt, Manager, 4611 Teak Dr., 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 Murphy Ditch from irrigation to use by the District for use in its water distribution system. The transfer is for Rapid Creek water historically used for the irrigation of 45 acres of Lytle property in Section 9-T1N-R8E. The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with annual volume limitation of 97.2 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 0.53 cfs to a permanent diversion point for use by the Sanitary District located in the NE 1/4 NW 1/4 Section 15-T1N-R8E. This application does not authorize any new water appropriation from Rapid Creek. This application, if approved, will retain the April 6, 1878, priority date established by the Murphy Ditch vested right for natural flow from Rapid Creek.

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

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends Approval of Application No. 2807-2 with qualifications because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Eric Gronlund for this information, or other information, at the Water Rights Program address provided below.

The Water Management Board will consider this application at 10:00 am, CST, February 26, 2020 in the Matthew Training Center, Joe Foss Bldg, 523 E. Capitol Ave. Pierre SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing.

Any interested person who intends to participate in the hearing shall file a petition to oppose or support the application and the petition shall be filed with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 14, 2020.

The petition may be informal but shall be in writing and shall include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. The hearing is an adversary proceeding and any party has the right to be present at the hearing and to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing and decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

The February 26, 2020 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any person who has filed a petition to oppose or support the application. The request for an automatic delay must be filed by February 14, 2020. If an automatic delay is requested, the hearing will be rescheduled for a future Board meeting and personal notice will be provided to all petitioners regarding the time, date and location.

Notice is given to individuals with disabilities that this hearing is being held in a physically accessible place. Please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing. The telephone number for making arrangements is (605) 773-3352.

Under SDCL 1-26-17(7) notices must state that "if the amount in controversy exceeds \$2,500.00 or if a property right may be terminated, any party to the contested case may require the agency to use the Office of Hearing Examiners by giving notice of the request to the agency no later than ten days after service of a notice of hearing issued pursuant to SDCL 1-26-17." This is a Notice of Hearing, service is being provided by publication, and the applicable date to give notice to the Chief Engineer is February 10, 2020. However, since this particular matter is a water permit application and not a monetary controversy in excess of \$2,500.00 or termination of a property right the Chief Engineer disputes the applicability of this provision and maintains that the hearing must be conducted by the Board.

As applicable, the following provides the legal authority and jurisdiction under which the hearing will be held and the particular statutes and rules pertaining to this application: SDCL 1-26-16 thru 1-26-28; SDCL 46-1-1 thru 46-1-9, 46-1-13 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-1 thru 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21, 46-2A-23; 46-5-1.1, 46-5-2 thru 46-5-26, 46-5-30.2 thru 46-5-30.4, 46-5-31, 46-5-32 thru 46-5-34.1, 46-5-38 thru 46-5-39, 46-5-46, 46-5-47, 46-5-49; 46-6-1 thru 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-21, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:25.02; 74:02:01:35.01.

Hunter Roberts, Secretary, Department of Environment and Natural Resources. Published once at an approximate cost of _____.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

FEB 28 2020

Rapid Valley Sanitary District-Water Service
Rusty Schmidt, Manager
4611 Teak Dr
Rapid City SD 57703

Dear Mr. Schmidt:

Enclosed is Water Permit No. 2807-2 authorizing the transfer of a portion of water use from Rapid Creek, not exceeding the limits as specified in the Water Permit.

An application/license filing fee of \$700.00 was submitted with the application. The fee for this permit should be \$300.00. \$400.00 will be refunded to you. The refund check should be received within the next couple of weeks.

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,

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

enclosures

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

Date 3-12-2020

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

FROM: Rapid Valley Sanitary District
(name)
4611 TEAK DR.
(address)
Rapid City S.D. 57703 605-393-1050
(city, state, zip) (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.

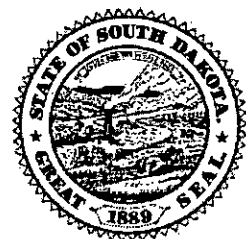
Water Permit No. 2807-2 states that the water use system is to be constructed by _____, and water is to be put to beneficial use by _____.
(date) (date)

The water use system was completed on Completed
(date)

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

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

A. Schmid
(signature)



Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 2807-2

I have this day, August 17, 2020, made a thorough examination of the water use system constructed by Rapid Valley Sanitary District, 4611 Teak Drive, Rapid City SD 57703 of Permit No. 2807-2, bearing the priority of April 6, 1878 authorizing the diversion of 0.53 cu. ft. per second of the waters of Rapid Creek for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use purposes, in Pennington County.

Inspection contact & relationship to permit holder, if applicable: **Rusty Schmidt**
Manager

A. Works used to divert the water: Collection Gallery

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

- 1) Type Municipal distribution system

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Yes

Qualification No. 7 required the lateral ditch be rendered inoperable. A visual inspection found the control structure removed and the lateral ditch filled in with dirt.

- 2) Exceptions to compliance are: none

E. Condition and Location:

1. The system is in good condition with the point(s) of diversion located as follows: legal description 735 ft south and 1375 ft east from the NW corner of Sec 15 T1N-R8E, Latitude 44.050785 longitude -103.146189).

Pump: 1

- 1) Make submersible
2) Capacity 700 GPM

Pump: 2

- 1) Make submersible
2) Capacity 1100 GPM

Pump: 3

- 1) Make submersible
2) Capacity 1800 GPM

Motor: 1

- 1) Make submersible
2) Horsepower rating 25 hp

Motor: 2

- 1) Make submersible
2) Horsepower rating 40 hp

Motor: 3

- 1) Make submersible
2) Horsepower rating 75 hp

Report of Examination of Works

Permit No. 2807-2

2. The works are capable of diverting and conveying to the place of use 8.02 cu. ft. per second of water which is to be used for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use. Water has been put to beneficial use to the maximum extent and the license should be issued for 0.53 cfs.
3. All structures, wells and lands on map Yes
If no, describe: NA

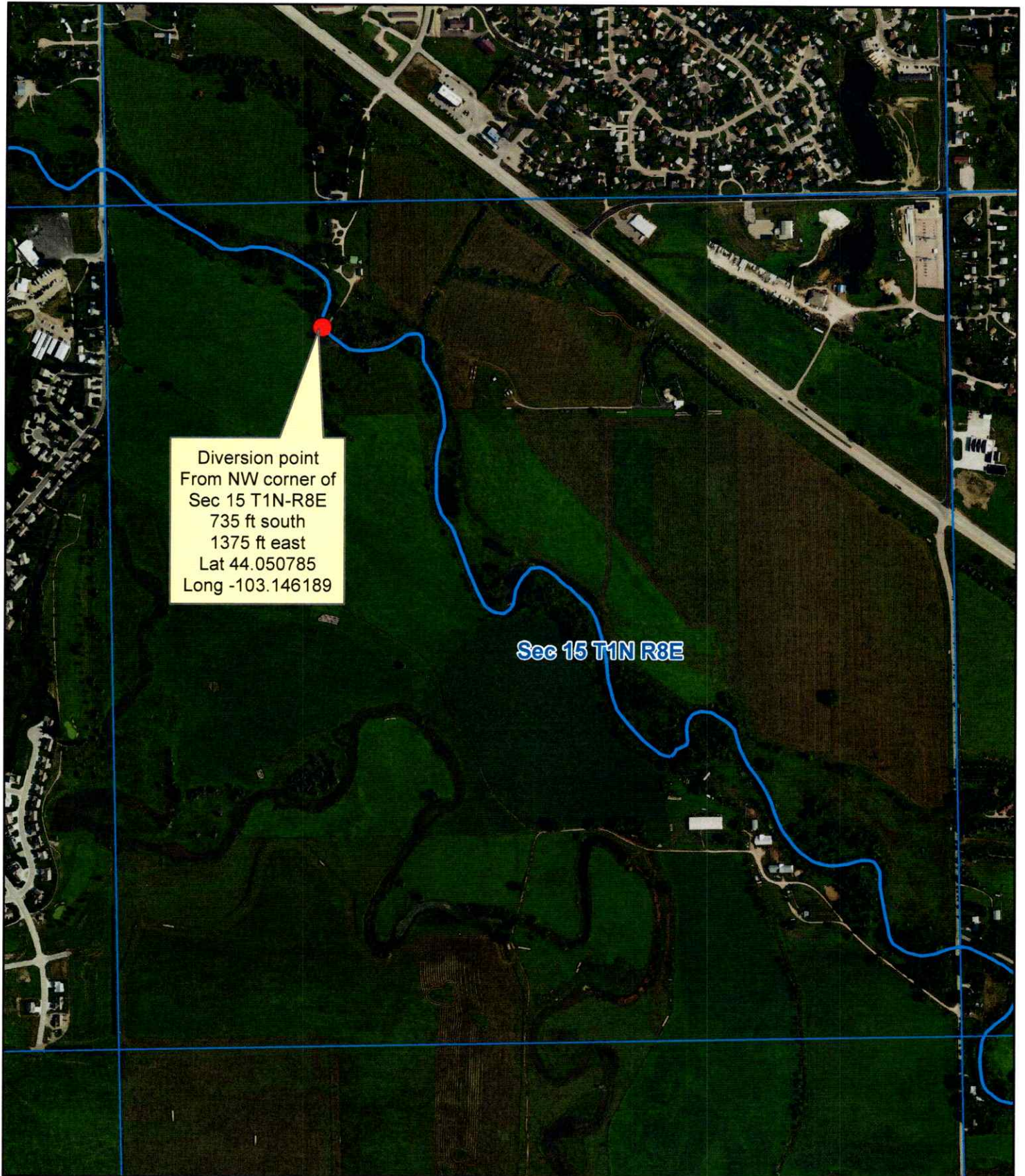
F. Comments or other permit(s) associated with the project:

This permit changed the location of the point of diversion and the type of use from what was authorized by Water Right No. 1727-2.



Mark D Rath
Natural Resources Engineer III
DENR, Water Rights Program

Date report completed: September 23, 2020



0 500 1,000 2,000 3,000 Feet


Mark D Rath
Natural Resources Engineer III
SD DENR - Water Rights Program



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

2020 05 05

2807-2

Rusty Schmidt
Rapid Valley Sanitary District
4611 Teak Dr
Rapid City SD 57703

Dear Mr. Schmidt:

Enclosed is Water License No. 2807-2. This is the final water right document completing the process of obtaining a Water Right. Included with the license is a map prepared by the staff engineer who conducted the field investigation.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 2807-2**

(1) The Rapid Valley Sanitary District Water Service, 4611 Teak Dr., Rapid City SD 57703 made Application No. 2807-2, October 11, 2019 for a water permit 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 Murphy Ditch from irrigation to use by the District for use in its water distribution system. The transfer is for Rapid Creek water historically used for the irrigation of 45 acres of Lytle property in Section 9, T1N, R8E. The portion of Rapid Creek natural flows to be transferred to the Sanitary District is 0.53 cubic feet of water per second (cfs) with an annual volume limitation of 97.3-acre feet of water.

Water Permit No. 2807-2, with a priority date of April 6, 1878 (established by the Murphy Ditch vested water right for natural flow) changed the diversion point for 0.53 cfs to a permanent diversion point for use by the Sanitary District located in the NE ¼ NW ¼ Section 15, T1N, R8E. No. 2807-2 did not authorize any new water appropriation from Rapid Creek.

(2) It is certified that the permit holder has complied with provisions of South Dakota State Law and is entitled to divert 0.53 cubic feet of water per second for beneficial use with an annual volume limitation of 97.3-acre feet of water. The diversion point is located as follows:

- 735 ft south and 1375 ft east from the NW corner of Section 15, T1N, R8E (NE ¼ NW ¼)
Latitude 44.050785; Longitude -103.146189

(3) Pursuant to South Dakota Water Law 46-5-30.1 the Rapid Valley Sanitary District Water Service, 4611 Teak Dr., Rapid City SD 57703 the holder and/or owner of Water Right No. 2807-2 is issued a license to appropriate water, the right to use 0.53 cubic feet of water per second from Rapid Creek with a priority date of April 6, 1878 from the location specified in (2) of this license for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2807-2 and subject to the following qualifications:

1. Permit No. 2807-2 is limited to a diversion rate of 0.53 cubic feet of water per second for a total annual volume of 97.3 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	Acre feet
April	3.7
May	12.1
June	14.1
July	18.6
August	24.1
September	17.7
October	7.0
Totals	97.3

continued

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. Water Right No. 2807-2 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 Water Right No. 2807-2 in the event that changes occur in the system that require adjustments to be made in the monthly or total annual volumes authorized by No. 2807-2.
5. Diversion under Permit No. 2807-2 may not interfere with existing water rights in effect prior to approval of No. 2807-2 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 0.53 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 responsible for ensuring that access is obtained from such third parties and that such third parties are also notified that inspections will occur. ***A visual inspection found the control structure removed and the lateral ditch filled in with dirt.***


Eric Gronlund, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

OCT 06 2020
date

