

WATER PERMIT NO. 2513-2

Name of Applicant: City of Rapid City

Address: 300 6th St, Rapid City SD

Phone: 605 394-4165

Amount of Water Claimed: 0.84 cfs

Total Acres: NA

Source of Water Supply: Rapid Creek

Water to be used for: municipal

County: Pennington

Type of Waste Disposal System:

Location:

PRIORITY

Date Received: 9-30-03

Application/License Fee: \$100 (not received)

Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks: Transfer of use from Water Right No. 2040-2 Known as the Galen Stein (Gordie Howie)
Property

Diversion Point:

Land to be Irrigated:

Depth of Well:

Well Driller :

Remarks:

Type of Map:

Prepared by: Daniel J Bjerke PE

Reviewed and the Number Assigned on: 9-30-03

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

RECEIVED

SEP 30 2003

WATER RIGHTS
PROGRAM

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>2513-2</u>	(office use only) Hydrologic Unit <u>10120110</u>
	Basin <u>Upper Cheyenne R</u>	
	Newspaper <u>Rapid City Journal</u>	

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

- | | | | |
|--|--|--|--|
| ☒ Municipal | ☒ Suburban Housing | ☐ Recreational | ☐ Institutional |
| ☒ Rural Water System | ☒ Commercial | ☐ Fish & Wildlife | ☐ Geothermal Heat |
| ☒ 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. 2040-2

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

Change diversion point (2); Add diversion point(s) Galen Steen (Gordie Howie) property

- Name of Applicant City of Rapid City Phone (605) 394-4165
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address 300 Sixth Street Rapid City State SD 57701
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 0.840 *CFS or 144.84 **GPM 144.80 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Rapid Creek (See attached Exhibits)
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Pennington
See attached Exhibit 2 for legal descriptions of City of Rapid City Water Treatment Plant, Galleries and Alternate Pactola Reservoir Diversion Points
- County or counties where water will be used Pennington, South Dakota
- Annual period during which water is to be used April 15 thru Oct. 15 (Jan 1 thru Dec 31 for Pactola Storage)
- 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)

Project will divert water from Rapid Creek to the City Water Treatment Plant and/or the City infiltration galleries located along Rapid Creek. Alternatively, the Project will, but not simultaneously, divert water from Rapid Creek to storage in Pactola Reservoir. Exhibit 3 shows the location of the City's diversion points on Rapid Creek.

STATE OF SOUTH DAKOTA)
County of Pennington SS

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

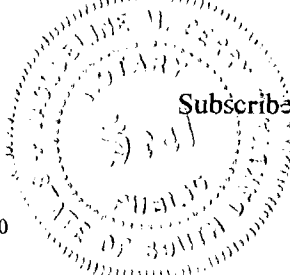
I, Jim Shaw, Mayor, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature

Subscribed and sworn to before me this 29th day of SEPTEMBER 20 03

My Commission Expires
July 15, 2006

Notary Public signature



**SOUTH DAKOTA
WATER PERMIT NO. 2513-2**

Date of first receipt of application September 30, 2003.

The Water Management Board approved Water Permit Application No. 2513-2 on December 3, 2003 for the City of Rapid City, 300 6th St, Rapid City SD 57701 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. 2513-2 transfers a portion of South Side Ditch use of Rapid Creek natural flows appropriated under Vested Water Right No. 2040-2. The transfer is for use of a portion of Rapid Creek natural flows historically used to irrigate 74.9 acres known as the Galen Steen (Gordie Howie) property from South Side Ditch. The portion of Rapid Creek natural flows to be transferred to the city is 0.84 cubic feet of water per second (cfs) with an annual volume limitation of 144.84 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre-feet, if stored in Pactola Reservoir. Historically, the 0.84 cfs has been used to irrigate approximately 74.9 acres located in W ½ SE ¼ Section 24 and SW ¼ NE ¼ Section 25; all in T1N-R8E. The existing diversion point on Rapid Creek for South Side Ditch is located in the SE ¼ NW ¼ Section 15-T1N-R8E. This permit is to change the diversion point for 0.84 cfs to diversion points for use by the city to be located in the SE ¼ NE ¼ Section 3 (Rapid City Water Treatment Plant); SW ¼ SW ¼ Section 3 (Sioux Park Gallery); SE ¼ NE ¼ Section 9 (Meadowbrook Gallery); NW ¼ SE ¼ Section 8 (Jackson Springs Gallery); all in T1N-R7E or to allow storage in Pactola Reservoir. The location of the Pactola Reservoir diversion point is the NW ¼ SW ¼ Section 2-T1N-R5E and the reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This permit does not authorize any new water appropriations from Rapid Creek.

The water appropriated shall be used for the purpose of meeting Rapid City's water needs and may not exceed the amount of water needed for beneficial use for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic purposes.

3. The water is to be used during the following described annual period: May 1 - September 30 for diversions from the Water Treatment Plant, Sioux Park Gallery, Meadowbrook Gallery and Jackson Springs Gallery and January 1 - December 31 for Pactola Reservoir diversion releases from storage.
4. The date from which applicant may claim right is May 3, 1880.
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. 2513-2 is limited to a diversion rate of 0.84 cfs for a total annual volume of 72.23 acre-feet at Pactola Reservoir or a total annual volume of 144.84 acre-feet at Sioux Park Gallery (SW¼ SW¼ Section 3), Meadowbrook Gallery (SE¼ NE¼ Section 9), Rapid City Water Treatment Plant (SE¼ NE¼ Section 3), or at the Jackson Springs Gallery (NW¼ SE¼ Section 8) considered as replacement water only all in T1N-R7E. Maximum monthly diversion volumes at Pactola or the diversion points within Rapid City are as follows:

(continued)

<u>Monthly</u>	<u>Monthly acre-feet at Pactola</u>	<u>Monthly acre-feet at diversion points within Rapid City</u>
May	10.20	20.79
June	14.92	29.84
July	15.41	30.82
August	18.03	36.07
September	13.66	27.32
October	0.00	0.00

Diversions during a month may be made at either Pactola Reservoir or at the diversion points within Rapid City, but not simultaneously at both Pactola and the Rapid City diversion points.

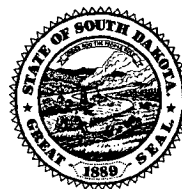
2. Permit No. 2513-2 authorizes diversion of only natural flow water by the City of Rapid City and does not include any rights to stored irrigation water available under contract from Pactola Reservoir.
3. That the City of Rapid City report to the Chief Engineer annually the amount of water withdrawn each month at Pactola Reservoir or the diversion points within Rapid City.
4. That the Water Management Board is retaining jurisdiction of Permit No. 2513-2 in the event that additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit No. 2513-2.
5. Diversions under Permit No. 2513-2 may not interfere with existing water rights in effect prior to approval of No. 2513-2 or any domestic rights.
6. The amount of water with a May 3, 1880 priority date which may be appropriated under Vested Water Right No. 2040-2 is reduced by 0.91 cfs (see staff report).
7. Approval of Permit No. 2513-2 retires the 81 acres, known as the Galen Steen (Gordon Howie) property which has been historically irrigated from using South Side Ditch, located in portions of the NE ¼, N ½ SE ¼ Section 32, T1N, R9E from future irrigation.

WATER MANAGEMENT BOARD

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

APR 23 2004

date



Supplemental Information

(Complete applicable portions only)

(type or print in ink)

1. Well Information - Proposed Construction

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

2. Wastewater Disposal System Information

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

3. Dugout Information

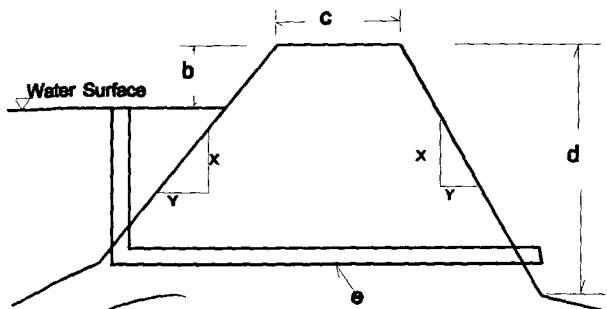
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

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

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

United States Bureau of Reclamation
Department of the Interior



Jim Shaw

JIM SHAW, MAYOR
CITY OF RAPID CITY

- b) Freeboard _____ 3.3 feet
- c) Crest Width _____ 40 feet
Crest Length _____ 5,200 incl. dikes
- d) Height _____ 245 feet
- e) Primary Outlet Capacity _____ 1,150 cfs
If pipe, diameter _____ 2 - 2.75 ft X 2.75 ft.
- f) Secondary Spillway Capacity _____ 245,000 cf
Spillway Width _____ 425 feet
- g) X & Y Slope _____
Upstream _____ 2.5:1
Downstream _____ 2:1
- h) Surface Area of Impoundment _____ 1,232 ac.
- i) Storage _____ 99,029.0 Acre Feet
- j) Drainage Area Above Dam _____ 319.0 Acres

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date October 22, 20 03

RECEIVED OF City of Rapid City, 300 Sixth Street, Rapid City SD 57701

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

Fee for Application for Permit No. <u>2513-2</u> to Appropriate Water, to construct and to put water to beneficial use	50	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>2513-2</u>	50	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	100.00

No.

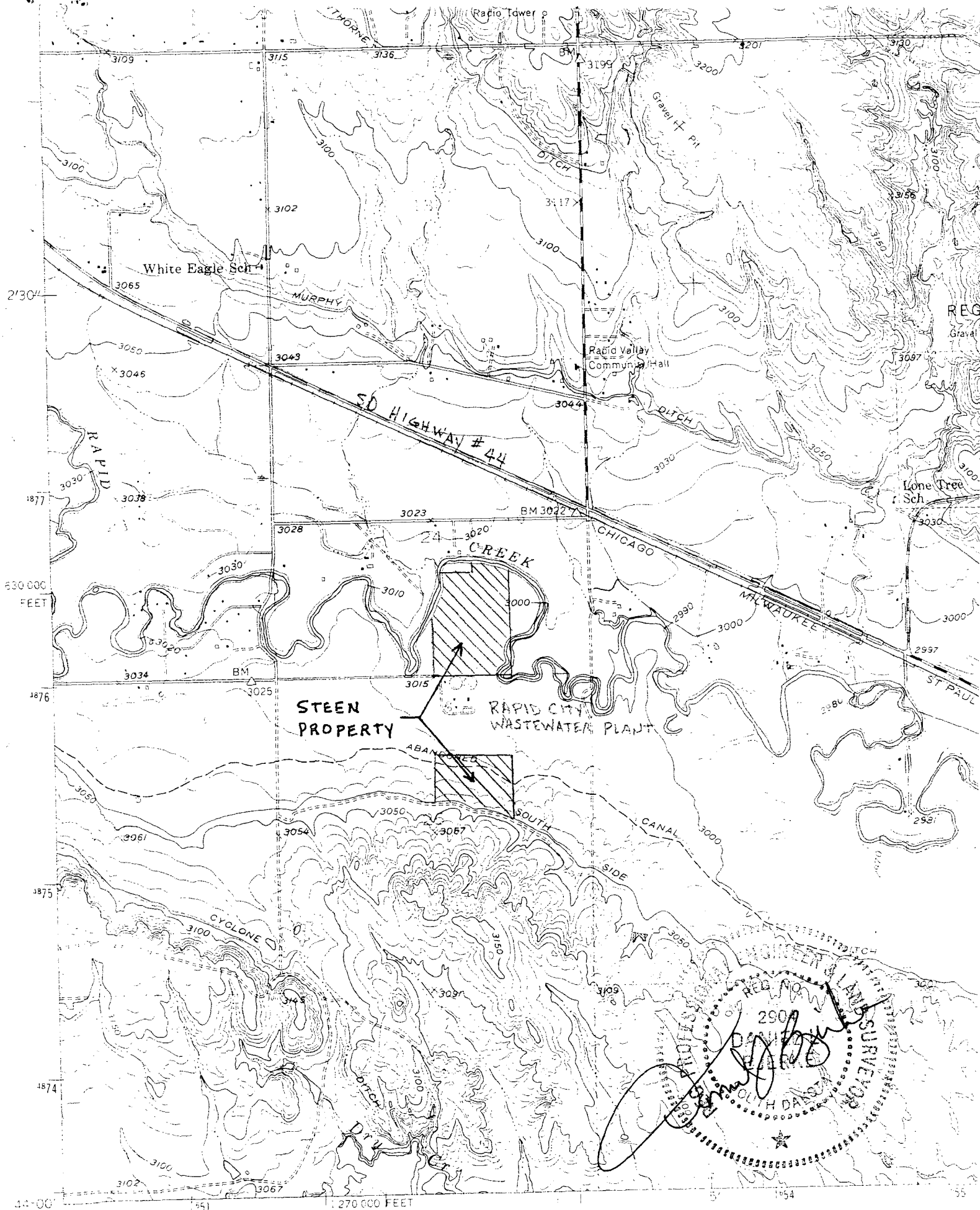
000897

By

Darlene Elbe

Chief Engineer

gms



Mapped, edited, and published by the Geological Survey
Control of USGS and USC&GS

MA
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REVIEWED

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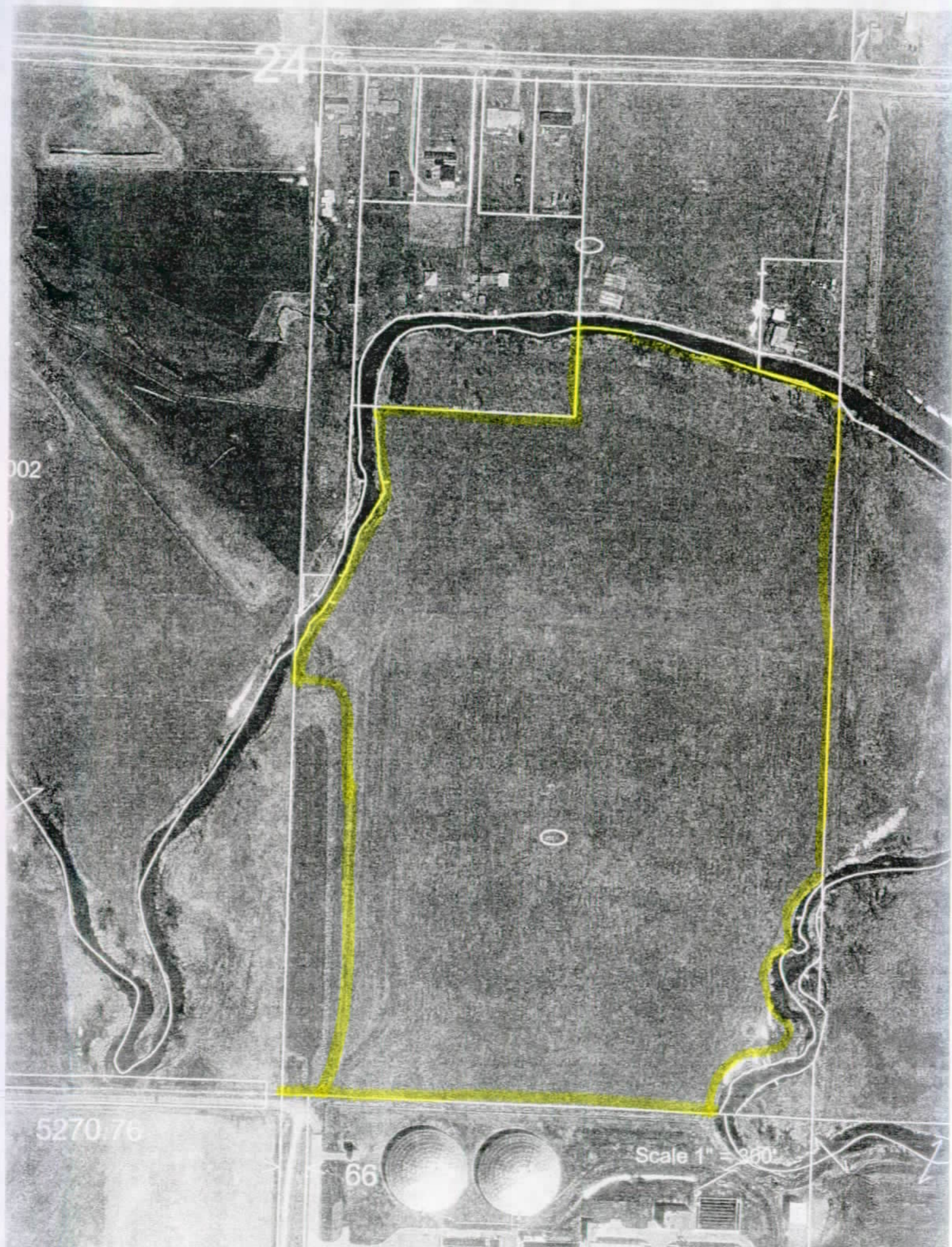
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25

Scale 1" = 300'



- WELL
- INFILTRATION GALLERY

RAPID CITY
SOUTH DAKOTA
JANUARY, 1991
1" = 3000'
WATER SUPPLIES

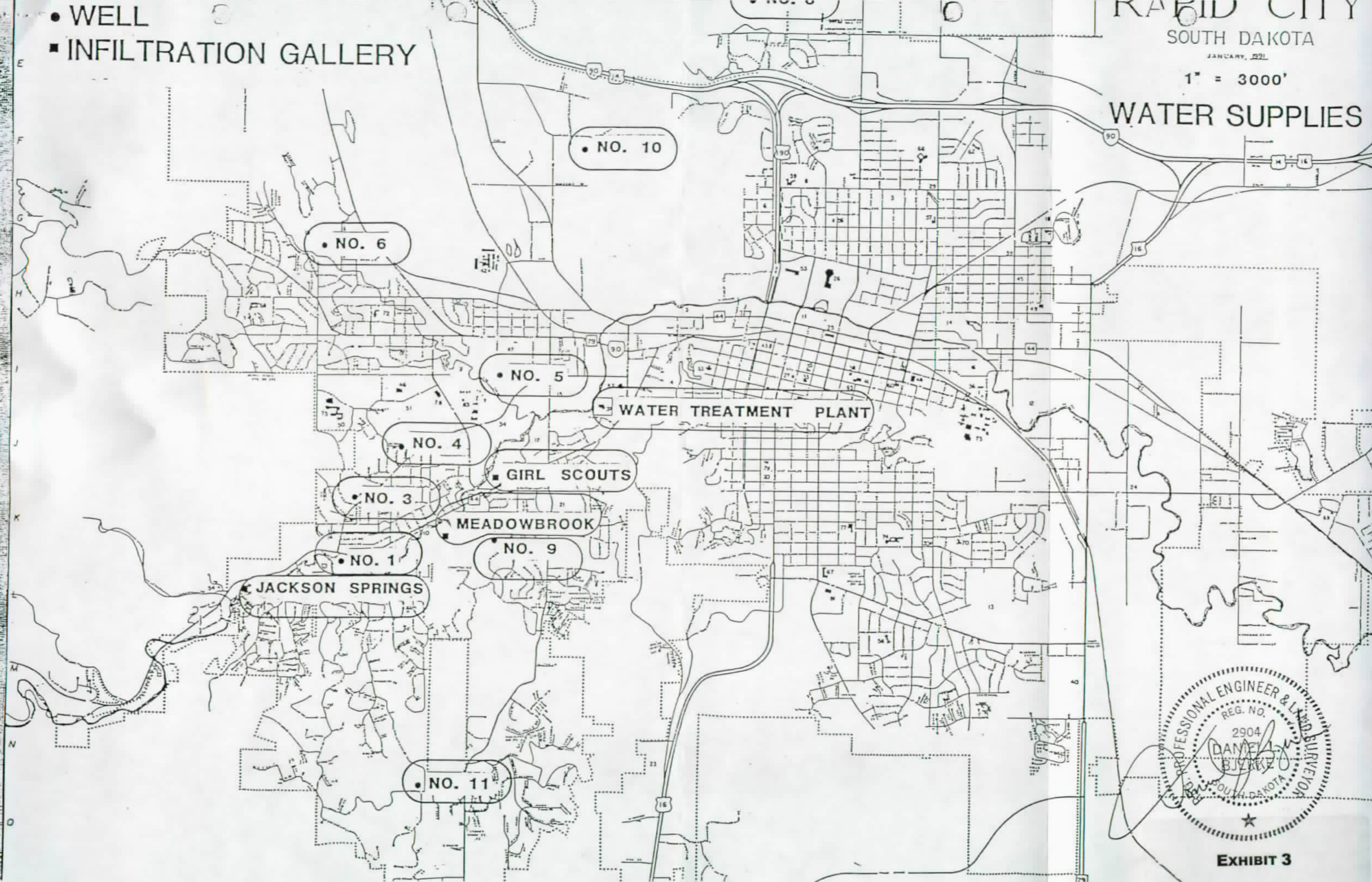


EXHIBIT 1

**LEGAL DESCRIPTION OF IRRIGATED LAND
AFFECTED BY APPLICATION**

Southeast one-quarter of the Northwest one-quarter of the Southeast one-quarter; Southwest one-quarter of the Southeast one-quarter; Southwest one-quarter of the Northwest one-quarter of the Southeast one-quarter less the North 210 feet and less the West 100 feet; and that portion of the Southeast one-quarter of the Northwest one-quarter of the Southeast one-quarter South of Rapid Creek, all located in Section Twenty-four (24); and Southwest one-quarter of the Northeast one-quarter not to include acreage south of the South Side Ditch and the West 66 feet of the Northwest one-quarter of the Northeast one-quarter, all located in Section Twenty-five; Township One (1) North, Range Eight (8) East, Black Hills Meridian, Pennington County, South Dakota.

EXHIBIT 2

APPLICATION FOR PERMIT TO APPROPRIATE WATER WITHIN THE STATE OF SOUTH DAKOTA

LOCATION OF POINT OF DIVERSION

City of Rapid City Water Treatment Plant:

North 71 degrees 39 feet West, 1,205 feet from East $\frac{1}{4}$ corner of Section Three (3), Township One (1) North, Range Seven (7) East of the Black Hills Meridian.

Sioux Park "Girl Scout" Gallery:

1,270 feet North 54 degrees 05 feet East of Southwest corner of Section Three (3), Township One (1) North, Range Seven (7) East of the Black Hills Meridian.

Meadowbrook Gallery:

2,032 feet South 31 degrees 41 feet West of Northeast corner of Section Nine (9), Township One (1) North, Range Seven (7) East of the Black Hills Meridian.

Jackson Springs Gallery:

2,943 feet North 58 degrees 54 feet West of Southeast corner of Section Eight (8), Township One (1) North, Range Seven (7) East of the Black Hills Meridian.

Alternate Pactola Reservoir Diversion (Inlet to Service Spillway):

South 19 degrees East 3,740 feet of Northwest corner of Section Two (2), Township One (1) North, Range Five (5) East of the Black Hills Meridian.

Reservoir generally located in portions of Sections Two (2), Three (3), Four (4), Five (5), Ten (10) and Eleven (11), Township One (1) North, Range Five (5) East of the Black Hills Meridian, and portions of Sections Thirty-one (31), Thirty-two (32), Thirty-three (33) and Thirty-four (34), Township One (1) North, Range Five (5) East of the Black Hills Meridian.

All of the above in Pennington County, South Dakota.

**TECHNICAL MEMORANDUM FOR:
GALEN L. STEEN PROPERTY
WATER RIGHTS TRANSFER**

PREPARED FOR:

**MARK RATH
WATER RIGHTS DIVISION
SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES**

PREPARED BY:

**BROWN AND CALDWELL
1697 COLE BOULEVARD, SUITE 200
GOLDEN, COLORADO 80401**

SEPTEMBER 25, 2003

TECHNICAL MEMORANDUM

Date: September 25, 2003

Prepared For: Mr. Mark Rath
Water Rights Division
South Dakota Dept of Environment and Natural Resources

Prepared By: Leo M. Eisel, Ph.D., P.E.
Project Manager
Brown and Caldwell

Subject: Steen Property Water Rights Transfer

Executive Summary

Engineering calculations and analysis prepared for the Steen property indicate the following:

- 74.9 acres have been flood irrigated on the Steen property which consist of 42.0 acres of alfalfa and 32.9 acres of hay/pasture.
- This historic irrigation will allow 72.42 acre-feet/year of water to be transferred to storage in Pactola Reservoir or 144.84 acre-feet/year to be transferred to Rapid City's water treatment plant and infiltration galleries.
- This transferred water may be diverted at the new points of diversion at a rate not to exceed 0.84 cfs.

Engineering Analysis

Brown and Caldwell has quantified the irrigated acreage under the South Side Ditch belonging to Galen L Steen. This acreage has been used to determine the amount of water that can be transferred to Pactola Reservoir and the Rapid City water treatment plant and infiltration galleries based on data and engineering calculations detailed in the engineering report prepared for the Stromer property (March 1992), Jundt property (December 1992) and the Eisenbraun property (October 1997).

The Steen property is located in Sections 24 and 25, Township 1 North, Range 8 East, Black Hills Meridian, Pennington County, South Dakota. The property has historically been irrigated off the South Side Ditch (see attached Vested Water Right License). Flood irrigation is used to apply South Side Ditch water to approximately 74.9 acres of irrigated land. This land is divided into three separate fields based on crop type. The first field is approximately 17.6 acres of 100 percent alfalfa that covers a portion of the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 24. The second field is 32.6 acres of 75 percent alfalfa and 25 percent hay in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 24. The third

field is 24.7 acres of 100 percent hay that is located in the NW ¼ NE ¼ of Section 25. Acreage of irrigated areas was determined by planimetering the ASCS aerial photo of the property.

Tables A-1, A-2 and A-3 show the calculations for the amount of water available from these three fields of the Steen property which is available for transfer to Pactola Reservoir and the Rapid City water treatment plant and infiltration galleries. These calculations are based on 1,313 acres of presently irrigated land for the South Side Ditch as agreed to in a 1992 telephone conference call with Del Brosz and Mark Rath. The 1,313 acres consists of 1,078 acres irrigated under the South Side Ditch priority and 235 acres irrigated under the Little Giant Ditch priority. These calculations are based upon a flood irrigation efficiency of 50 percent for hay and alfalfa and 9.8 percent seepage loss from the South Side Ditch. The TR-21 Blaney-Criddle consumptive use calculations for each crop type are found in Tables C-1 and C-2.

The consumptive use calculations and diversion records in the attached tables yield the following:

Average yearly transferable amount to storage in the Pactola Reservoir =

$$(17.6 \text{ acres} \times 0.97 \text{ AF/ac.}) + (32.6 \text{ acres} \times 0.97 \text{ AF/ac.}) + (24.7 \text{ acres} \times 0.97 \text{ AF/ac.}) = \\ \mathbf{72.4 \text{ AF}}$$

Average yearly transferable amount to the City's WTP and infiltration galleries =

$$(17.6 \text{ acres} \times 1.93 \text{ AF/ac.}) + (32.6 \text{ acres} \times 1.93 \text{ AF/ac.}) + (24.7 \text{ acres} \times 1.93 \text{ AF/ac.}) = \\ \mathbf{144.8 \text{ AF}}$$

The monthly transferable amount to the Pactola Reservoir and the City's WTP and infiltration galleries are presented in Table B. Diversion at the alternate points of Pactola Reservoir and the WTP and infiltration galleries will only take place during the permitted irrigation season for the South Side Ditch (April 15 to November 30). Table B, however, includes transferable monthly amounts for only May through September because no historic diversion by the South Side Ditch is recorded for April, October and November.

The rate of diversion for the transferable amount from the Steen property is calculated by the following method:

$$\frac{74.9 \text{ acres}}{1877 \text{ acres}} \times 23.4 \text{ cfs} \times (1 - 0.098) = 0.84 \text{ cfs}$$

Where:

- The 74.9 acres is the acreage of the Steen property historically irrigated by the South Side Ditch
- The 1,877 acres is the total licensed irrigated acreage for the South Side Ditch
- The 23.4 cfs is the licensed diversion amount for the South Side Ditch priority
- The 9.8 percent is the carriage loss for the South Side Ditch that will remain in the ditch

These transferable amounts and this rate of diversion insure that there will be no injury to downstream water rights, and that depletions to Rapid Creek will not exceed historic depletions.

During those periods when the South Side Ditch is diverting stored water, diversion by Rapid City at the infiltration galleries and/or water treatment plant will be limited to the historic consumptive use amounts (see "Diversion to Storage in Pactola Reservoir" column in Tables C-1 and C-2). This limitation is to insure that Rapid City does not divert stored water.

If you have any questions regarding these calculations, please do not hesitate to contact us.

TABLE A-1

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)
FIELD 1 - NWSE SEC 24: 100% ALFALFA
17.6 ACRES

Q MONTH	R SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	888
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U.	C PRECIP.	D EFFECT. PRECIP.	E PRECIP. ADJ. C.U.	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH	G SOIL MOIST. USED TO SATISFY ADJUST. C.U.	H REMAIN. CROP REQUIR.	I GROSS CROP NEEDS	J FARM IRRIG. SUPPLY	K EXCESS IRRIG. SOIL MOIST. CONTRIB.	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG.	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG.	N DEEP PERC. (25.0%)	O SURFACE WATER RETURN FLOW (25.0%)	P CLAIMED IRRIG. C.U. FOR TRANSFER
	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.00	2.11	1.48	0.00	1.48	0.00	0.00	0.00	0.00	0.00	3.68	0.00	0.00	0.00	0.00
MAY	3.95	2.58	1.79	2.18	0.00	2.16	0.00	0.00	3.33	1.07	3.16	0.00	0.83	0.83	1.57
JUN	5.78	3.29	2.45	3.33	0.00	3.18	0.15	0.31	4.78	2.24	2.24	0.00	1.20	1.20	2.38
JUL	7.88	1.87	1.67	5.22	0.00	2.24	3.98	7.97	4.94	0.00	0.00	1.51	1.23	1.23	2.47
AUG	6.64	1.55	1.31	5.33	0.00	0.00	5.33	10.66	5.78	0.00	0.00	2.44	1.44	1.44	2.88
SEP	3.69	1.10	0.80	2.89	0.00	0.00	2.89	5.78	4.38	0.00	0.00	0.70	1.09	1.09	2.19
OCT	0.88	0.75	0.50	0.78	0.00	0.00	0.78	1.56	0.00	0.00	0.00	0.78	0.00	0.00	0.00
TOTAL	28.93	16.39	11.89	20.71	3.08	7.58	13.14	26.27	23.21	3.98	14.74	5.44	5.80	5.80	11.60

STEEN FIELD 1 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE

17.5

AVERAGE CONDITIONS, CROP = 100% ALFALFA

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

80% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1979 DUE TO CONSISTENCY OF DATA

**TRANSFERABLE AMOUNT FROM STEEN
PROPERTY UNDER SOUTH SIDE DITCH**

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.60	0.97	17.02
TO WTP	23.21	1.93	34.04

TABLE A-2

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)

FIELD 2 - SWSE SEC 24: 75% ALFALFA, 25% HAY

32.6 ACRES

Q	R
MONTH	SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	599
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U.	C PRECIP.	D EFFECT. PRECIP.	E PRECIP. ADJ. C.U.	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH	G SOIL MOIST. USED TO SATISFY ADJUST. C.U.	H REMAIN. CROP REQUIR.	I GROSS CROP NEEDS	J FARM IRRIG. SUPPLY	K EXCESS IRRIG. SOIL MOIST. CONTRIB.	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG.	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG.	N DEEP PERC. (25.0%)	O SURFACE WATER RETURN FLOW (25.0%)	P CLAIMED IRRIG. C.U. FOR TRANSFER
	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.14	2.11	1.48	0.00	1.34	0.00	0.00	0.00	0.00	0.00	3.54	0.00	0.00	0.00	0.00
MAY	3.79	2.58	1.77	2.16	0.00	2.16	0.00	0.00	3.33	1.67	3.04	0.00	0.83	0.83	1.67
JUN	5.51	3.29	2.42	3.33	0.00	3.04	0.29	0.58	4.78	2.10	2.10	0.00	1.20	1.20	2.39
JUL	7.55	1.87	1.64	3.22	0.00	2.10	4.12	8.24	4.94	0.00	0.00	1.65	1.23	1.23	2.47
AUG	6.40	1.55	1.29	5.33	0.00	0.00	5.33	10.66	5.78	0.00	0.00	2.44	1.44	1.44	2.89
SEP	3.58	1.10	0.80	2.89	0.00	0.00	2.89	5.78	4.38	0.00	0.00	0.70	1.09	1.09	2.19
OCT	1.10	0.75	0.25	0.78	0.00	0.00	0.78	1.56	0.00	0.00	0.00	0.78	0.00	0.00	0.00
TOTAL	28.07	16.39	11.84	20.71	3.54	7.30	13.41	26.83	23.21	3.76	14.33	5.57	5.80	5.80	11.60

STEEN FIELD 2 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE

32.6

AVERAGE CONDITIONS, CRCP = 75% ALFALFA, 25% HAY

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

50% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT. = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1979 DUE TO CONSISTENCY OF DATA

TRANSFERABLE AMOUNT FROM STEEN
PROPERTY UNDER SOUTH SIDE DITCH

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.60	0.97	31.52
TO WTP	23.21	1.93	63.04

TABLE A-3

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)
FIELD 3 - NWNE SEC 25; 100% HAY
 24.7 ACRES

Q	R
MONTH	SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	599
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U.	C PRECIP.	D EFFECT. PRECIP.	E PRECIP. ADJ. C.U.	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH	G SOIL MOIST. USED TO SATISFY ADJUST. C.U.	H REMAIN. CROP REQUIR.	I GROSS CROP NEEDS	J FARM IRRIG. SUPPLY	K EXCESS IRRIG. SOIL MOIST. CONTRIB.	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG.	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG.	N DEEP PERC. (25.0%)	O SURFACE WATER RETURN FLOW (25.0%)	P CLAIMED IRRIG. C.U. FOR TRANSFER
	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.55	2.11	1.48	0.00	0.92	0.00	0.00	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00
MAY	3.29	2.58	1.72	2.16	0.00	2.16	0.00	0.00	3.33	1.67	2.62	0.00	0.83	0.83	1.67
JUN	4.71	3.29	2.31	3.33	0.00	2.62	0.71	1.42	4.78	1.68	1.68	0.00	1.20	1.20	2.39
JUL	6.54	1.87	1.54	6.22	0.00	1.68	4.54	9.07	4.94	0.00	0.00	2.44	1.44	1.44	2.89
AUG	5.70	1.55	1.24	5.33	0.00	0.00	5.33	10.66	5.78	0.00	0.00	0.70	1.09	1.09	2.19
SEP	3.24	1.10	0.78	2.89	0.00	0.00	2.89	5.78	4.38	0.00	0.00	0.78	0.00	0.00	0.00
OCT	1.48	0.75	0.40	0.78	0.00	0.00	0.78	1.56	0.00	0.00	0.00	0.78	0.00	0.00	0.00
TOTAL	25.51	16.39	11.68	20.71	3.12	6.47	14.25	28.49	23.21	3.35	13.08	5.99	5.80	5.80	11.60

STEEN FIELD 2 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE:

24.7

AVERAGE CONDITIONS, CROP = 75% ALFALFA, 25% HAY

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

50% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT. = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1979 DUE TO CONSISTENCY OF DATA

**TRANSFERABLE AMOUNT FROM STEEN
PROPERTY UNDER SOUTH SIDE DITCH**

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.60	0.97	23.88
TO WTP	23.21	1.93	47.77

TABLE A
FOOTNOTES FOR STEEN PROPERTY TRANSFERABLE AMOUNT

<u>Column A:</u>	Month
<u>Column B:</u>	Gross consumptive use calculated by weighting percent crop results from the Blaney-Criddle method presented in C Tables.
<u>Column C:</u>	Total monthly precipitation taken from NOAA gage at Rapid City airport.
<u>Column D:</u>	Effective precipitation is precipitation available to meet crop consumptive use requirements. Nongrowing season: $0.7 \times C_i$ Growing season: Calculated by weighting percent crop results from the Blaney-Criddle regression presented in C Tables.
<u>Column E:</u>	Net consumptive use. Growing season: $B_i - D_i$ Nongrowing season: 0
<u>Column F:</u>	Excess precipitation to soil moisture in storage. All months: if $D_i \geq B_i$, then $D_i - B_i$, else 0
<u>Column G:</u>	Soil moisture used to satisfy adjusted consumptive use. All months: if $E_i = 0$, then 0, else if $L_{i-1} \geq E_i$, then E_i, else L_{i-1}
<u>Column H:</u>	Remaining crop needs. All months: if $E_i \geq L_{i-1}$, then $E_i - L_{i-1}$, else 0
<u>Column I:</u>	Gross crop needs accounting for farm irrigation inefficiencies All months: $H/0.50$
<u>Column J:</u>	Farm irrigation supply is prorated for the Steen property as percentage of South Side Ditch water (9.8 percent South Side Ditch seepage loss and 1,313 total acres of land irrigated). November - April: $R = 0$ May - September: $R \times 0.902 \times 12/1,313$ (average year conditions) October: $R = 0$

TABLE A
FOOTNOTES FOR STEEN PROPERTY TRANSFERABLE AMOUNT
(Continued)

Column K: Excess irrigation soil moisture contribution.

All months: if $J_i = 0$, then 0, else, if $J_i \leq I_i$, then 0, else $(J_i - I_i) \times 0.50$

Column L: Accumulative soil moisture storage after irrigation.

All months: if $J_i - I_i < 0$, then 0 else,
If $F_i = 0$ then $L_{i-1} - G_i + K_i$, else $L_{i-1} + F_i$

Column M: Additional water required to meet consumptive use needs from sub-irrigation.

All months: if $L_i = 0$, then $(I_i - J_i) \times 0.50$, else 0

Column N: Deep percolation with flood irrigation.

All months: if $L_i > 9.5$, then $L_i - 9.5 + (J_i \times 0.25)$, else $J_i \times 0.25$

Column O: Surface water return flow.

All months: $J_i \times 0.25$

Column P: Claimed irrigation consumptive use for transfer from Steen property.

All months: if $J_i = 0$, then $P_i = 0$;
if $E_i \leq 0.50 J_i$, then $P_i = E_i$;
if $E_i > 0.50 J_i$, then $P_i = 0.50 J_i$

Column Q: Month during irrigation season

Column R: South Side Ditch diversions (AF).

TABLE B**MONTHLY TRANSFER SUMMARY
STEEN PROPERTY**

MONTH	DIVERSION TO STORAGE IN PACTOLA RESERVOIR (AC.FT)*	DIVERSION AT THE RAPID CITY WTP AND INFILTRATION GALLERIES (AC.FT)**
MAY	10.39	20.79
JUNE	14.92	29.84
JULY	15.41	30.82
AUGUST	18.03	36.07
SEPTEMBER	13.66	27.32
OCTOBER	0.00	0.00
TOTAL	72.42	144.84

1313 acres at the South Side Ditch headgate:

* Monthly amount transferable to storage in Pactola Reservoir:

Column P (Table A) x No. of acres x 1 foot/12 inches

** Monthly amount transferable to Rapid City WTP and infiltration galleries:

Column J (Table A) x No. of acres x 1 foot/12 inches

TABLE C-1

TR-21 CONSUMPTIVE USE CALCULATIONS (AVERAGE)
SOUTH SIDE DITCH

LATITUDE: 44 N
CROP: HAY
YEAR: 49-54, 56-59, 63-68, 70-79

STATION: RAPID CITY WSO AP

IRR. APPL. IN.: 3.00
LIMIT: 45 F MEAN TEMP

f = 1.00067

MONTH	DAYS	TEMP	ADJ. TEMP.	% DAY	ADJ. DAY	CU FACTOR	CLIMATE COEFF.	GROWTH COEFF.	CU COEFF.	MONTH CU	MONTH PPT.	PPT. FACTOR	EFFECT. PPT.	ADJUSTED CU
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
JAN	—	—	—	6.48	0.00	0.0000	0.3140	0.49	0.1539	0.00	0.00	-0.11556	0.00	0.00
FEB	—	—	—	6.57	0.00	0.0000	0.3140	0.57	0.1790	0.00	0.00	-0.11556	0.00	0.00
MAR	—	—	—	8.29	0.00	0.0000	0.3140	0.73	0.2292	0.00	0.00	-0.11556	0.00	0.00
APR	9	43.9	47.4	9.05	2.72	1.2893	0.5060	0.85	0.4301	0.55	0.63	0.380641	0.38	0.17
MAY	31	55.4	55.4	10.25	10.25	5.6785	0.6444	0.90	0.5800	3.29	2.58	1.72271	1.72	1.57
JUN	30	63.2	63.2	10.39	10.39	6.5665	0.7794	0.92	0.7170	4.71	3.29	2.311315	2.31	2.40
JUL	31	72.3	72.3	10.49	10.49	7.5843	0.9368	0.92	0.8618	6.54	1.87	1.54497	1.54	4.99
AUG	31	70.8	70.8	9.71	9.71	6.8747	0.9108	0.91	0.8289	5.70	1.55	1.240239	1.24	4.46
SEP	30	60.5	60.5	8.41	8.41	5.0881	0.7327	0.87	0.6374	3.24	1.10	0.780971	0.78	2.46
OCT	26	49.3	51.1	7.64	6.41	3.2755	0.5700	0.79	0.4503	1.48	0.63	0.400725	0.40	1.07
NOV	—	—	—	6.50	0.00	0.0000	0.3140	0.67	0.2104	0.00	0.00	-0.11556	0.00	0.00
DEC	—	—	—	6.22	0.00	0.0000	0.3140	0.55	0.1727	0.00	0.00	-0.11556	0.00	0.00

SUM 188

INCHES	25.51	11.65		8.38	17.13
FEET	2.13	0.97		0.70	1.43

TABLE C-2

TR-21 CONSUMPTIVE USE CALCULATIONS (AVERAGE) SOUTH SIDE DITCH

LATITUDE: 44 N
CROP: ALFALFA
YEAR: 49-54, 56-59, 63-68, 70-79

STATION: RAPID CITY WSO AP

IRR. APPL. IN.: 3.00
LIMIT: 50 F MEAN TEMP

f = 1.00067

MONTH	DAYS	TEMP	ADJ. TEMP.	% DAY	ADJ. DAY	CU FACTOR	CLIMATE COEFF.	GROWTH COEFF.	CU COEFF.	MONTH CU	MONTH PPT.	PPT. FACTOR	EFFECT. PPT.	ADJUSTED CU
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
JAN	—	—	—	6.48	0.00	0.0000	0.3140	0.63	0.1978	0.00	0.00	-0.11556	0.00	0.0000
FEB	—	—	—	6.57	0.00	0.0000	0.3140	0.73	0.2292	0.00	0.00	-0.11556	0.00	0.0000
MAR	—	—	—	8.29	0.00	0.0000	0.3140	0.86	0.2700	0.00	0.00	-0.11556	0.00	0.0000
APR	—	—	—	9.05	0.00	0.0000	0.3140	0.99	0.3109	0.00	0.00	-0.11556	0.00	0.0000
MAY	31	55.4	55.4	10.25	10.25	5.6785	0.6444	1.08	0.6960	3.95	2.58	1.787276	1.79	2.1648
JUN	30	63.2	63.2	10.39	10.39	6.5665	0.7794	1.13	0.8807	5.78	3.29	2.454322	2.45	3.3286
JUL	31	72.3	72.3	10.49	10.49	7.5843	0.9368	1.11	1.0398	7.89	1.87	1.665978	1.67	6.2204
AUG	31	70.8	70.8	9.71	9.71	6.8747	0.9108	1.06	0.9655	6.64	1.55	1.307049	1.31	5.3304
SEP	30	60.5	60.5	8.41	8.41	5.0881	0.7327	0.99	0.7253	3.69	1.10	0.800732	0.80	2.8898
OCT	15	49.3	51.1	7.64	3.70	1.8907	0.5700	0.91	0.5187	0.98	0.36	0.200682	0.20	0.7801
NOV	—	—	—	6.50	0.00	0.0000	0.3140	0.78	0.2449	0.00	0.00	-0.11556	0.00	0.0000
DEC	—	—	—	6.22	0.00	0.0000	0.3140	0.64	0.2010	0.00	0.00	-0.11556	0.00	0.0000

SUM 168

INCHES	28.93	10.75		8.22	20.71
FEET	2.41	0.90		0.68	1.73

Form VR-1

VESTED WATER RIGHT

The Water Management Board hereby validates Vested Water Right No. 2040-2

South Side Ditch
(applicant)

Route 2, Box 4920A, Rapid City
(post office address)

SD
(state)

57701
(zip code)

Date of receipt of Application October 21, 1987.

Validated December 2, 1987.

The Water Management Board hereby validates the construction of the water use system and the placing of water to beneficial use as stated in the Application and as qualified in the Vested Water Right, subject, however, to the following limitations and conditions:

1. The date from which the applicant may claim right is May 3, 1880.
2. The whole of said work has been completed and water has been applied to beneficial use as described on Form 2B of this application.
3. The water appropriated is used for the purpose of irrigation.
4. The prior rights of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be unlawfully impaired by this appropriation.
5. The amount of the appropriation hereby validated shall not exceed _____

23.4 cubic feet per second; neither shall it exceed the capacity of the above described water supply system nor shall it exceed the amount of water needed for beneficial uses served. For irrigation purposes said appropriation must be limited to not more than 2 acre feet per acre per year and be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water has been actually and beneficially applied for irrigation. The water is to be used during the following described annual period Apr 15 - Nov 1.

The applicable portions of the Location Certificate filed June 17, 1880 have been incorporated into Vested Water Right No. 2040-2 and the abandoned portions of the Location Certificate have been cancelled.

Vested Water Right No. 2040-2 was validated subject to the qualifications listed in Attachment A.

WATER MANAGEMENT BOARD

By: John H. Helt

(Chief Engineer)

Division of Water Rights
Dept. of Water and Natural Resources

REPORT ON VESTED RIGHT APPLICATION NO. 2040-2
South Side Ditch
October 15, 1987

Vested Right Application No. 2040-2 requests validation of a vested right claim to appropriate 23.4 cubic feet of water per second from Rapid Creek to irrigate 1877 acres. The claimed priority date is May 3, 1880. The point of diversion is located in the SE1/4 of the NW1/4 of Section 15 - T1N - R8E, Pennington County.

DISCUSSION

Pursuant to SDCL 46-5-49 and ARSD 74:02:01:20, South Side Ditch has submitted this Application No. 2040-2 to validate a vested water right claim. The following findings are from the investigation of South Side Ditch.

A notice of water appropriation (no number was assigned this certificate) was filed with the Pennington County Register of Deeds and recorded in Book E, Page 20 and 21 of the Location Certificate records. The notice claimed the right to 2500 miner's inches of water. The date of recording was June 17, 1880 and the date of posting was May 3, 1880.

A Seventh Judicial Court decision in Lower Rapid Ditch Co, et al vs Hawthorne Ditch Co, et al decreed 900 miner's inches of water to Lower Rapid Ditch Co. This decision was recorded September 26, 1899 in Book 9 of Judgements, pages 100-103.

A Seventh Judicial Court decision in Lower Rapid Ditch Co., et al vs. John Chitty, et al decreed 900 miner's inches of water to Lower Rapid Ditch Co. This decision was recorded May 11, 1901 in Book 9 of Judgements, pages 342-345.

A third decision by the Seventh Judicial court in South Side Ditch and Water Company, et al vs. Jennie L. Brennan, et al decreed 23.4 cfs to South Side Ditch. This decision was filed on June 3, 1936.

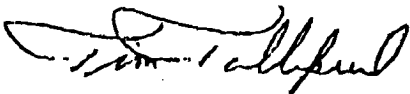
South Dakota statutes states that 1.0 cfs is equal to 50 miner's inches. The Seventh Judicial Court in 1899 defined a miner's inch as the flow required to produce 2250 cubic feet of water in a 24 hour period. Reducing this value produces a value of 1.0 cfs is equal to 38.4 miner's inches. The 900 miner's inches decreed South Side Ditch is equal to 23.4 cfs using the courts definition of a miner's inch.

South Side Ditch was investigated by Division of Water Rights Engineers during the Fall of 1986 and the Summer of 1987. Water is diverted through a headgate by means of a diversion dam on Rapid Creek. A parshall flume with a throat width of 2.65 feet used to measure the ditch flow is located below the headgate. The headgate is capable of diverting 23.4 cfs and the ditch is capable of carrying 23.4 cfs. This amount has been diverted and put to beneficial use in the past. Any surplus water or irrigation return flow is returned to Rapid Creek. There is approximately six miles of main ditch with laterals used to

SDCL 46-5-6 allows the diversion of one cfs for each 70 acres of irrigation. Applying this rate to the number of acres claimed by this vested right application, the total diversion rate allowed by state law would be 26.8 cfs. The amount claimed by this vested right, 23.4 cfs, is less than the amount allowed by present law. Since the court found that the Ditch was entitled to 23.4 cfs, this should be the amount validated by Vested Right Application No. 2040-2.

CONCLUSIONS

1. A location Certificate filed for record June 17, 1880 claimed the right to divert 2500 miner's inches of water. South Dakota statutes state that 1.0 cfs is equal to 50 miner's inches.
2. A Seventh Judicial court decreed South Side Ditch 900 miner's inches of water in 1899 and 1901. Another Seventh Judicial Court decision in 1936 decreed South Side Ditch 23.4 cfs. The court defined 1.0 cfs as equal to 38.4 miner's inches.
3. South Side Ditch is capable of diverting and transporting 23.4 cfs.
4. South Side Ditch has diverted and put to beneficial use 23.4 cfs of water in the past.
5. Water has been put to beneficial use continuously since the system was constructed.
6. The 23.4 cfs claimed by this application is less than the amount allowed by present state law to irrigate 1877 acres.
7. It is recommended Vested Right Application No. 2040-2 be validated with a priority date of May 3, 1880 for 23.4 cfs to irrigate 1877 acres.
8. It is recommended if Vested Right Application No. 2040-2 is validated, that the applicable portions of the Location Certificate filed June 17, 1880 be incorporated into Vested Right No. 2040-2 and that the abandoned portions of the Location Certificate be cancelled.



Tim Tollefsrud
Natural Resources Engineer

Attachment 1 to Water License No. 2040-2

The location of the irrigated acreage is:

ACRES		ACRES		
13	SE1/4 SE1/4 SEC 15-T1N-R8E	4	SE1/4 NW1/4 SEC 29-T1N-R9E	Shomen
26	NE1/4 NE1/4 SEC 22-T1N-R8E	17	SW1/4 NW1/4 SEC 29-T1N-R9E	Shomen
37	SW1/4 SW1/4 SEC 23-T1N-R8E	10	NE1/4 SE1/4 SEC 29-T1N-R9E	Keller Shomen
31	NW1/4 SW1/4 SEC 23-T1N-R8E	19	NW1/4 SE1/4 SEC 29-T1N-R9E	
22	SE1/4 SW1/4 SEC 23-T1N-R8E	34	SE1/4 SE1/4 SEC 29-T1N-R9E	
8	NE1/4 SW1/4 SEC 23-T1N-R8E	40	SW1/4 SE1/4 SEC 29-T1N-R9E	
40	SW1/4 NW1/4 SEC 23-T1N-R8E	33	NW1/4 SW1/4 SEC 29-T1N-R9E	
1	SW1/4 SE1/4 SEC 23-T1N-R8E	38	NE1/4 SW1/4 SEC 29-T1N-R9E	
20	SE1/4 NW1/4 SEC 23-T1N-R8E	40	SE1/4 SW1/4 SEC 29-T1N-R9E	
15	NW1/4 NW1/4 SEC 23-T1N-R8E	40	SW1/4 SW1/4 SEC 29-T1N-R9E	
7	NE1/4 NW1/4 SEC 23-T1N-R8E			
2	NW1/4 SW1/4 SEC 24-T1N-R8E	18	SE1/4 SW1/4 SEC 30-T1N-R9E	
2	NE1/4 SW1/4 SEC 24-T1N-R8E	40	NE1/4 SW1/4 SEC 30-T1N-R9E	
25	SE1/4 SW1/4 SEC 24-T1N-R8E	34	NW1/4 SW1/4 SEC 30-T1N-R9E	
26	SW1/4 SW1/4 SEC 24-T1N-R8E	24	NE1/4 NW1/4 SEC 30-T1N-R9E	Webb
Barnhart 3	NE1/4 SE1/4 SEC 24-T1N-R8E	28	NW1/4 NW1/4 SEC 30-T1N-R9E	City of PC
Barnhart 5	SE1/4 SE1/4 SEC 24-T1N-R8E	40	SW1/4 NW1/4 SEC 30-T1N-R9E	City of PC
star (15)	NW1/4 SE1/4 SEC 24-T1N-R8E	40	SE1/4 NW1/4 SEC 30-T1N-R9E	Webb
star (37)	SW1/4 SE1/4 SEC 24-T1N-R8E	9	SE1/4 NE1/4 SEC 30-T1N-R9E	
18	SE1/4 NW1/4 SEC 25-T1N-R8E	20	NE1/4 NE1/4 SEC 30-T1N-R9E	
22	SW1/4 NW1/4 SEC 25-T1N-R8E	18	NW1/4 NE1/4 SEC 30-T1N-R9E	
40	NE1/4 NW1/4 SEC 25-T1N-R8E	34	SW1/4 NE1/4 SEC 30-T1N-R9E	
40	NW1/4 NW1/4 SEC 25-T1N-R8E	27	NE1/4 SE1/4 SEC 30-T1N-R9E	
star 29	SW1/4 NE1/4 SEC 25-T1N-R8E	30	SE1/4 SE1/4 SEC 30-T1N-R9E	
30	SE1/4 NE1/4 SEC 26-T1N-R8E	37	SW1/4 SE1/4 SEC 30-T1N-R9E	
star 34	SW1/4 NE1/4 SEC 26-T1N-R8E	40	NW1/4 SE1/4 SEC 30-T1N-R9E	
40	NW1/4 NE1/4 SEC 26-T1N-R8E	4	NW1/4 SE1/4 SEC 32-T1N-R9E	
40	NE1/4 NE1/4 SEC 26-T1N-R8E	5	NE1/4 SE1/4 SEC 32-T1N-R9E	
11.5	SE1/4 NW1/4 SEC 26-T1N-R8E	4	NW1/4 NW1/4 SEC 32-T1N-R9E	
15	NW1/4 NW1/4 SEC 26-T1N-R8E	23	NE1/4 NW1/4 SEC 32-T1N-R9E	
37.5	NE1/4 NW1/4 SEC 26-T1N-R8E	25	SW1/4 NE1/4 SEC 32-T1N-R9E	
11	SW1/4 SW1/4 SEC 19-T1N-R9E	32	SE1/4 NE1/4 SEC 32-T1N-R9E	
2	SW1/4 SE1/4 SEC 28-T1N-R9E	40	NE1/4 NE1/4 SEC 32-T1N-R9E	
8	NW1/4 SW1/4 SEC 28-T1N-R9E	40	NW1/4 NE1/4 SEC 32-T1N-R9E	
19	SE1/4 SW1/4 SEC 28-T1N-R9E	25	SW1/4 NE1/4 SEC 33-T1N-R9E	
33	SW1/4 SW1/4 SEC 28-T1N-R9E	25	NW1/4 NE1/4 SEC 33-T1N-R9E	
1	NW1/4 NW1/4 SEC 29-T1N-R9E	35	SW1/4 NW1/4 SEC 33-T1N-R9E	
		37	SE1/4 NW1/4 SEC 33-T1N-R9E	
		37	NE1/4 NW1/4 SEC 33-T1N-R9E	224
		40	NW1/4 NW1/4 SEC 33-T1N-R9E	
		2	NE1/4 SW1/4 SEC 33-T1N-R9E	
		6	NW1/4 SW1/4 SEC 33-T1N-R9E	
		17	NW1/4 SE1/4 SEC 33-T1N-R9E	

TOTAL ACRES IRRIGATED

1877

TECHNICAL MEMORANDUM

Date: September 25, 2003 (Revised October 10, 2003)

Prepared For: Mr. Mark Rath
Water Rights Division
South Dakota Dept of Environment and Natural Resources

Prepared By: Leo M. Eisel, Ph.D., P.E.
Project Manager
Brown and Caldwell

Subject: Steen Property Water Rights Transfer

RECEIVED
OCT 15 2003
WATER RIGHTS
PROGRAM

Executive Summary

Engineering calculations and analysis prepared for the Steen property indicate the following:

- 74.9 acres have been flood irrigated on the Steen property which consist of 42.0 acres of alfalfa and 32.9 acres of hay/pasture.
- This historic irrigation will allow 72.23 acre-feet/year of water to be transferred to storage in Pactola Reservoir or 144.84 acre-feet/year to be transferred to Rapid City's water treatment plant and infiltration galleries.
- This transferred water may be diverted at the new points of diversion at a rate not to exceed 0.84 cfs.

Engineering Analysis

Brown and Caldwell has quantified the irrigated acreage under the South Side Ditch belonging to Galen L Steen. This acreage has been used to determine the amount of water that can be transferred to Pactola Reservoir and the Rapid City water treatment plant and infiltration galleries based on data and engineering calculations detailed in the engineering report prepared for the Stromer property (March 1992), Jundt property (December 1992) and the Eisenbraun property (October 1997).

The Steen property is located in Sections 24 and 25, Township 1 North, Range 8 East, Black Hills Meridian, Pennington County, South Dakota. The property has historically been irrigated off the South Side Ditch (see attached Vested Water Right License). Flood irrigation is used to apply South Side Ditch water to approximately 74.9 acres of irrigated land. This land is divided into three separate fields based on crop type. The first field is approximately 17.6 acres of 100 percent alfalfa that covers a portion of the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 24. The second field is 32.6 acres of 75 percent alfalfa and 25 percent hay in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 24. The third

field is 24.7 acres of 100 percent hay that is located in the NW ¼ NE ¼ of Section 25. Acreage of irrigated areas was determined by planimetering the ASCS aerial photo of the property.

Tables A-1, A-2 and A-3 show the calculations for the amount of water available from these three fields of the Steen property which is available for transfer to Pactola Reservoir and the Rapid City water treatment plant and infiltration galleries. These calculations are based on 1,313 acres of presently irrigated land for the South Side Ditch as agreed to in a 1992 telephone conference call with Del Brosz and Mark Rath. The 1,313 acres consists of 1,078 acres irrigated under the South Side Ditch priority and 235 acres irrigated under the Little Giant Ditch priority. These calculations are based upon a flood irrigation efficiency of 50 percent for hay and alfalfa and 9.8 percent seepage loss from the South Side Ditch. The TR-21 Blaney-Criddle consumptive use calculations for each crop type are found in Tables C-1 and C-2.

The consumptive use calculations and diversion records in the attached tables yield the following:

Average yearly transferable amount to storage in the Pactola Reservoir =

$$(17.6 \text{ acres} \times 0.97 \text{ AF/ac.}) + (32.6 \text{ acres} \times 0.97 \text{ AF/ac.}) + (24.7 \text{ acres} \times 0.96 \text{ AF/ac.}) = \\ \mathbf{72.23 \text{ AF}}$$

Average yearly transferable amount to the City's WTP and infiltration galleries =

$$(17.6 \text{ acres} \times 1.93 \text{ AF/ac.}) + (32.6 \text{ acres} \times 1.93 \text{ AF/ac.}) + (24.7 \text{ acres} \times 1.93 \text{ AF/ac.}) = \\ \mathbf{144.84 \text{ AF}}$$

The monthly transferable amount to the Pactola Reservoir and the City's WTP and infiltration galleries are presented in Table B. Diversion at the alternate points of Pactola Reservoir and the WTP and infiltration galleries will only take place during the permitted irrigation season for the South Side Ditch (April 15 to November 30). Table B, however, includes transferable monthly amounts for only May through September because no historic diversion by the South Side Ditch is recorded for April, October and November.

The rate of diversion for the transferable amount from the Steen property is calculated by the following method:

$$\frac{74.9 \text{ acres}}{1877 \text{ acres}} \quad \times \quad 23.4 \text{ cfs} \quad \times \quad (1 - 0.098) \quad = \quad 0.84 \text{ cfs}$$

Where:

- The 74.9 acres is the acreage of the Steen property historically irrigated by the South Side Ditch
- The 1,877 acres is the total licensed irrigated acreage for the South Side Ditch
- The 23.4 cfs is the licensed diversion amount for the South Side Ditch priority
- The 9.8 percent is the carriage loss for the South Side Ditch that will remain in the ditch

These transferable amounts and this rate of diversion insure that there will be no injury to downstream water rights, and that depletions to Rapid Creek will not exceed historic depletions.

During those periods when the South Side Ditch is diverting stored water, diversion by Rapid City at the infiltration galleries and/or water treatment plant will be limited to the historic consumptive use amounts (see "Diversion to Storage in Pactola Reservoir" column in Tables C-1 and C-2). This limitation is to insure that Rapid City does not divert stored water.

If you have any questions regarding these calculations, please do not hesitate to contact us.

TABLE A-1

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)

FIELD 1 - NWSE SEC 24: 100% ALFALFA

17.6 ACRES

Q	R
MONTH	SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	599
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U.	C PRECIP.	D EFFECT. PRECIP.	E PRECIP. ADJ. C.U.	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH	G SOIL MOIST. USED TO SATISFY ADJUST. C.U.	H REMAIN. CROP REQUIR.	I GROSS CROP NEEDS	J FARM IRRIG. SUPPLY	K EXCESS IRRIG. SOIL MOIST. CONTRIB.	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG.	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG.	N DEEP PERC. (25.0%)	O SURFACE WATER RETURN FLOW (25.0%)	P CLAIMED IRRIG. C.U. FOR TRANSFER
	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.00	2.11	1.48	0.00	1.48	0.00	0.00	0.00	0.00	0.00	3.68	0.00	0.00	0.00	0.00
MAY	3.95	2.58	1.79	2.16	0.00	2.16	0.00	0.00	3.33	1.67	3.18	0.00	0.83	0.83	1.67
JUN	5.78	3.29	2.45	3.33	0.00	3.18	0.15	0.31	4.78	2.24	2.24	0.00	1.20	1.20	2.39
JUL	7.89	1.87	1.67	6.22	0.00	2.24	3.98	7.97	4.94	0.00	0.00	1.51	1.23	1.23	2.47
AUG	6.64	1.55	1.31	5.33	0.00	0.00	5.33	10.66	5.78	0.00	0.00	2.44	1.44	1.44	2.89
SEP	3.69	1.10	0.80	2.89	0.00	0.00	2.89	5.78	4.38	0.00	0.00	0.70	1.09	1.09	2.19
OCT	0.98	0.75	0.20	0.78	0.00	0.00	0.78	1.56	0.00	0.00	0.00	0.78	0.00	0.00	0.00
TOTAL	28.93	16.39	11.89	20.71	3.68	7.58	13.14	26.27	23.21	3.90	14.74	5.44	5.80	5.80	11.60

STEEN FIELD 1 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE:

17.6

AVERAGE CONDITIONS, CROP = 100% ALFALFA

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

50% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT. = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1979 DUE TO CONSISTENCY OF DATA

TRANSFERABLE AMOUNT FROM STEEN
PROPERTY UNDER SOUTH SIDE DITCH

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.60	0.97	17.02
TO WTP	23.21	1.93	34.04

TABLE A-2

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)

FIELD 2 - SWSE SEC 24; 75% ALFALFA, 25% HAY

32.6 ACRES

Q	R
MONTH	SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	599
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U.	C PRECIP.	D EFFECT. PRECIP.	E PRECIP. ADJ. C.U.	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH	G SOIL MOIST. USED TO SATISFY ADJUST. C.U.	H REMAIN. CROP REQUIR.	I GROSS CROP NEEDS	J FARM IRRIG. SUPPLY	K EXCESS IRRIG. SOIL MOIST. CONTRIB.	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG.	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG.	N DEEP PERC. (25.0%)	O SURFACE WATER RETURN FLOW (25.0%)	P CLAIMED IRRIG. C.U. FOR TRANSFER
	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.14	2.11	1.48	0.04	1.34	0.04	0.00	0.00	0.00	0.00	3.54	0.00	0.00	0.00	0.00
MAY	3.79	2.58	1.77	2.02	0.00	2.02	0.00	0.00	3.33	1.67	3.19	0.00	0.83	0.83	1.67
JUN	5.51	3.29	2.42	3.10	0.00	3.10	0.00	0.00	4.78	2.39	2.48	0.00	1.20	1.20	2.39
JUL	7.55	1.87	1.64	5.91	0.00	2.48	3.43	6.87	4.94	0.00	0.00	0.96	1.23	1.23	2.47
AUG	6.40	1.55	1.29	5.11	0.00	0.00	5.11	10.22	5.78	0.00	0.00	2.22	1.44	1.44	2.89
SEP	3.58	1.10	0.80	2.78	0.00	0.00	2.78	5.67	4.38	0.00	0.00	0.59	1.09	1.09	2.19
OCT	1.10	0.75	0.25	0.85	0.00	0.00	0.85	1.71	0.00	0.00	0.00	0.85	0.00	0.00	0.00
TOTAL	28.07	18.39	11.84	19.82	3.54	7.64	12.18	24.36	23.21	4.08	14.86	4.83	5.80	5.80	11.60

STEEN FIELD 2 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE:

32.6

AVERAGE CONDITIONS, CROP = 75% ALFALFA, 25% HAY

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

50% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT. = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1975 DUE TO CONSISTENCY OF DATA

TRANSFERABLE AMOUNT FROM STEEN

PROPERTY UNDER SOUTH SIDE DITCH

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.60	0.97	31.52
TO WTP	23.21	1.93	63.04

TABLE A-3

DETERMINATION OF CONSUMPTIVE USE FOR TRANSFER

RAPID CITY WATER RIGHTS

Project No. 24892

9/24/03

TRANSFERABLE AMOUNT FROM STEEN PROPERTY UNDER SOUTH SIDE DITCH DITCH (AVERAGE)
FIELD 3 - NWNE SEC 25: 100% HAY
 24.7 ACRES

Q	R
MONTH	SOUTH SIDE WATER (AF)
MAY	404
JUN	580
JUL	599
AUG	701
SEP	531
TOTAL	2815

A MONTH	B C.U. (IN)	C PRECIP. (IN)	D EFFECT. PRECIP. (IN)	E PRECIP. ADJ. C.U. (IN)	F EXCESS PRECIP. TO SOIL MOIST. DURING MONTH (IN)	G SOIL MOIST. USED TO SATISFY ADJUST. C.U. (IN)	H REMAIN. CROP REQUIR. (IN)	I GROSS CROP NEEDS (IN)	J FARM IRRIG. SUPPLY (IN)	K EXCESS IRRIG. SOIL MOIST. CONTRIB. (IN)	L ACCUM. SOIL MOIST. STORAGE AFTER IRRIG. (IN)	M ADDITIONAL WATER REQUIRED TO MEET C.U. NEEDS FROM SUBIRRIG. (IN)	N DEEP PERC. (25.0%) (IN)	O SURFACE WATER RETURN FLOW (25.0%) (IN)	P CLAIMED IRRIG. C.U. FOR TRANSFER (IN)
NOV	0.00	0.53	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
DEC	0.00	0.41	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
JAN	0.00	0.50	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
FEB	0.00	0.59	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00
MAR	0.00	1.11	0.78	0.00	0.78	0.00	0.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00	0.00
APR	0.55	2.11	1.48	0.00	0.92	0.00	0.00	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00
MAY	3.29	2.58	1.72	1.57	0.00	1.57	0.00	0.00	3.33	1.67	3.21	0.00	0.83	0.83	1.57
JUN	4.71	3.29	2.31	2.40	0.00	2.40	0.00	0.00	4.78	2.39	3.21	0.00	1.20	1.20	2.39
JUL	6.54	1.87	1.54	4.99	0.00	3.21	1.78	3.57	4.94	0.69	0.69	0.00	1.23	1.23	2.47
AUG	5.70	1.55	1.24	4.46	0.00	0.69	3.77	7.54	5.78	0.00	0.00	0.88	1.44	1.44	2.89
SEP	3.24	1.10	0.78	2.46	0.00	0.00	2.46	4.92	4.38	0.00	0.00	0.27	1.09	1.09	2.19
OCT	1.48	0.75	0.40	1.07	0.00	0.00	1.07	2.15	0.00	0.00	0.00	1.07	0.00	0.00	0.00
TOTAL	25.51	16.39	11.68	16.95	3.12	7.86	9.09	18.18	23.21	4.74	15.89	2.23	5.80	5.80	11.51

STEEN FIELD 2 IRRIGATED ACREAGE UNDER SOUTH SIDE DITCH LICENSE:

24.7

AVERAGE CONDITIONS, CROP = 75% ALFALFA, 25% HAY

IRRIGATED ACREAGE AT THE SOUTH SIDE DITCH HEADGATE: 1313

9.8% SEEPAGE LOSS

50% IRRIGATION EFFICIENCY USING FLOOD IRRIGATION

DEEP PERCOLATION IS ONE HALF OF IRRIGATION INEFFICIENCY (25.0%) PLUS EXCESS SOIL MOISTURE

OTHER HALF OF IRRIGATION INEFFICIENCY (25.0%) IS SURFACE WATER RETURN FLOW

PACT. = PACTOLA RESERVOIR

WTP = RAPID CITY WATER TREATMENT PLANT AND INFILTRATION GALLERIES

SOUTH SIDE DITCH AVERAGE MONTHLY DIVERSION IS FOR YEARS 1949-1979 DUE TO CONSISTENCY OF DATA

**TRANSFERABLE AMOUNT FROM STEEN
PROPERTY UNDER SOUTH SIDE DITCH**

	(INCHES)	(FEET)	(AC.FT)
TO PACT.	11.51	0.96	23.69
TO WTP	23.21	1.93	47.77

TABLE B

**MONTHLY TRANSFER SUMMARY
STEEN PROPERTY**

MONTH	DIVERSION TO STORAGE IN PACTOLA RESERVOIR (AC.FT)*	DIVERSION AT THE RAPID CITY WTP AND INFILTRATION GALLERIES (AC.FT)**
MAY	10.20	20.79
JUNE	14.92	29.84
JULY	15.41	30.82
AUGUST	18.03	36.07
SEPTEMBER	13.66	27.32
OCTOBER	0.00	0.00
TOTAL	72.23	144.84

1313 acres at the South Side Ditch headgate:

* Monthly amount transferable to storage in Pactola Reservoir:

Column P (Table A) x No. of acres x 1 foot/12 inches

** Monthly amount transferable to Rapid City WTP and infiltration galleries:

Column J (Table A) x No. of acres x 1 foot/12 inches

TABLE C-1

TR-21 CONSUMPTIVE USE CALCULATIONS (AVERAGE) SOUTH SIDE DITCH

LATITUDE: 44 N
CROP: HAY
YEAR: 49-54, 56-59, 63-68, 70-79

STATION: RAPID CITY WSO AP

IRR. APPL. IN.: 3.00
LIMIT: 45 F MEAN TEMP

f = 1.00067

MONTH	DAYS	TEMP	ADJ.	%	ADJ.	CU	CLIMATE	GROWTH	CU	MONTH	MONTH	PPT.	EFFECT.	ADJUSTED
			TEMP.	DAY	DAY	FACTOR	COEFF.	COEFF.	COEFF.	CU	PPT.	FACTOR	PPT.	CU
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
JAN	—	—	—	6.48	0.00	0.0000	0.3140	0.49	0.1539	0.00	0.00	-0.11556	0.00	0.00
FEB	—	—	—	6.57	0.00	0.0000	0.3140	0.57	0.1790	0.00	0.00	-0.11556	0.00	0.00
MAR	—	—	—	8.29	0.00	0.0000	0.3140	0.73	0.2292	0.00	0.00	-0.11556	0.00	0.00
APR	9	43.9	47.4	9.05	2.72	1.2893	0.5060	0.85	0.4301	0.55	0.63	0.380641	0.38	0.17
MAY	31	55.4	55.4	10.25	10.25	5.6785	0.6444	0.90	0.5800	3.29	2.58	1.72271	1.72	1.57
JUN	30	63.2	63.2	10.39	10.39	6.5665	0.7794	0.92	0.7170	4.71	3.29	2.311315	2.31	2.40
JUL	31	72.3	72.3	10.49	10.49	7.5843	0.9368	0.92	0.8618	6.54	1.87	1.54497	1.54	4.99
AUG	31	70.8	70.8	9.71	9.71	6.8747	0.9108	0.91	0.8289	5.70	1.55	1.240239	1.24	4.46
SEP	30	60.5	60.5	8.41	8.41	5.0881	0.7327	0.87	0.6374	3.24	1.10	0.780971	0.78	2.46
OCT	26	49.3	51.1	7.64	6.41	3.2755	0.5700	0.79	0.4503	1.48	0.63	0.400725	0.40	1.07
NOV	—	—	—	6.50	0.00	0.0000	0.3140	0.67	0.2104	0.00	0.00	-0.11556	0.00	0.00
DEC	—	—	—	6.22	0.00	0.0000	0.3140	0.55	0.1727	0.00	0.00	-0.11556	0.00	0.00

SUM 188

INCHES	25.51	11.65		8.38	17.13
FEET	2.13	0.97		0.70	1.43

TABLE C-2

TR-21 CONSUMPTIVE USE CALCULATIONS (AVERAGE)
SOUTH SIDE DITCH

LATITUDE: 44 N
CROP: ALFALFA
YEAR: 49-54, 56-59, 63-68, 70-79

STATION: RAPID CITY WSO AP

IRR. APPL. IN.: 3.00
LIMIT: 50 F MEAN TEMP

f = 1.00067

MONTH	DAYS	TEMP	ADJ.	%	ADJ.	CU	CLIMATE	GROWTH	CU	MONTH	MONTH	PPT.	EFFECT.	ADJUSTED
			TEMP.	DAY	DAY	FACTOR	COEFF.	COEFF.	COEFF.	CU	PPT.	FACTOR	PPT.	CU
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
JAN	—	—	—	6.48	0.00	0.0000	0.3140	0.63	0.1978	0.00	0.00	-0.11556	0.00	0.0000
FEB	—	—	—	6.57	0.00	0.0000	0.3140	0.73	0.2292	0.00	0.00	-0.11556	0.00	0.0000
MAR	—	—	—	8.29	0.00	0.0000	0.3140	0.86	0.2700	0.00	0.00	-0.11556	0.00	0.0000
APR	—	—	—	9.05	0.00	0.0000	0.3140	0.99	0.3109	0.00	0.00	-0.11556	0.00	0.0000
MAY	31	55.4	55.4	10.25	10.25	5.6785	0.6444	1.08	0.6960	3.95	2.58	1.787276	1.79	2.1648
JUN	30	63.2	63.2	10.39	10.39	6.5665	0.7794	1.13	0.8807	5.78	3.29	2.454322	2.45	3.3286
JUL	31	72.3	72.3	10.49	10.49	7.5843	0.9368	1.11	1.0398	7.89	1.87	1.665978	1.67	6.2204
AUG	31	70.8	70.8	9.71	9.71	6.8747	0.9108	1.06	0.9655	6.64	1.55	1.307049	1.31	5.3304
SEP	30	60.5	60.5	8.41	8.41	5.0881	0.7327	0.99	0.7253	3.69	1.10	0.800732	0.80	2.8898
OCT	15	49.3	51.1	7.64	3.70	1.8907	0.5700	0.91	0.5187	0.98	0.36	0.200682	0.20	0.7801
NOV	—	—	—	6.50	0.00	0.0000	0.3140	0.78	0.2449	0.00	0.00	-0.11556	0.00	0.0000
DEC	—	—	—	6.22	0.00	0.0000	0.3140	0.64	0.2010	0.00	0.00	-0.11556	0.00	0.0000

SUM 168

INCHES	28.93	10.75		8.22	20.71
FEET	2.41	0.90		0.68	1.73

Attachment 1 to Water License No. 2040-2

The location of the irrigated acreage is:

ACRES

13 SE1/4 SE1/4 SEC 15-T1N-R8E
 26 NE1/4 NE1/4 SEC 22-T1N-R8E
 37 SW1/4 SW1/4 SEC 23-T1N-R8E
 31 NW1/4 SW1/4 SEC 23-T1N-R8E
 22 SE1/4 SW1/4 SEC 23-T1N-R8E
 8 NE1/4 SW1/4 SEC 23-T1N-R8E
 40 SW1/4 NW1/4 SEC 23-T1N-R8E
 1 SW1/4 SE1/4 SEC 23-T1N-R8E
 20 SE1/4 NW1/4 SEC 23-T1N-R8E
 15 NW1/4 NW1/4 SEC 23-T1N-R8E
 7 NE1/4 NW1/4 SEC 23-T1N-R8E
 2 NW1/4 SW1/4 SEC 24-T1N-R8E
 2 NE1/4 SW1/4 SEC 24-T1N-R8E
 25 SE1/4 SW1/4 SEC 24-T1N-R8E
 26 SW1/4 SW1/4 SEC 24-T1N-R8E
 3 NE1/4 SE1/4 SEC 24-T1N-R8E
 5 SE1/4 SE1/4 SEC 24-T1N-R8E
 15 NW1/4 SE1/4 SEC 24-T1N-R8E
 37 SW1/4 SE1/4 SEC 24-T1N-R8E
 18 SE1/4 NW1/4 SEC 25-T1N-R8E
 22 SW1/4 NW1/4 SEC 25-T1N-R8E
 40 NE1/4 NW1/4 SEC 25-T1N-R8E
 40 NW1/4 NW1/4 SEC 25-T1N-R8E
 29 SW1/4 NE1/4 SEC 25-T1N-R8E
 30 SE1/4 NE1/4 SEC 26-T1N-R8E
 34 SW1/4 NE1/4 SEC 26-T1N-R8E
 40 NW1/4 NE1/4 SEC 26-T1N-R8E
 40 NE1/4 NE1/4 SEC 26-T1N-R8E
 11.5 SE1/4 NW1/4 SEC 26-T1N-R8E
 15 NW1/4 NW1/4 SEC 26-T1N-R8E
 37.5 NE1/4 NW1/4 SEC 26-T1N-R8E
 11 SW1/4 SW1/4 SEC 19-T1N-R9E
 2 SW1/4 SE1/4 SEC 28-T1N-R9E
 8 NW1/4 SW1/4 SEC 28-T1N-R9E
 19 SE1/4 SW1/4 SEC 28-T1N-R9E
 33 SW1/4 SW1/4 SEC 28-T1N-R9E
 1 NW1/4 NW1/4 SEC 29-T1N-R9E

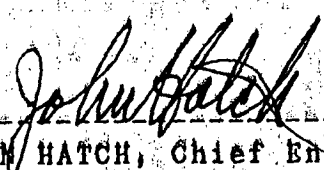
ACRES

4 SE1/4 NW1/4 SEC 29-T1N-R9E
 17 SW1/4 NW1/4 SEC 29-T1N-R9E
 10 NE1/4 SE1/4 SEC 29-T1N-R9E
 19 NW1/4 SE1/4 SEC 29-T1N-R9E
 34 SE1/4 SE1/4 SEC 29-T1N-R9E
 40 SW1/4 SE1/4 SEC 29-T1N-R9E
 33 NW1/4 SW1/4 SEC 29-T1N-R9E
 38 NE1/4 SW1/4 SEC 29-T1N-R9E
 40 SE1/4 SW1/4 SEC 29-T1N-R9E
 40 SW1/4 SW1/4 SEC 29-T1N-R9E
 18 SE1/4 SW1/4 SEC 30-T1N-R9E
 40 NE1/4 SW1/4 SEC 30-T1N-R9E
 34 NW1/4 SW1/4 SEC 30-T1N-R9E
 24 NE1/4 NW1/4 SEC 30-T1N-R9E
 28 NW1/4 NW1/4 SEC 30-T1N-R9E
 40 SW1/4 NW1/4 SEC 30-T1N-R9E
 40 SE1/4 NW1/4 SEC 30-T1N-R9E
 9 SE1/4 NE1/4 SEC 30-T1N-R9E
 20 NE1/4 NE1/4 SEC 30-T1N-R9E
 18 NW1/4 NE1/4 SEC 30-T1N-R9E
 34 SW1/4 NE1/4 SEC 30-T1N-R9E
 27 NE1/4 SE1/4 SEC 30-T1N-R9E
 30 SE1/4 SE1/4 SEC 30-T1N-R9E
 37 SW1/4 SE1/4 SEC 30-T1N-R9E
 40 NW1/4 SE1/4 SEC 30-T1N-R9E
 4 NW1/4 SE1/4 SEC 32-T1N-R9E
 5 NE1/4 SE1/4 SEC 32-T1N-R9E
 4 NW1/4 NW1/4 SEC 32-T1N-R9E
 23 NE1/4 NW1/4 SEC 32-T1N-R9E
 25 SW1/4 NE1/4 SEC 32-T1N-R9E
 32 SE1/4 NE1/4 SEC 32-T1N-R9E
 40 NE1/4 NE1/4 SEC 32-T1N-R9E
 40 NW1/4 NE1/4 SEC 32-T1N-R9E
 25 SW1/4 NE1/4 SEC 33-T1N-R9E
 25 NW1/4 NE1/4 SEC 33-T1N-R9E
 35 SW1/4 NW1/4 SEC 33-T1N-R9E
 37 SE1/4 NW1/4 SEC 33-T1N-R9E
 37 NE1/4 NW1/4 SEC 33-T1N-R9E
 40 NW1/4 NW1/4 SEC 33-T1N-R9E
 2 NE1/4 SW1/4 SEC 33-T1N-R9E
 6 NW1/4 SW1/4 SEC 33-T1N-R9E
 17 NW1/4 SE1/4 SEC 33-T1N-R9E

TOTAL ACRES IRRIGATED

1877

(3) Pursuant to Section 46-5-30.1 South Side Ditch, Don Jundt, President, of RR #2, Box 4920A, Rapid City, SD 57701 the holder(s) and/or owner(s) of Vested Water Right No. 2040-2 is issued a license to appropriate 23.4 cubic feet of water per second from Rapid Creek with a priority date of May 3, 1880 from the location specified in (2) of this license. The water is to be used for the purpose of irrigation. This license is subject to any limitations, conditions or qualifications listed in Vested Water Right No. 2040-2 and subject to South Dakota State Law.



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

MAY 2 1988

ATTACHMENT A
VESTED WATER RIGHT NO. 2040-2

1. That Vested Water Right No. 2040-2 is subject to domestic use rights. Diversion of natural flow water under Water Right No. 2040-2 is contingent upon supplies being available first to domestic users.
2. That the existing flow measuring device be maintained at or near the point of diversion for South Side Ditch.

Report on Water Permit Application No. 2513-2
City of Rapid City
October 16, 2003

Application No. 2513-2, City of Rapid City, proposes to transfer an annual volume of 144.84 acre-feet of water (ac-ft), if diverted at the city's water treatment plant or infiltration galleries, or 72.23 ac-ft, if stored in Pactola Reservoir. The maximum diversion rate proposed for this transfer is 0.84 cubic feet of water per second (cfs) from the natural flows of Rapid Creek. The transfer is from irrigation to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic uses for the City of Rapid City. Application No. 2513-2 proposes to transfer South Side Ditch Company stockholder/landowner's water which has been historically used to irrigate 74.9 acres located in the W1/2 SE1/4, of Section 24 and SW1/4 NE1/4 of Section 25 all in T1N-R8E also known as the Galen Steen (Gordon Howie) property.

The source of water for the proposed transfer is from the natural flow of Rapid Creek, when available, through South Side ditch. Vested Water Right No. 2040-2, South Side Ditch Company was validated for 23.40 cfs with a priority date of May 3, 1880. The existing diversion point for South Side ditch is located in the SE1/4 NW1/4 of Section 15 T1N-R8E. The locations of the diversion points for the proposed transfer are in the SE1/4 NE1/4 Section 3 (Rapid City Water Treatment Plant); SW1/4 SW1/4 Section 3 (Sioux Park Gallery); SE1/4 NE1/4 Section 9 (Meadowbrook Gallery); NW1/4 SE1/4 Section 8 (Jackson Springs Gallery); all in T1N-R7E and NW1/4 SW1/4 Section 2 T1N-R5E (Pactola Reservoir). Pactola Reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This application does not request any new water appropriation from Rapid Creek and the validated priority date of May 3, 1880, is to be retained by the city.

Review of Existing Water Rights

The water to be transferred has been appropriated under Vested Water Right No. 2040-2, South Side ditch, with a priority date of May 3, 1880. The water right authorizes the irrigation of 74.9 acres of the Galen Steen (Gordon Howie) property. There are 74.9 acres located in the NE1/4, N1/2 SE1/4 of Section 32 T1N-R9E which have been continually irrigated.

There are 87 existing water rights/permits appropriating 268.01 cfs located on Rapid Creek between Pactola Reservoir and the confluence with the Cheyenne River. Of these, 17 water rights which appropriate approximately 32.43 cfs have priority dates which are senior to this proposed transfer.

Review of the Proposed Transfer

SDCL 46-5-34.1 states that no transfer can occur unless the transfer can be made without detriment to existing rights, or to individual domestic use rights. SDCL 46-5-34.1 also states "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. SDCL 46-2A-12 allows a change in use "only

if the change does not unlawfully impair existing rights and is for a beneficial use and in the public interest." Calculations using accepted scientific methods and available climatic and cropping data have been made to insure that adverse affects on existing water rights do not occur.

The volume of water which could be stored in Pactola Reservoir is 72.23 ac-ft annually. This volume of water is equal to the amount of water estimated to have been consumed annually by the crop. The amount of water which can be diverted at Rapid City water system intakes is 144.84 ac-ft annually. This volume of water includes the amount of water consumed by the crop plus the return water to Rapid Creek.

The volume of water estimated to have been consumed by the crop is calculated on a monthly basis. For each month the maximum amount of water the crop would use is calculated. This is compared to the amount of water that is available for the crop's use based on historical ditch diversions and the total acreage irrigated annually from the ditch. A determination is made, on a monthly basis, whether maximum crop water usage or available water supply is the limiting factor. The lessor of these is used as the volume of water consumed by the crop for that particular month. Water which has been returned to Rapid Creek through irrigation would also be returned to Rapid Creek by Rapid City through their waste water treatment system. (Wright, 1992) If in the future the City of Rapid City stops returning effluent to Rapid Creek, then the diversion proposed by this application will need to be recalculated to reflect that condition.

Farm turnouts do not have measuring devices, so actual individual diversions from the ditch are unknown. Water in the ditch is shared by the users as needed. Based on actual past operations, the calculated diversion rate transfer is based on a pro rata share of the total ditch diversion. The proposed diversion rate transfer is based on water beneficially used as described under SDCL 46-1-8.

The transferable diversion rate is based on the pro rata share of water which is decreased by the 9.8 percent carriage loss that is to remain in the ditch. This gives a transferable diversion rate of 0.84 cfs. There are 6.1 acres with 0.07 cfs of irrigation water associated with it, located in the W ½ SE ¼, that were listed on Vested Water Right 2040-2 as being irrigated which are no longer irrigated and should be removed from the vested water right. If this transfer is approved, the diversion rate and acreage authorized by the May 3, 1880 priority date of Water Right No. 2040-2 should be decreased by 0.91 cfs and 81 acres due to the transfer.

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

To insure that the transfer of the water can be made without detriment to existing water rights, the Water Management Board should monitor the management and operation of the proposed transfer.

Conclusions

1. SDCL 46-5-34.1 allows for the transfer of irrigation water rights apart from the land to municipal use when the transfer can be made without causing detriment to existing rights. SDCL 46-2A-12 allows a change in use only if the change does not unlawfully impair existing rights and is for a beneficial use and in the public interest."
2. The water has been historically used to irrigate 74.9 acres.
3. The priority date of May 3, 1880, should be retained.
4. The diversion rate to be transferred is 0.84 cfs, and is based on the pro-rated share of the total ditch diversion rate minus carriage losses for the main ditch and lateral.
5. The amount of water requested to be transferred, 144.84 ac-ft and 72.23 ac-ft is reasonable. The following table lists the monthly diversion associated with each volume:

Month	Diversion at Pactola (ac-ft)	Diversion at Intakes (ac-ft)
May	10.20	20.79
June	14.92	29.84
July	15.41	30.82
Aug	18.03	36.07
Sept	13.66	27.32
Oct	0.00	0.00
Total	72.23	144.84

6. There are 6.1 acres with 0.07 cfs of irrigation water associated with it, located in the W ½ SE ¼, that were listed on Vested Water Right 2040-2 as being irrigated which are no longer irrigated and should be removed from the vested water right.
7. If application No. 2513-2 is approved, the authorized diversion rate and acreage for the South Side Ditch Company Water Right No.2040-2 under the May 3, 1880 priority date should be decreased by 0.91 cfs and 81 acres.
8. The Water Management Board should monitor the management and operation of the proposed transfer.
9. Approval of Application No. 2513-2, only approves transfer of natural flow water and does not include any rights to stored irrigation water available under contract from Pactola Reservoir.
10. Because natural flow water has not been available for No. 2040-2 during lower flow periods, approval of No. 2513-2 does not guarantee that natural flow water will be available for No. 2513-2 for diversion or storage during low flow periods.

11. The effect of approval of No. 2513-2 will be to retire 74.9 acres of the Galen Steen (Gordon Howie) property from irrigation pursuant to SDCL 46-5-34.1 which states "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."



Mark D. Rath
Natural Resources Engineering Specialist

References

1. Wright Water Engineers, Inc. 1992. Engineering Report for Transfer of Stroman Property Portion of South Side Ditch Water Rights. Wright Water Engineers, Inc. Engineering Consultants, Denver, Colorado.
2. U.S. Bureau of Reclamation. 1990. Rapid Valley Water Management Study. U.S. Bureau of Reclamation, Belle Fourche Projects Office, Newell, South Dakota.
3. S.D. Department of Environment and Natural Resources. Water Rights Program Records.
4. Brown and Caldwell. 2003. Steen Property Water Rights Transfer Brown and Caldwell, 1697 Cole Blvd, Suite 200, Golden Colorado 80401



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2513-2, City of Rapid City**

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. 2513-2, City of Rapid City, c/o Ted Vore, Acting Public Works Director, 300 6th Street, Rapid City SD 57701.

The Chief Engineer is recommending APPROVAL of Application No. 2513-2 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. 2513-2 is limited to a diversion rate of 0.84 cfs for a total annual volume of 72.23 acre-feet at Pactola Reservoir or a total annual volume of 144.84 acre-feet at Sioux Park Gallery (SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3), Meadowbrook Gallery (SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 9), Rapid City Water Treatment Plant (SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 3), or at the Jackson Springs Gallery (NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 8) considered as replacement water only all in T1N-R7E. Maximum monthly diversion volumes at Pactola or the diversion points within Rapid City are as follows:

<u>Monthly</u>	<u>Monthly acre-feet at Pactola</u>	<u>Monthly acre-feet at diversion points within Rapid City</u>
May	10.20	20.79
June	14.92	29.84
July	15.41	30.82
August	18.03	36.07
September	13.66	27.32
October	0.00	0.00

Diversions during a month may be made at either Pactola Reservoir or at the diversion points within Rapid City, but not simultaneously at both Pactola and the Rapid City diversion points.

2. Permit No. 2513-2 authorizes diversion of only natural flow water by the City of Rapid City and does not include any rights to stored irrigation water available under contract from Pactola Reservoir.

3. That the City of Rapid City report to the Chief Engineer annually the amount of water withdrawn each month at Pactola Reservoir or the diversion points within Rapid City.
4. That the Water Management Board is retaining jurisdiction of Permit No. 2513-2 in the event that additional information shows that changes need to be made in the monthly or total annual volumes authorized by Permit No. 2513-2.
5. Diversions under Permit No. 2513-2 may not interfere with existing water rights in effect prior to approval of No. 2513-2 or any domestic rights.
6. The amount of water with a May 3, 1880 priority date which may be appropriated under Vested Water Right No. 2040-2 is reduced by 0.91 cfs (see staff report).
7. Approval of Permit No. 2513-2 retires the 74.9 acres, known as the Galen Steen (Gordon Howie) property which has been historically irrigated from using South Side Ditch, located in portions of the NE ¼, N ½ SE ¼ Section 32, T1N, R9E from future irrigation.

See report on application for additional information.

A handwritten signature in cursive script, reading "Garland Erbele".

Garland Erbele, Chief Engineer
October 29, 2003

Water Rights Program - File Documentation

NAME: City of Rapid City

ADDRESS:

DATE: 12-9-2003 **COUNTY:** PE **TELEPHONE:**

RE: Recommendation of Chief Engineer for Water Permit No. 2513-2

COMMENTS:

During the Water Management Board hearing on December 3, 2003, Mark Rath indicated there was an error on the Recommendation of Chief Engineer for Water Permit No. 2513-2.

In Item No. 7 states:

Approval of Permit No. 2513-2 retires the 74.9 acres, known as the Galen Steen (Gordon Howie) property which has been historically irrigated from using South Side Ditch, located in portions of the W ½ SE ¼ Section 24 and SW ¼ NE ¼ Section 25; all in T1N-R8E from future irrigation.

The correct number is 81 acres.

Therefore, Item No. 7 should be:

Approval of Permit No. 2513-2 retires the 81 acres, known as the Galen Steen (Gordon Howie) property which has been historically irrigated from using South Side Ditch, located in portions of the W ½ SE ¼ Section 24 and SW ¼ NE ¼ Section 25; all in T1N-R8E from future irrigation.



Karen Schlaak
Environmental Scientist



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 30, 2003

Rapid City Journal
PO Box 450
Rapid City SD 57709-0450

ATTENTION: Legal Public Notice

Enclosed is a Notice of Hearing on Application Nos. 2512-2 & 2513-2 to Transfer Use to be published twice. Please publish the first notice on November 6, 2003 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is City of Rapid City, %Ted Vore, Acting Public Works Director, 300 6th St., Rapid City SD (Ph # 605-394-4165).

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

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

Sincerely,

Eric Gronlund / KS
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

Nos. 2512-2 & 2513-2

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

Date _____

We are in receipt of your letter of October 30, 2003 enclosing Notice of Hearing to Transfer Use by Application Nos. 2512-2, & 2513-2 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

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

October 30, 2003

City of Rapid City
% Ted Vore Acting Public Works Director
300 6th St.
Rapid City SD 57701

Dear Mr. Vore:

Water Permit Application Nos. 2512-2 and 2513-2 for municipal use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Rapid City Journal printed at Rapid City, SD (Ph # 605-394-8300). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and reports on the applications 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 of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. 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 /KS

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendations, 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 applications.

Instruction to Newspaper - Publish first Notice on November 6, 2003 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Application Nos. 2512-2 and 2513-2 to Transfer Use

Notice is given that the City of Rapid City, c/o Ted Vore, Acting Public Works Director, 300 6th St, Rapid City SD 57701 has filed Water Permit Application Nos. 2512-2 and 2513-2 pursuant to 46-5-34.1 to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City.

Water Permit Application No. 2512-2 proposes to transfer a portion of Rapid Valley Company (aka Murphy Ditch) stockholder/landowner's use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 from Murphy Ditch. The transfer is for Rapid Creek water historically used to irrigate 145 acres known as the M.P. Carley (Merrilyn Schroeder) property. The portion of Rapid Creek natural flows to be transferred to the city is 1.84 cubic feet of water per second (cfs) with an annual volume limitation of 195.37 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 97.68 acre-feet, if stored in Pactola Reservoir. Historically, the 1.84 cfs has been used to irrigate approximately 145 acres located in E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$ Section 19-T1N-R9E. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 8-T1N-R8E. This permit is to change the diversion point for 1.84 cfs to diversion points for use by the city to be located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 3 (Rapid City Water Treatment Plant); SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3 (Sioux Park Gallery); SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 9 (Meadowbrook Gallery); NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 8 (Jackson Springs Gallery); all in T1N-R7E or to allow storage in Pactola Reservoir. The location of the Pactola Reservoir diversion point is the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 2-T1N-R5E and the reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This permit does not authorize any new water appropriations from Rapid Creek. This application, if approved, will retain the April 6, 1878 priority date established by the Murphy Ditch vested water rights.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2512-2 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest.

Water Permit Application No. 2513-2 proposes to transfer a portion of South Side Ditch use of Rapid Creek natural flows appropriated under Vested Water Right No. 2040-2. The transfer is for use of a portion of Rapid Creek natural flows historically used to irrigate 74.9 acres known as the Galen Steen (Gordie Howie) property from South Side Ditch. The portion of Rapid Creek natural flows to be transferred to the city is 0.84 cubic feet of water per second (cfs) with an annual volume limitation of 144.84 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre-feet, if stored in Pactola Reservoir. Historically, the 0.84 cfs has been used to irrigate approximately 74.9 acres located in W $\frac{1}{2}$ SE $\frac{1}{4}$ Section 24 and SW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 25; all in T1N-R8E. The existing diversion point on Rapid Creek for South Side Ditch is located in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 15-T1N-R8E. This permit is to change the diversion point for 0.84 cfs to diversion points for use by the city to be located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 3 (Rapid City Water Treatment Plant); SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3 (Sioux Park Gallery); SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 9 (Meadowbrook Gallery); NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 8 (Jackson Springs Gallery); all in T1N-R7E or to allow storage in Pactola Reservoir. The location of the Pactola Reservoir diversion point is the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 2-T1N-R5E and the reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This permit does not authorize any new water appropriations from Rapid Creek. This application, if approved, will retain the May 3, 1880 priority date established by the South Side Ditch vested water rights.

(continued)

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2513-2 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest.

Any person interested in opposing or supporting these applications must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. 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 November 24, 2003. The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will consider these applications at 9:00 AM, December 3, 2003 in the Matthew Training Center, Foss Building, 523 E Capitol, Pierre SD. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny these applications based on the facts presented at the public hearing. The December 3, 2003 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the applications. The request for an automatic delay must be filed by November 24, 2003.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by November 24, 2003, at the above Water Rights Program address to request copies of information pertaining to these applications, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; 46-5-33 thru 46-5-35; 46-5-20.1, 46-5-8.1; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
County of Pennington)

I, Patricia K. Van Patten

certify that the attached printed Notice was taken

from the Rapid City Journal

printed and published in Rapid City

County of Pennington and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

November 6, 2003

November 13, 2003

Cost of Printing Two hundred fifty-six

dollars and eighty-eight cents (\$256.88)

Patricia K. Van Patten
(Signature)

Legal Advertising Rep.
(Title)

11/13/03
(Date Signed)

RECEIVED
NOV 14 2003
WATER RIGHTS
PROGRAM

Nov. 6, 13

L1525090

NOTICE OF HEARING
ON APPLICATION
NOS. 2512-2 AND 2513-2
TO TRANSFER USE

Notice is given that the City of Rapid City, c/o Ted Vore, Acting Public Works Director, 300 6th St., Rapid City, SD 57701, has filed Water Permit Application Nos. 2512-2 and 2513-2 pursuant to 46-5-34.1 to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City.

Water Permit Application No. 2512-2 proposes to transfer a portion of Rapid Valley Company (a/k/a Murphy Ditch) stockholder/landowner's use of Rapid Creek natural flows appropriated under Vested Water Right No. 1727-2 from Murphy Ditch. The transfer is for Rapid Creek water historically used to irrigate 145 acres known as the M.P. Carley (Merrilyn Schroeder) property. The portion of Rapid Creek natural flows to be transferred to the city is 1.84 cubic feet of water per second (cfs) with an annual volume limitation of 195.37 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 97.68 acre-feet, if stored in Pactola Reservoir. Historically, the 1.84 cfs has been used to irrigate approximately 145 acres located in E1/4NW1/4, NE1/4SW1/4, SW1/4SE1/4, NW1/4SE1/4, S1/4NE1/4 Section 19-T1N-R9E. The existing diversion point on Rapid Creek for Murphy Ditch is located in the NE1/4SW1/4 Section 8-T1N-R8E. This permit is to change the diversion point for 1.84 cfs to diversion points for use by the city to be located in the SE1/4NE1/4 Section 3 (Rapid City Water Treatment Plant); SW1/4SW1/4 Section 3 (Sioux Park Gallery); SE1/4NE1/4 Section 9 (Meadowbrook Gallery); NW1/4SE1/4 Section 8 (Jackson Springs Gallery); all in T1N-R7E or to allow storage in Pactola Reservoir. The location of the Pactola Reservoir diversion point is the NW1/4SW1/4 Section 2-T1N-R5E and the reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This permit does not authorize any new water appropriations from Rapid Creek. This application, if approved, will retain the April 6, 1878, priority date established by the Murphy Ditch vested water rights.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2512-2 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.

Water Permit Application No. 2513-2 proposes to transfer a portion of South Side Ditch use of Rapid Creek natural flows appropriated under Vested Water Right No. 2040-2. The transfer is for use of a portion of Rapid Creek natural flows historically used to irrigate 74.9 acres known as the Galen Steen (Gordon Howie) property from South Side Ditch. The portion of Rapid Creek natural flows to be transferred to the city is 0.84 cubic feet of water per second (cfs) with an annual volume limitation of 144.84 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre-feet, if stored in Pactola Reservoir. Historically, the 0.84 cfs has been used to irrigate approximately 74.9

acres located in W1/4SE1/4 Section 24 and SW1/4NE1/4 Section 25; all in T1N-R8E. The existing diversion point on Rapid Creek for South Side Ditch is located in the SE1/4NW1/4 Section 15-T1N-R8E. This permit is to change the diversion point for 0.84 cfs to diversion points for use by the city to be located in the SE1/4NE1/4 Section 3 (Rapid City Water Treatment Plant); SW1/4SW1/4 Section 3 (Sioux Park Gallery); SE1/4NE1/4 Section 9 (Meadowbrook Gallery); NW1/4SE1/4 Section 8 (Jackson Springs Gallery); all in T1N-R7E or to allow storage in Pactola Reservoir. The location of the Pactola Reservoir diversion point is the NW1/4SW1/4 Section 2-T1N-R5E and the reservoir impounds water in portions of Sections 2, 3, 4, 5, 10, 11 of T1N-R5E and Sections 31, 32, 33, 34 of T2N-R5E. This permit does not authorize any new water appropriations from Rapid Creek. This application, if approved, will retain the May 3, 1880, priority date established by the South Side Ditch vested water rights.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2513-2 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.

Any person interested in opposing or supporting these applications must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. 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 November 24, 2003. The petition may be informal but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will consider these applications at 9:00 a.m., December 3, 2003, in the Matthew Training Center, Foss Building, 523 E. Capitol, Pierre, S.D. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny these applications based on the facts presented at the public hearing. The December 3, 2003, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the applications. The request for an automatic delay must be filed by November 24, 2003.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-36. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Granlund by November 24, 2003, at the above Water Rights Program address to request copies of information pertaining to these applications, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-

17-46-2A-1 thru 46-2A-10; 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21, 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31, 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-25, 46-5-13 thru 46-5-35, 46-5-20.1, 46-5-8.1, and Board Rules ARSD 74-02-01.01 thru 74-02-01.15.1.
Steven M. Pinner, Secretary
Department of Environment and Natural Resources



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 5, 2003

Don Jundt, President
South Side Ditch
RR 2 Box 4920A
Rapid City SD 57701

Dear Mr. Jundt:

I am writing regarding Water Right Permit Application Nos. 2512-2 and 2513-2 filed by City of Rapid City. The applications seek to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City. One of the applications proposes to transfer a portion of South Side Ditch use of Rapid Creek.

Enclosed is a copy of the recommendation, report and notice of hearing on these applications. The notice is to be published in the Rapid City Journal on November 6 and 13, 2003. A hearing before the Water Management Board is scheduled for December 3rd in Pierre, anyone desiring to participate in that hearing must file a petition to intervene by November 24, 2003 as set forth in the notice of hearing.

If you have any questions, please contact Mark Rath at (605) 773-3352.

Sincerely,


Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 5, 2003

Curt Anderson
Bureau of Reclamation
515 9th Street, Suite 101
Rapid City, SD 57701-2695

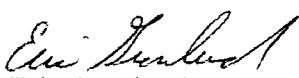
Dear Mr. Anderson:

I am writing regarding Water Right Permit Application Nos. 2512-2 and 2513-2 filed by City of Rapid City. The applications seek to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City.

Enclosed is a copy of the recommendation, report and notice of hearing on these applications. The notice is to be published in the Rapid City Journal on November 6 and 13, 2003. A hearing before the Water Management Board is scheduled for December 3rd in Pierre, anyone desiring to participate in that hearing must file a petition to intervene by November 24, 2003 as set forth in the notice of hearing.

If you have any questions, please contact Mark Rath at (605) 773-3352.

Sincerely,


Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 5, 2003

Jerry Hammerquist
Rapid Valley Conservancy District
P.O. Box 26
Caputa, SD 57725

Dear Mr. Hammerquist:

I am writing regarding Water Right Permit Application Nos. 2512-2 and 2513-2 filed by City of Rapid City. The applications seek to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City.

Enclosed is a copy of the recommendation, report and notice of hearing on these applications. The notice is to be published in the Rapid City Journal on November 6 and 13, 2003. A hearing before the Water Management Board is scheduled for December 3rd in Pierre, anyone desiring to participate in that hearing must file a petition to intervene by November 24, 2003 as set forth in the notice of hearing.

If you have any questions, please contact Mark Rath at (605) 773-3352.

Sincerely,


Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 5, 2003

Keith Ham
15567 Hammerquist Road
Caputa SD 57725

Dear Mr. Ham:

I am writing regarding Water Right Permit Application Nos. 2512-2 and 2513-2 filed by City of Rapid City. The applications seek to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City.

Enclosed is a copy of the recommendation, report and notice of hearing on these applications. The notice is to be published in the Rapid City Journal on November 6 and 13, 2003. A hearing before the Water Management Board is scheduled for December 3rd in Pierre, anyone desiring to participate in that hearing must file a petition to intervene by November 24, 2003 as set forth in the notice of hearing.

If you have any questions, please contact Mark Rath at (605) 773-3352.

Sincerely,

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 5, 2003

David Lamb, President
Rapid Valley Water Company
RR 5 Box 140
Rapid City SD 57701

Dear Mr. Lamb:

I am writing regarding Water Right Permit Application Nos. 2512-2 and 2513-2 filed by City of Rapid City. The applications seek to transfer the use of a portion of Rapid Creek natural flows appropriated for irrigation use to municipal, industrial, commercial, common distribution system, rural water system, suburban housing, and domestic use by the city of Rapid City. One of the applications proposes to transfer a portion of Murphy Ditch stockholder/landowner's use of Rapid Creek.

Enclosed is a copy of the recommendation, report and notice of hearing on these applications. The notice is to be published in the Rapid City Journal on November 6 and 13, 2003. A hearing before the Water Management Board is scheduled for December 3rd in Pierre, anyone desiring to participate in that hearing must file a petition to intervene by November 24, 2003 as set forth in the notice of hearing.

If you have any questions, please contact Mark Rath at (605) 773-3352.

Sincerely,

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



APR 23 2004

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

City of Rapid City
% Ted Vore Acting Public Works Dir
300 6th St
Rapid City SD 57701

Dear Mr. Vore:

Enclosed are Water Permit Nos. 2512-2 and 2513-2 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

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

Sincerely,

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

enclosures

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

Date 5/4/2004

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

RECEIVED
MAY 05 2004
WATER RIGHTS
PROGRAM

FROM: John Wagner, Water Supt. Rapid City
(name)
300 6th St.
(address)
Rapid City, SD 57701
(city, state, zip)

394-4162
(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.

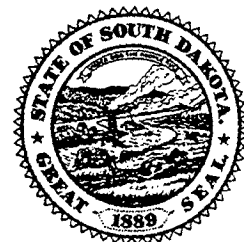
Water Permit No. 2513-2 states that the water use system is to be constructed by
currently in place, and water is to be put to beneficial use by 5/1/2004.
(date) (date)

The water use system was completed on 5/1/2004.
(date)

Applying the water to beneficial use was completed on 5/1/2004.
(date)

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

John Wagner
(signature)





2513-2

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

September 30, 2005

INTERNAL MEMORANDUM

TO: Garland Erbele, Chief Engineer
DENR Water Rights Program

FROM: Donald E. Stroup *Donald E. Stroup*
Natural Resources Project Engineer
DENR Water Rights Program

SUBJECT: Rapid City – Rapid Valley Water Rights Transfers

A total of 16.75 cubic feet per second (cfs) of water has been transferred from Rapid Valley irrigation ditches to Rapid City, SD. The amounts of flow transferred and acres retired by ditch are:

<u>Ditch</u>	<u>Flow (cfs)</u>	<u>Acres</u>
Murphy	4.12	325
Little Giant	0.99	26
South Side	10.80	1001.8
Hawthorne	0.84	46

The locations of the land retired from irrigation are shown on the Rapid City-Rapid Valley Water Rights Transfers Map. Following is a list summarizing the water transfers from Rapid Valley irrigators to Rapid City:

- 2399-2:** Retired 52-acres and 0.75-cfs of Wileman property from future irrigation, 26-acres and 0.33-cfs from Murphy Ditch and 26-acres and 0.42-cfs from Little Giant Ditch. Land located in the NE¼ Section 24 T1N R8E and water via Murphy Ditch at the same location.
- 2316-2:** Retired 64-acres and 0.81-cfs of Morris property from future irrigation via Murphy Ditch. Land located in the SE¼ Section 9 T1N R8E and water via Murphy Ditch at the same location.
- 2201-1:** Retired 10-acres and 0.13-cfs of Long property from future irrigation via Murphy Ditch. Land located in the center of Section 14 T1N R8E and water via Murphy Ditch at the same location.
- 2199-2** Retired 4-acres and 0.05-cfs of Pelle property from future irrigation via Murphy Ditch. Land located in the NW¼ Section 19 T1N R9E and water via Murphy Ditch at the same location.
- 2142-2** Retired 49-acres and 0.62-cfs of Tyler property from future irrigation via Murphy Ditch. Land located in the NW¼ and SW¼ Section 19 T1N R9E and water via Murphy Ditch at the same location.

- 2469-2** Retired 27-acres and 0.34-cfs of Murphy property from future irrigation via Murphy Ditch. Land located in the NW¼ and SW¼ Section 14 T1N R8E and water via Murphy Ditch at the same location.
- 2512-2** Retired 145-acres and 1.84-cfs of Schroeder property from future irrigation via Murphy Ditch. Land located in Section 19 T1N R9E and water via Murphy Ditch at the same location.
- 2513-2** Retired 74.9-acres and 0.84-cfs of Steen property from future irrigation via South Side Ditch. Land located in the NE¼ Section 25, and SW¼ and SE¼ Section 24 T1N R8E and water via South Side Ditch in Section 25 T1N R8E. The turnout for the supplying lateral has a turn screw gate that is functional.
- 2234-2** Retired 70-acres and 0.79-cfs of Eisenbraun property from future irrigation via South Side Ditch. Land located in the NE¼ Section 26 T1N R8E and water via South Side Ditch at the same location. The turnout for the supplying lateral is into a buried pipeline capped with a plastic bucket.
- 2411-2** Retired 3.6-acres and 0.04-cfs of Eisenbraun property from future irrigation via South Side Ditch. Land located in the NE¼ Section 26 T1N R8E and water via South Side Ditch at the same location. The turnout for the supplying lateral is into a buried pipeline capped with a plastic bucket.
- 2397-2** Retired 59.3-acres and 0.59-cfs of Eisenbraun property from future irrigation via South Side Ditch. Land located in the NE¼ Section 26 T1N R8E and water via South Side Ditch at the same location. The turnout for the supplying lateral is into a buried pipeline capped with a plastic bucket.
- 2468-2** Retired 34.8-acres and 0.57-cfs of Howie property from future irrigation via Little Giant Ditch water delivered via Murphy Ditch. Land located in the SW¼ Section 19 and NW¼ Section 30 T1N R9E and water via Murphy Ditch in the NE¼ Section 19 T1N R9E. The turnout for the supplying lateral is blocked by a silted-in board.
- 2249-2** Retired 105.5-acres and 1.19-cfs of Weber property from future irrigation via South Side Ditch. Land located in the NW¼ and SW¼ Section 30 T1N R9E and water via South Side Ditch in the SW¼ Section 30 T1N R9E.
- 2296-2** Retired 253.4-acres and 2.85-cfs of Jundt property from future irrigation via South Side Ditch. Land located in Section 33 T1N R9E and water via South Side Ditch in the NE¼ Section 33 T1N R9E. The turnout for the supplying lateral is not blocked and ditch and lateral do not appear to be maintained.
- 2360-2** Retired 32.6-acres and 0.37-cfs of Soetaert property from future irrigation via South Side Ditch. Land located in the E½ Section 33 T1N R9E and water via South Side Ditch in the NE¼ Section 33 T1N R9E. The turnout for the supplying lateral is not blocked and ditch and lateral do not appear to be maintained.
- 2415-2** Retired 146-acres and 1.64-cfs of Howie property from future irrigation via South Side Ditch. Land located in the NE¼ and SE¼ Section 32 T1N R9E and water via South Side Ditch in the NE¼ Section 32 T1N R9E. The turnout for the supplying lateral is not blocked and ditch and lateral do not appear to be maintained.

- 2217-2** Retired 29.2-acres and 0.33-cfs of Keller property from future irrigation via South Side Ditch. Land located in the SE¼ Section 29 T1N R9E and water via South Side Ditch in the NE¼ Section 32 T1N R9E. The turnout for the supplying lateral is not blocked and ditch and lateral do not appear to be maintained.
- 2218-2** Retired 192.5-acres and 2.16-cfs of Stromer property from future irrigation via South Side Ditch. Land located in the NW¼, SW¼ , and SE¼ of Section 29 T1N R9E and water via South Side Ditch in the SW¼ Section 29 T1N R9E. The turnout for the supplying lateral is not blocked and ditch and lateral do not appear to be maintained.
- 2317-2** Retired 46-acres and 0.84-cfs of Morris property from future irrigation via Hawthorne Ditch. Land located in the center of Section 9 T1N R8E and water via Hawthorne Ditch in the NE¼ Section 9 T1N R8E. Hawthorne Ditch is now piped underground through the area where the turnout for the supplying lateral was and the new Elk Vale Road by-pass, a school, and Western Electric have been constructed where the lateral previous ran. There is no evidence of a lateral at the location.

cc: Individual Files

Permit No. 2513-2
Upper Cheyenne River - Water District

Report of Examination of Works

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have on this day, 11/30/2009, made a thorough examination of the water use system constructed by City of Rapid City, 300 6th Street, Rapid City SD 57701 holder of Permit No. 2513-2, bearing the priority date of May 3, 1880 authorizing the diversion of 0.84 cubic feet of water per second (cfs) with an annual volume limitation of 144.84 acre-feet if diverted at Rapid City's municipal diversion points or 72.23 acre-feet if stored in Pactola Reservoir of the natural flow water of surface water from Rapid Creek for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic purposes, in Pennington County.

Inspection contact and relationship to
permit holder, if applicable:

John Wagner, Water Superintendent,
City of Rapid City

A. Works used to divert the water:

Pumps at the water treatment plant, Jackson Springs Gallery, Sioux (aka Girl Scout) Gallery, Meadowbrook Gallery and storage in Pactola Reservoir.

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

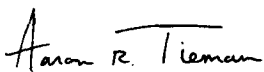
Rapid City municipal distribution system.

The system is in the following condition good. The points of diversion are located at SE¼ NE¼ Section 3 (Rapid City Water Treatment Plant); SW¼ SW¼ Section 3 (Sioux Park a.k.a. Girl Scout Gallery); SE¼ NE¼ Section 9 (Meadowbrook Gallery); NW¼ SE¼ Section 8 (Jackson Springs Gallery); all in T1N-R7E and NW¼ SW¼ Section 2 T1N-R5E (Pactola Reservoir). Pactola Reservoir impounds water in portions of Sections 2,3,4,5,10 and 11 of T1N-R5E and Section 31, 32, 33, and 34 of T2N-R5E * (see Attachment A). The permit holder is entitled to divert and convey to the place of use 0.84 cfs with an annual volume limitation of 144.84 acre-feet if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre-feet if stored in Pactola Reservoir which is to be used for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic purposes.

Water has been put to beneficial use to the maximum extent and the license should be issued for 0.84 cfs (144.84 acre feet annually).

All structures, wells and lands on map Yes

Exceptions to compliance are: None.



Aaron Tieman
Natural Resources Project Engineer
DENR, Water Rights Program

Date report completed: June 23, 2010

Attachment A

Legal Locations and GPS Coordinates of Points of Diversion for the city of Rapid City, Pennington County, South Dakota

Water Treatment Plant:

2710 feet north and 1130 feet west of SE corner of Section 3, T1N-R7E
44.075066 North Latitude, -103.256256 West Longitude.

Sioux Park "Girl Scout" Gallery

990 feet north and 800 feet east of SW corner of Section 3, T1N-R7E.
44.070079 North Latitude, -103.269053 West Longitude.

Meadowbrook Gallery

1500 feet south and 1370 feet west of NE corner of Section 9, T1N-R7E.
44.063524 North Latitude, -103.277394 West Longitude.

Jackson Springs Gallery

1500 feet north and 2550 feet west of SE corner of Section 8, T1N-R7E.
44.057299 North Latitude, -103.301863 West Longitude.

Pactola Reservoir

2200 feet north and 725 feet east of SW corner of Section 2, T1N-R5E.
44.073971 North Latitude, -103.491580 West Longitude.

FIELD INVESTIGATION REPORT FOR PERMIT NO. 2513-2

DATE OF INVESTIGATION:	November 30, 2009
NAME & ADDRESS OF PERMIT HOLDER	City of Rapid City 300 6 th Street Rapid City, SD 57701
NAME & ADDRESS OF INVESTIGATION CONTACT/ RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE	John Wagner (Water Superintendent)
DIVERSION POINT LEGAL LOCATION	*
WATER SUPPLY SOURCE	Surface Water, Rapid Creek

*** SE¼ NE¼ Section 3 (Rapid City Water Treatment Plant); SW¼ SW¼ Section 3 (Sioux Park a.k.a. Girl Scout Gallery); SE¼ NE¼ Section 9 (Meadowbrook Gallery); NW¼ SE¼ Section 8 (Jackson Springs Gallery); all in T1N-R7E and NW¼ SW¼ Section 2 T1N-R5E (Pactola Reservoir). Pactola Reservoir impounds water in portions of Sections 2,3,4,5,10 and 11 of T1N-R5E and Section 31, 32, 33, and 34 of T2N-R5E * (see Attachment A).**

Other permit(s) associated with the project: **This permit transfers the use of a portion of Rapid Creek natural flows historically used to irrigate 145 acres known as the Galen Steen (Gordon Howie) property from South Side Ditch. The portion of Rapid Creek natural flows to be transferred to the city is 0.84 cubic feet of water per second (cfs) with an annual volume limitation of 144.84 acre-feet, if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre-feet, if stored in Pactola Reservoir. This permit does not authorize any new water appropriations from Rapid Creek.**

WATER SUPPLY SOURCE: Rapid Creek

WATER TREATMENT PLANT

Pump:

- 1) Make: Peerless
- 2) Model: 258595
- 3) Capacity: 5600 GPM

Motor:

- 1) Make: GE
- 2) Model No.: 5K405DP7011B FR2G
- 3) Horsepower rating: 75 hp

Pump:

- 1) Make: Layne Bowler
- 2) Model: 14MSL
- 3) Capacity: 2780 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 326UP
- 3) Horsepower rating: 30 hp

Pump:

- 1) Make: Vertiline
- 2) Model: 27908
- 3) Capacity: 5560 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 445UPY
- 3) Horsepower rating: 60 hp

Pump:

- 1) Make: Layne Bowler
- 2) Model: 85522
- 3) Capacity: 5875 GPM

Motor:

- 1) Make: Louis Allis
- 2) Model No.: COG5B
- 3) Horsepower rating: 60 hp

Pump:

- 1) Make: Vertiline
- 2) Model: 27989
- 3) Capacity: 8000 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: CFU
- 3) Horsepower rating: 100 hp

SIOUX PARK (a.k.a. Girl Scout) GALLERY**Pump:**

- 1) Make: Worthington
- 2) Model: 12H13501
- 3) Capacity: 1400 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 324UP
- 3) Horsepower rating: 25 hp

Pump:

- 1) Make: Worthington
- 2) Model: 12H13501
- 3) Capacity: 1400 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 324UP
- 3) Horsepower rating: 25 hp

MEADOWBROOK GALLERY**Pump:**

- 1) Make: Worthington
- 2) Model: 10QHA0
- 3) Capacity: 1525 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 2743715
- 3) Horsepower rating: 15 hp

Pump:

- 1) Make: Worthington
- 2) Model: 10QHA0
- 3) Capacity: 1475 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 2745675
- 3) Horsepower rating: 15 hp

Pump:

- 1) Make: Worthington
- 2) Model: 10QHA0
- 3) Capacity: 1525 GPM

Motor:

- 1) Make: US Electrical
- 2) Model No.: 2744261
- 3) Horsepower rating: 15 hp

JACKSON SPRINGS GALLERY**Pump:**

- 1) Make: Fairbank-Morse
- 2) Model: T4B242990A
- 3) Capacity: 1390 GPM

Motor:

- 1) Make: GE
- 2) Model No.: 5K6258XH1A
- 3) Horsepower rating: 75 hp

Pump:

- 1) Make: Fairbank-Morse
- 2) Model: T4B242992A
- 3) Capacity: 2085 GPM

Motor:

- 1) Make: GE
- 2) Model No.: 5K6268XH1A
- 3) Horsepower rating: 125 hp

Pump:

- 1) Make: Fairbank-Morse
- 2) Model: T4B242991A
- 3) Capacity: 2085 GPM

Motor:

- 1) Make: GE
- 2) Model No.: 5K6258XH1A
- 3) Horsepower rating: 125 hp

PACTOLA RESERVOIR: This is a US Bureau of Reclamation dam with 55,972 acre-feet of active storage.

DISTRIBUTION LINES OR CANALS:

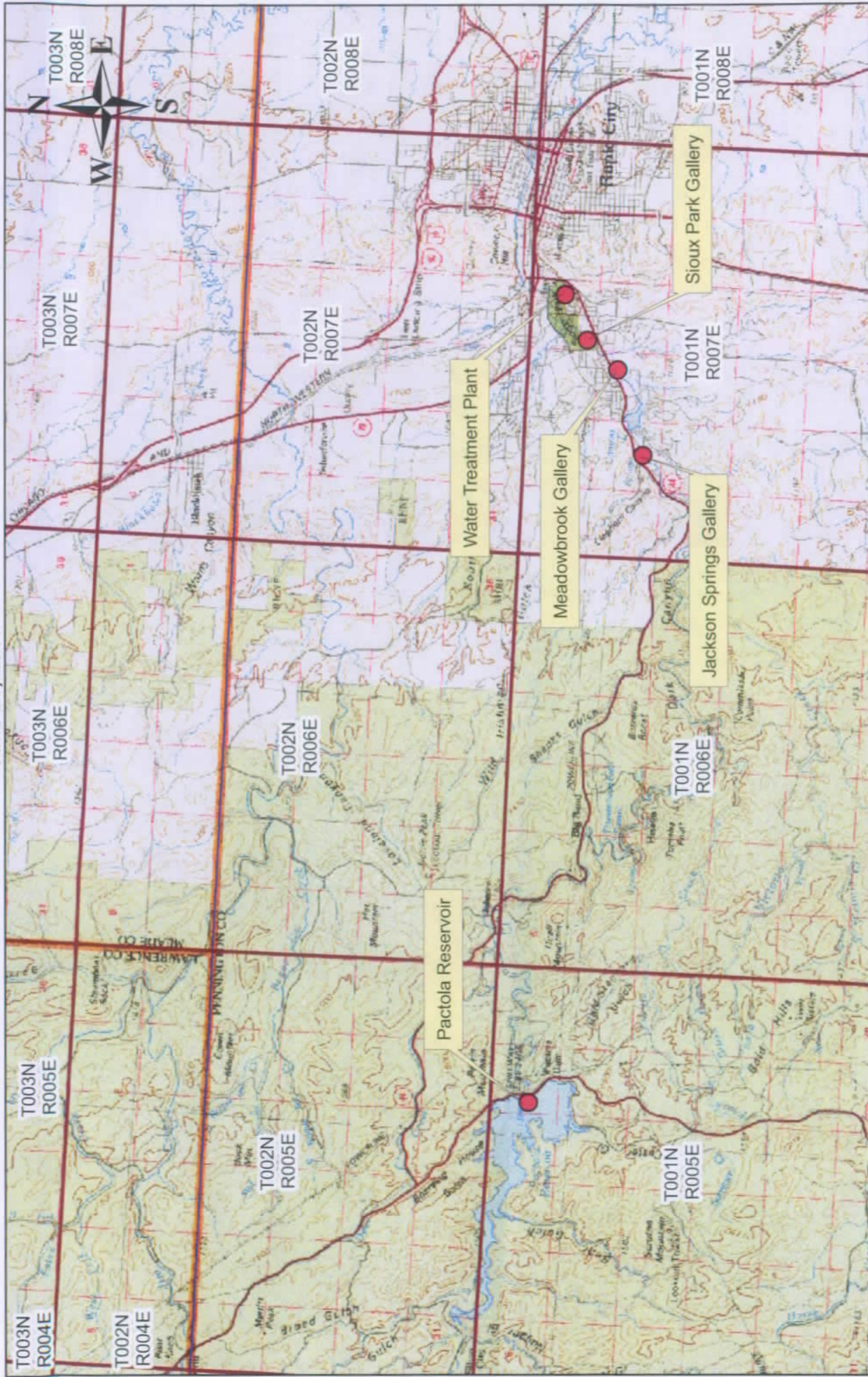
- 1) Type: Municipal distribution system

PERMIT QUALIFICATIONS:

- 1) Special qualifications to permit being abided by Yes
- 2) All structures, wells and lands on map Yes

COMMENTS:

Water Right 2513-2
City of Rapid City
June 23, 2010



Aaron R. Tieman

Aaron Tieman
Natural Resources Project Engineer
DNR Water Rights Program





DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

JUL 14 2010

2513-2

John Wagner, Water Supt
City of Rapid City
300 6th St
Rapid City SD 57701

Dear Mr. Wagner:

Enclosed is Water License No. 2513-2 for the City of Rapid City. The license is the final document which completes the process of obtaining a water right. Included with the license is a map prepared by the staff engineer who conducted the 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,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2513-2

(1) The City of Rapid City, 300 6th St, Rapid City SD 57701 made Application No. 2513-2, September 30, 2003 for a water permit to transfer a portion of South Side Ditch use of Rapid Creek natural flows appropriated under Vested Water Right No. 2040-2. The transfer is for use of a portion of Rapid Creek natural flows historically used to irrigate the Galen Steen (Gordie Howie) property from South Side Ditch to municipal use by the city. The portion of Rapid Creek natural flows to be transferred to the city is 0.84 cubic feet of water per second with an annual volume limitation of 144.84 acre feet if diverted at the city's municipal diversion points or 72.23 acre feet if stored in Pactola Reservoir. All diversion points are in Pennington County, South Dakota. Permit No. 2513-2, with a priority date of May 3, 1880 was approved December 3, 2003.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use. Pursuant to South Dakota Water Law 46-5-30.1, the City of Rapid City is issued a license to appropriate water and is entitled to divert 0.84 cubic feet of water per second for beneficial use with an annual volume limitation of 144.84 acre feet if diverted at the city's water treatment plant and infiltration galleries or 72.23 acre feet if stored in Pactola Reservoir for municipal, industrial, commercial, common distribution system, rural water system, suburban housing and domestic use purposes.

The location of the diversion points are as follows:

Water Treatment Plant:

2710 feet north and 1130 feet west of SE corner of Section 3, T1N-R7E (SE ¼ NE ¼)
44.075066 North Latitude, -103.256256 West Longitude.

Sioux Park "Girl Scout" Gallery

990 feet north and 800 feet east of SW corner of Section 3, T1N-R7E (SW ¼ SW ¼)
44.070079 North Latitude, -103.269053 West Longitude.

Meadowbrook Gallery

1500 feet south and 1370 feet west of NE corner of Section 9, T1N-R7E (SE ¼ NE ¼)
44.063524 North Latitude, -103.277394 West Longitude.

Jackson Springs Gallery

1500 feet north and 2550 feet west of SE corner of Section 8, T1N-R7E (NW ¼ SE ¼)
44.057299 North Latitude, -103.301863 West Longitude.

Pactola Reservoir

2200 feet north and 725 feet east of SW corner of Section 2, T1N-R5E (NW ¼ SW ¼)
44.073971 North Latitude, -103.491580 West Longitude.

continued

Page 2

Water License No. 2513-2

City of Rapid City

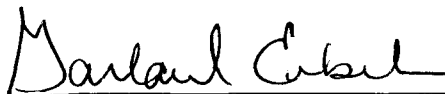
This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2513-2 and subject to the following qualifications:

- No. 2513-2 is limited to a diversion rate of 0.84 cfs for a total annual volume of 72.23 acre-feet at Pactola Reservoir or a total annual volume of 144.84 acre-feet at Sioux Park Gallery (SW ¼ SW ¼ Section 3) Meadowbrook Gallery (SE ¼ NE ¼ Section 9), Rapid City Water Treatment Plant (SE ¼ NE ¼ Section 3) or at Jackson Springs Gallery (NW ¼ SE ¼ Section 8) considered as replacement water only all in T1N, R7E. Maximum monthly diversion volumes at Pactola or the diversion points within Rapid City are as follows:

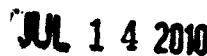
Monthly	Monthly acre-feet at Pactola	Monthly acre-feet at diversion points within Rapid City
May	10.20	20.79
June	14.92	29.84
July	15.41	30.82
August	18.03	36.07
September	13.66	27.32
October	0.0	0.0

Diversions during a month may be made at either Pactola Reservoir or at the diversion points within Rapid City, but not simultaneously at both Pactola and the Rapid City diversion points.

- No. 2513-2 authorizes diversion of only natural flow water by the City of Rapid City and does not include any rights to stored irrigation water available under contract from Pactola Reservoir.
- The City of Rapid City must report to the Chief Engineer annually the amount of water withdrawn each month at Pactola Reservoir or the diversion points within Rapid City.
- The Water Management Board is retaining jurisdiction of No. 2513-2 in the event that additional information shows that changes need to be made in the monthly or total annual volumes authorized by Water Right No. 2513-2.
- Diversions under No. 2513-2 may not interfere with existing water rights in effect prior to approval of No. 2513-2 or any domestic rights.
- The amount of water with a May 3, 1880 priority date, which may be appropriated under Vested Water Right No. 2040-2, is reduced by 0.91 cfs.
- No. 2513-2 retires the 81 acres, known as the Galen Steen (Gordon Howie) property which has been historically irrigated from South Side Ditch located in portions of the NE 1/4, N ½ SE ¼ Section 32, T1N, R9E from future irrigation.



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



date



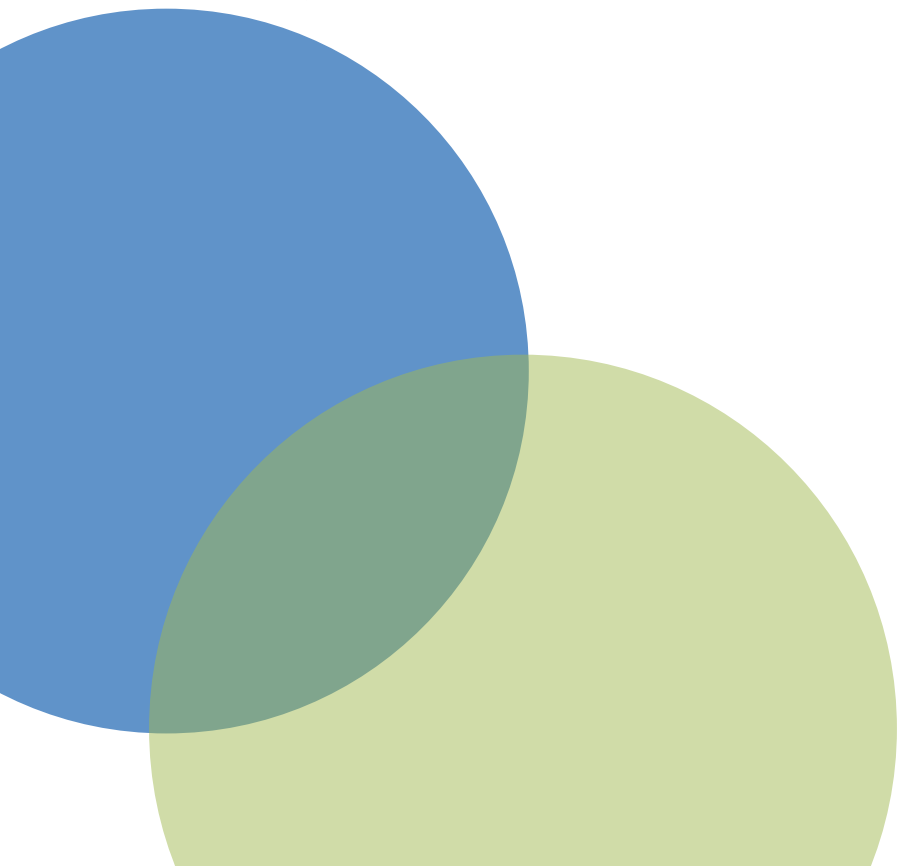
DOCUMENTATION OF
IRRIGATION DIVERSION POINT ABANDONMENT
FOR CITY OF RAPID CITY
PROJECT NO. 12-2034, CIP NO. 50922

Topical Report RSI-2317

prepared for

City of Rapid City
Public Works Department
Water Division
300 6th Street
Rapid City, SD 57701

January 2016



DOCUMENTATION OF
IRRIGATION DIVERSION POINT ABANDONMENT
FOR CITY OF RAPID CITY
PROJECT NO. 12-2034, CIP NO. 50922

Topical Report RSI-2317

by

Peter P. Rausch
Curtis D. Anderson
Adam J. Rutz
Jared K. Oswald

RESPEC
3824 Jet Drive
Rapid City, South Dakota 57703

prepared for

City of Rapid City
Public Works Department
Water Division
300 6th Street
Rapid City, SD 57701

January 2016

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1.0 BACKGROUND

The City of Rapid City has obtained the water permits from several irrigators served by Rapid Creek in the Rapid Valley area. According to the South Dakota Department of Environment and Natural Resources (SD DENR) Water Rights Division, the holder of a transferred permit shall permanently render inoperable the structural means of diverting water to land that is no longer subject to the water permit. The City of Rapid City has record of transfers and has now completed abandonment of the aforementioned diversion structures. The abandonment of the structures was performed by the City of Rapid City and reviewed by SD DENR personnel. This report documents the permits transferred, the diversion points associated with those permits, and the abandonment of those diversion points.

2.0 DATA SOURCES

Six sources were used to identify the diversion structures (turnouts) to be disabled. The first is the South Dakota Water Rights Program online permit database that is operated by the SD DENR [2012]. This database includes water rights documentation for each of the Rapid Valley irrigation ditches, identifies all permit transfers, and has documentation for individual water rights permits.

The second source is the Rapid Valley Water Management Study, which was completed in 1990 by the U.S. Bureau of Reclamation for ditches that have storage in Deerfield Reservoir, including the South Side, Cyclone, Little Giant, and Hawthorne irrigation ditches [U.S. Bureau of Reclamation, 1990]. The Murphy Ditch was excluded from the Rapid Valley Water Management Study because its water right is for natural Rapid Creek flows and, therefore, contractually has no storage in Deerfield Reservoir managed by the Bureau of Reclamation. The documentation from the study includes photographs of irrigation turnouts; associated notes; and irrigation ditch maps with turnout locations, photograph locations, and irrigated acreages.

The third source is an undocumented study conducted by the City of Rapid City in 2008. This study includes photographs of irrigation turnouts, associated notes, and maps that include data pertinent to water rights transferred to the city. The last three sources include parcel delineation and owner information from RapidMap [City of Rapid City and Pennington County, 2014], field investigations, and direct communication with irrigation ditch personnel and landowners.

Searches were conducted within the SD DENR Water Rights Program database to identify the water rights transferred to the City of Rapid City. Permit documentation associated with these transfers was downloaded. The water rights flow rate, acreage, location, previous owner, and approval date were identified for each transfer and this information is provided in Table 2-1.

By combining the information from Table 2-1 with the data from the RapidMap geodatabase, the parcels associated with each transfer were identified. Then, structure location maps from the Rapid Valley Water Management Study were used to identify the locations of turnouts requiring disablement. These locations were field-verified with help from ditch personnel and were recorded with Global Positioning System (GPS). Verified structure locations were digitized with ArcGIS mapping software.

Table 2-1. Information for Water Rights Transferred to the City of Rapid City

Permit No.	Ditch(s)	Previous Owner	Acres	Flow (cfs) ^(a)	Section	Township	Range	Quarter	Transfer Date
2655-2	Cyclone	Lamb	58	0.83	22	1N	8E	SW NW, NW NW	12/1/2010
2317-2	Hawthorne	Morris	46	0.84	9	1N	8E	SW NE, SE NW, NE SW, NW SE	5/1/1996
2399-2	Little Giant and Murphy	Wileman	52	0.75	24	1N	8E	E NE	5/7/1998
2468-2	Little Giant via Murphy	Howie	34.8	0.57	19; 30	1N	9E	W SW; NW NW	12/5/2001
2142-2	Murphy	Tyler	49	0.62	19	1N	9E	W NW, NW SW	5/1/1991
2199-2	Murphy	Pelle	4	0.05	19	1N	9E	NW NW	5/7/1992
2201-2	Murphy	Long	10	0.13	14	1N	8E	C	5/7/1992
2316-2	Murphy	Morris	64	0.81	9	1N	8E	W SE	5/1/1996
2469-2	Murphy	Murphy	27	0.34	14	1N	8E	S NW, N SW	12/5/2001
2512-2	Murphy	Schroeder	145	1.84	19	1N	9E	E NW, NE SW, SW SE, N SE, S NE	12/3/2003
2217-2	South Side	Keller	29.2	0.33	29	1N	9E	SE SE	7/22/1992
2218-2	South Side	Stromer	192.5	2.16	29	1N	9E	SW	7/22/1992
2234-2	South Side	Eisenbraun	70	0.79	26	1N	8E	E NE	5/1/1996
2249-2	South Side	Weber	105.5	1.19	30	1N	9E	E NW, NW SW, E SW	5/5/1993
2296-2	South Side	Jundt	253.4	2.85	28; 33	1N	9E	SW, SW SE; NW, W NE, NW SE, N SW	1/6/1994
2360-2	South Side	Soetaert	32.6	0.37	33	1N	9E	W NW	7/10/1996
2397-2	South Side	Eisenbraun	59.3	0.59	26	1N	8E	W NE	2/25/1998
2411-2	South Side	Eisenbraun	3.6	0.04	26	1N	8E	N NE	10/1/1998
2415-2	South Side	Howie	146	1.64	32	1N	9E	NE, N SE	12/2/1998
2513-2	South Side	Steen	74.9	0.84	24; 25	1N	8E	W SE; SW NE	12/3/2003

(a) cfs = cubic feet per second

3.0 IRRIGATION DITCH SUMMARIES

The information gathered for turnouts to parcels with water rights transferred from irrigation use to the City of Rapid City is described by permit number in the following sections. The information includes each turnout location, access, and disablement information. All maps can be found in Appendix A.

All references to compacted backfill or compacted embankment were completed according to City of Rapid City Specifications Section 14-Embankment. Rapid City Specifications are located at www.rcgov.org under Departments – Public Works – Engineering Services – Standard Specifications & Details 2007.

3.1 CYCLONE DITCH

A single Cyclone Ditch water right has been transferred to the City of Rapid City with a single associated turnout. Table 3-1 describes the turnout location and Figure A-1 maps the vicinity. The following section describes the turnout details.

Table 3-1. Cyclone Ditch Turnout Information

Turnout	Longitude	Latitude	Adjacent Landowner
2655-2	-103.151	44.034	David Lamb

3.1.1 Permit 2655-2

This permit is for 58 acres and 0.85 cubic feet per second (cfs) transferred from Mr. David Lamb.

3.1.1.1 Turnout

The single turnout for this permit was an open ditch cut through the bank of Cyclone Ditch. Water was directed down the turnout ditch by boarding up a steel flume immediately downstream in the Cyclone Ditch.

3.1.1.2 Access

The turnout was located adjacent to property owned by the Rapid City Area School District No. 51-4 (PIN 3822100004). Direct access to the site is along an over 1-mile, two-track road that runs through fields on property owned by Mr. David Lamb. It is accessible by a private driveway at 4555 Reservoir Road, south of East Highway 44.

3.1.1.3 Disablement

The flume has been removed, the turnout ditch filled, and the ditch reshaped by the landowner as illustrated in Figure 3-1.



Figure 3-1. The Turnout Ditch (Left Arrow) and Former Location of Flume (Right Arrow) Associated With Permit 2655-2. Cyclone Ditch Runs From Foreground to Background Through Large Concrete Pipe.

3.2 HAWTHORNE DITCH

A single Hawthorne Ditch water right has been transferred to the City of Rapid City with a single associated turnout. Table 3-2 provides the turnout location and Figure A-2 maps the vicinity. The following section describes the turnout details.

Table 3-2. Hawthorne Ditch Turnout Information

Turnout	Longitude	Latitude	Current Landowner
2317-2	-103.162	44.064	N/A

3.2.1 Permit 2317-2

This permit is for 46 acres and 0.84 cfs transferred from Mr. Morris.

3.2.1.1 Turnout

The supplying lateral and turnout for this permit no longer exist. An internal memorandum of SD DENR dated September 30, 2005, states “Hawthorne Ditch is now piped underground through the area where the turnout for the supplying lateral was and the new Elk Vale Road bypass, a school, and (the West River Electric Association building) have been constructed where the lateral previously ran. There is no evidence of a lateral at the location” [Stroup, 2005]. This statement was field-verified.

3.2.1.2 Access

The approximate, former location of the turnout is along East Highway 44 near the Elk Vale Road bypass.

3.2.1.3 Disablement

The turnout was previously disabled.

3.3 MURPHY DITCH

Eight Murphy Ditch water rights have been transferred to the City of Rapid City, and 11 associated turnout locations are described in Table 3-3 in order from upstream to downstream. Two vicinity maps of the turnouts are illustrated by Figures A-3 and A-4. The following sections describe each of the Murphy Ditch turnout locations by permit. The ditch has a 20-foot easement on either side for access and maintenance.

Table 3-3. Murphy Ditch Turnout Information

Turnout	Longitude	Latitude	Adjacent Landowner
2316-2	-103.158	44.059	Yasmeen Dream
2469-2 A	-103.128	44.049	Dennis Murphy
2469-2 B	-103.127	44.049	Dennis Murphy
2201-2	-103.121	44.047	Ramona Buchholz
2399-2 A	-103.097	44.038	Michelle Minnerath
2399-2 B	-103.091	44.037	Penn. Co. ROW
2468-2	-103.091	44.031	SD DOT
2142-2 and 2199-2	-103.089	44.037	Randall Albers or Melvin Ross
2512-2 A	-103.083	44.035	Rapid City
2512-2 B	-103.077	44.034	Rapid City
2512-2 C	-103.070	44.031	Rapid City ROW

3.3.1 Permit 2316-2

This permit is for 64 acres and 0.81 cfs transferred from Mr. Morris.

3.3.1.1 Turnout

A single turnout was associated with this permit. A wooden flume within the Murphy Ditch was used to check water up to a 12-inch-diameter corrugated metal pipe (CMP). The flume throat was 8 feet long, 4 feet 8 inches wide, and 4 feet 2 inches tall. The CMP was sedimented in and remained in segments. Figure 3-2 is a photograph of the flume and Figure 3-3 is a photograph of the CMP opening.



Figure 3-2. Wooden Flume Used as a Check for Permit 2316-2.



Figure 3-3. Opening to 12-Inch-Diameter Corrugated Metal Pipe Turnout for Permit 2316-2.

3.3.1.2 Access

The flume and pipe were adjacent to property owned by Yasmeen Dream that is accessible from Lytle Lane off of East Highway 44.

3.3.1.3 Disablement

The following are the procedures the City of Rapid City used in disabling the Permit 2316-2 turnout:

- Removed the wooden flume and all associated concrete from Murphy Ditch
- Removed the upstream CMP section from the ditch embankment
- Backfilled with compacted embankment material where items were removed
- Reshaped the ditch banks through the project area to match the cross section of existing banks outside of the project area

Figure 3-4 and Figure 3-5 document removal of the turnout.



Figure 3-4. Removal of Turnout associated with Permit 2316-2. Date 3/20/2014



Figure 3-5. Removal of Turnout associated with Permit 2316-2. Date 3/20/2014

3.3.2 Permit 2469-2

This permit is for 27 acres and 0.34 cfs transferred from Ms. Arlene Murphy.

3.3.2.1 Turnouts

Two turnouts were associated with this permit, and they were located at either end of an inverted siphon through which the Murphy Ditch passes. Both turnouts were approximately 10-inch-diameter plastic pipes through the ditch bank. The upstream pipe (Turnout A) was mostly buried and is shown in Figure 3-6. The downstream pipe (Turnout B) was exposed, as illustrated in Figure 3-7.



Figure 3-6. Pipe Turnout A for Permit 2469-2.

3.3.2.2 Access

Both turnouts were adjacent to property owned by Dennis Murphy (PIN 3814105010), and the sites are accessible from a private driveway at 5670 East Highway 44. Direct access to both turnouts was through fields along a two-track path. Access to the Turnout B site requires crossing an existing drainage or can alternatively be accessed by a two-track path off the end of Springfield Road.



Figure 3-7. Pipe Turnout B for Permit 2469-2.

3.3.2.3 *Disablingment*

The following are the procedures the City of Rapid City used in disabling the Permit 2469-2 turnouts

- Removed both pipe turnouts from the ditch embankment
- Backfilled with compacted embankment material to match the existing bank cross section

Figures 3-8 and Figure 3-9 document removal of the turnouts.



Figure 3-8. Removal of Turnout A Associated With Permit 2469-2. Date 4/22/2014



Figure 3-9. Removal of Turnout B Associated With Permit 2469-2. Date 4/22/2014.

3.3.3 Permit 2201-2

This permit is for 10 acres and 0.13 cfs transferred from Mr. Long.

3.3.3.1 Turnout

The old turnout ditch for this permit was identified, but the turnout had been removed. No evidence of a turnout could be identified on the ditch side of the bank, as illustrated in Figure 3-10. The remains of wooden structures, possibly related to the turnout, were found nearby, as shown in Figure 3-11.

3.3.3.2 Access

The site is adjacent to property owned by Ms. Ramona Buchholz (PIN 3814326004) and is located directly west of Apple Tree Road. It is accessible from East Highway 44.

3.3.3.3 Disablement

The structure was previously disabled.



Figure 3-10. Photograph Taken From in the Murphy Ditch Running Right to Left (Bank in Foreground Is Likely Former Turnout Location for Permit 2201-2).



Figure 3-11. Wooden Remains Found Near the Site for Permit 2201-2.

3.3.4 Permit 2399-2

This permit is for 52 acres and 0.75 cfs transferred from Mr. Wesley Wileman.

3.3.4.1 *Turnouts*

Two turnout locations were associated with this permit. Turnout A had been removed but was not properly backfilled, as illustrated in Figure 3-12. A meeting on site with Mr. Jeep Williams, watermaster for Murphy Ditch, in April 2014 verified that the backfill at that site has been repaired since the photograph was taken. Turnout B was a 12-inch steel canal gate, as shown in Figure 3-13.

3.3.4.2 *Access*

The Turnout A site is adjacent to property owned by Ms. Michelle Minnerath (PIN 3824200002) and is north of Morris Lane. Direct access to the location is through a field with no defined path. Turnout B was located in the west ditch of Radar Hill Road.



Figure 3-12. Backfill Material at the Former Location of Turnout A for Permit 2399-2. This area has since had material added to the bank.



Figure 3-13. Turnout B for Permit 2399-2 (The 12-Inch Steel Canal Gate was Located on the Far Bank Adjacent to the Concrete Culvert, and Murphy Ditch Runs Right to Left).

3.3.4.3 *Disablement*

The following are the procedures the City of Rapid City used in disabling the Permit 2399-2 turnouts:

- Turnout A was previously disabled
- Turnout B
 - Removed the canal gate from Murphy Ditch
 - Removed a portion of the pipe from the ditch bank and backfilled with compacted embankment material to match the existing bank cross section

Figure 3-14 and Figure 3-15 document removal of Turnout B.



Figure 3-14. Removal of Turnout B for Permit 2399-2 Located on Murphy Ditch on Radar Road.
Date 4/22/2014



Figure 3-15. Removal of Turnout B for Permit 2399-2 Located on Murphy Ditch on Radar Road.
Date 4/22/2014

3.3.5 Permit 2468-2

This permit is for 34.8 acres and 0.57 cfs transferred from Mr. Gordon Howie.

3.3.5.1 *Turnouts*

A single turnout for this permit was once located on a lateral ditch. The turnout ditch was identified, as shown in Figure 3-16, but no turnout structure exists.



Figure 3-16. Disabled Turnout Ditch for Permit 2468-2 Running From the Foreground to the Background Along the East Side of Radar Hill Road (The Lateral Ditch Is in the Left Foreground, Turning Left at the Visible Tree Root).

3.3.5.2 *Access*

The site is located on property owned by the South Dakota Department of Transportation (SD DOT) on the east side of Radar Hill Road, south of East Highway 44 (PIN 3824427001).

3.3.5.3 *Disablement*

The structure was previously disabled.

3.3.6 Permits 2142-2 and 2199-2

Permit 2142-2 is for 49 acres and 0.62 cfs transferred from Mr. Tyler. Permit 2199-2 is for 4 acres and 0.05 cfs transferred from Mr. Pelle.

3.3.6.1 Turnout

A single turnout location was used for these two permits. Upon inspection, the turnout ditch was identified and a short, disconnected segment of a 12-inch-diameter CMP was found lying in the ditch at the site, but an existing turnout structure was not evident. The concrete check structure for the turnout has been removed and sits on the ditch bank at the location illustrated in Figure 3-17.



Figure 3-17. Former Location of the Turnout for Permits 2142-2 and 2199-2 (The Concrete Check Structure and a Disconnected Corrugated Metal Pipe Segment Sit on the Far Bank, and Murphy Ditch Flows Right to Left).

3.3.6.2 Access

The site is adjacent to property owned by Mr. Randall Albers (PIN 3919100002) along Morris Lane. Direct access to the site is through the Albers property or the neighboring property owned by Melvin Ross (PIN 391900001), or from the top side of the Murphy Ditch through Mr. Jerry Olson's property.

3.3.6.3 Disablement

The structure was previously disabled and no further action was required, as per a meeting with SD DENR personnel in April 2014.

3.3.7 Permit 2512-2

This permit is for 145 acres and 1.84 cfs transferred from Ms. Marilyn Schroeder.

3.3.7.1 Turnouts

Three turnouts were associated with this permit. Turnout A was a 10-inch-diameter plastic pipe through the ditch bank but was capped and buried, as shown in Figure 3-18. Turnout B was a clay pipe 12-inches in diameter and 20 feet long through the ditch bank. The downstream end of this pipe was previously buried. Figure 3-19 is a photograph of a plywood headgate used for Turnout B. Turnout C was a 24-inch steel canal gate secured in a concrete junction box, as shown in Figure 3-20. The junction box is on a lateral ditch and is shared with an identical gate for a separate, active permit.



Figure 3-18. Pipe Used for Turnout A of Permit 2512-2 (Red Arrow).

3.3.7.2 Access

Turnouts A and B were located adjacent to property owned by the City of Rapid City (PIN 3919200001). Turnout C was located in the west right-of-way for Airport Road.

3.3.7.3 Disablement

The following are the procedures the City of Rapid City used in disabling the Permit 2512-2 turnouts:

- Turnout A was previously disabled and no further action was required per discussion with the Murphy Ditch watermaster and SD DENR personnel in April 2014.
- Turnout B was previously disabled and no further action was required per discussion with the Murphy Ditch watermaster and SD DENR personnel in April 2014.

- Turnout C
 - Removed the canal gate and disabled the pipe with a Class M-5 concrete plug.

Figure 3-21 and Figure 3-22 document disablement of the Turnout C structure.



Figure 3-19. Plywood Headgate for Turnout B of Permit 2512-2.



Figure 3-20. Junction Box With 24-Inch Canal Gate for Turnout C of Permit 2512-2 (Turnout C Shown With Red Arrow, Leading South).



Figure 3-21. Removal of Turnout C for Permit 2512-2 Located on Murphy Ditch on the East Side of Airport Road. Date 4/22/2014



Figure 3-22. Removal of Turnout C for Permit 2512-2 Located on Murphy Ditch on the East Side of Airport Road Going South to the Airport. Date 4/22/2014.

3.4 SOUTH SIDE DITCH

Ten South Side Ditch water rights have been transferred to the City of Rapid City, and 13 associated turnout locations were identified by using maps from the Rapid Valley Water Management Study [U.S. Bureau of Reclamation, 1990] and field investigations. The locations are described in Table 3-4 from upstream to downstream. Two vicinity maps of the turnouts are provided by Figures A-5 and A-6.

Table 3-4. South Side Ditch Turnout Information

Turnout	Longitude	Latitude	Adjacent Landowner
2234-2, 2397-2 & 2411-2	-103.115	44.017	Reinhold Eisenbraun (south) Randy Christensen (north)
2513-2	-103.100	44.018	City of Rapid City
2249-2 A	-103.095	44.017	City of Rapid City
2249-2 B	-103.091	44.015	City of Rapid City
2249-2 C	-103.091	44.015	City of Rapid City
2249-2 D	-103.084	44.011	City of Rapid City
2218-2	-103.071	44.010	Merlin Stromer
2415-2 A	-103.065	44.008	Matt Bowen
2415-2 B	-103.061	44.006	Matt Bowen
2415-2 C	-103.059	44.006	Matt Bowen
2415-2 D	-103.056	44.006	Matt Bowen
2217-2	-103.056	44.011	Leonard V. Keller Trust
2296-2 and 2360-2	-103.05	44.007	Donald Jundt

3.4.1 Permits 2234-2, 2397-2, and 2411-2

Permit 2234-2 is for 70 acres and 0.79 cfs, Permit 2397-2 is for 59.3 acres and 0.59 cfs, and Permit 2411-2 is for 3.6 acres and 0.04 cfs, all transferred from Mr. Reinhold Eisenbraun.

3.4.1.1 Turnouts

One turnout structure could be found in the described vicinity of these permits, located in Section 26, 1N 8E. The ditch was walked for approximately 1/2 mile to the west and the only turnout found is shown in Figure 3-23.

3.4.1.2 Access

The turnout for Permit 2234-2 is accessed off of Highway 44 by turning south on Anderson Rd. and continuing south past Southside Dr. approximately 3/8 mile to South Side Ditch. The site is approximately 1/4 mile west. The land north of the ditch, including the structure, is owned by Mr. Randy Christensen, and the land south of the ditch is owned by Mr. Eisenbraun.

3.4.1.3 Disablement

The structure was previously disabled, and no further action was required by SD DENR personnel.



Figure 3-23. Turnout for Permit 2234-2. Note the headwall sticking out of the snow just upstream from the culvert crossing on the left or north side of the ditch (red arrow). The ditch behind the headwall has been filled in.

3.4.2 Permit 2513-2

This permit is for 74.9 acres and 0.84 cfs transferred from Mr. Steen.

3.4.2.1 Turnouts

One turnout was associated with Permit 2513-2. The turnout was located straight south of the Rapid City Water Treatment Plant near the middle of section 25 on South Side Ditch. The turnout inlet structure was concrete with a 15-inch canal gate and PVC pipe going under the north bank to a weir box. On the north side of the weir box, 15-inch PVC pipe ran from the box to a vertical PVC air vent and then continued north. Figures 3-24, 3-25, and 3-26 show the structures associated with Permit 2513-2.



Figure 3-24. Inlet Structure, Weir Box, and Air Vent Associated With Turnout 2513-2.



Figure 3-25. Inlet Structure, Weir Box, and Air Vent Associated With Turnout 2513-2.



Figure 3-26. Inside the Weir Box for Turnout 2513-2. Note center wall weir and PVC pipe exiting the box.

3.4.2.2 Access

The site is located on land owned by the City of Rapid City and occupied by Mr. Bud Steen. The site may be accessed by turning off Highway 44 on Anderson Rd., then turning east on Southside Dr. to the treatment plant, then south on Redemption Road at the west edge of the treatment plant. At South Side Ditch, the site is located just east of the road.

3.4.2.3 Disablement

The following are the procedures the City of Rapid City used in disabling the turnout associated with Permit 2513-2:

- Cut existing turnout pipe 5 feet north from air vent
- Removed the air vent, inlet structure, and appurtenances.
- Backfilled with compacted embankment material

Figure 3-27 documents disablement of the structure.



Figure 3-27. Removal of Turnout for Permit 2513-2. Headgate removed, measurement box filled with dirt and pipeline air vent removed. Date: 10/29/2015

3.4.3 Permit 2249-2

This permit is for 105.5 acres and 1.19 cfs transferred from Mr. Weber.

3.4.3.1 *Turnouts*

Four turnouts were associated with Permit 2249-2. Turnout A was located 1,500 feet downstream from the Permit 2513-2 turnout site and consisted of a steel-framed headgate and concrete headwall. The structure is shown in Figure 3-28.

Turnout B was located upstream from a culvert crossing, shown in Figure 3-29. This culvert was used as a check structure for Turnout B and is located just west of the line between Section 25, 1N 8E and Section 30, 1N 9E. Figure 3-30 shows the outlet end of the Turnout B pipe.

Turnout C consisted of a wooden structure on the north bank of South Side Ditch, just upstream from a second culvert crossing, shown in Figure 3-31. The Turnout C site is shown in Figure 3-32 and located just east of the line between Section 25, 1N 8E and Section 30, 1N 9E.

Turnout D was located in the SW1/4 of Section 30 T1N R9E and consisted of a steel frame canal gate and division box. The gate is shown in Figure 3-33 and the division box is shown in Figure 3-34.



Figure 3-28. Turnout A structure Associated with Permit 2249-2.



Figure 3-29. Culvert Crossing Used as a Check for Turnout B Associated with Permit 2249-2.



Figure 3-30. Outlet end of Turnout B pipe (Red Arrow). (Looking South, Towards South Side Ditch).



Figure 3-31. Second Culvert Crossing, Used as Check for Turnout C Associated With Permit 2249-2.



Figure 3-32. Wooden Structure (Red Arrow) for Turnout C Associated With Permit 2249-2. This structure is immediately upstream of the culvert crossing in Figure 3-31, on the north bank.



Figure 3-33. Metal Framed Canal Gate of Turnout D Associated With Permit 2249-2.



Figure 3-34. Turnout D Division Box Associated With Permit 2249-2. Date 10/30/2015.

3.4.3.2 Access

The turnout sites may be accessed by turning south from Highway 44 on Anderson Rd., then east on Southside Dr. to the treatment plant. The sites are adjacent to property owned by the City of Rapid City, southeast from the treatment plant.

3.4.3.3 Disablement

The following are the procedures the City of Rapid City used in disabling turnouts A, B, C, and D associated with Permit 2249-2:

- Turnout A
 - Removed turnout head gate
 - Placed concrete plug in turnout pipe
 - Filled turnout ditch with compacted material
- Turnout B
 - Removed pipe and structure
 - Backfilled with compacted embankment material to match existing ditch cross section
- Turnout C
 - Removed the wooden structure
 - Backfilled with compacted embankment material to match existing ditch cross section
- Turnout B
 - Removed the steel framed canal gate and structure
 - Backfilled with compacted embankment material to match the existing ditch cross section

Figures 3-35 through Figure 3-40 document the disablement of these four turnouts.



Figure 3-35. Turnout A Associated with Permit 2249-2. Headgate removed, turnout pipe filled with concrete, and outlet filled in. Date 10/29/2015



Figure 3-36. Turnout B Associated with Permit 2249-2. The old turnout structure has been removed. Date 10/29/2015.



Figure 3-37. Turnout C Associated With Permit 2249-2. Removed turnout structure. Date 10/29/2015.



Figure 3-38. Turnout D Associated With Permit 2249-2, removed by the City. Date 10/30/2015



Figure 3-39. Turnout D Associated With Permit 2249-2. Turnout being backfilled. Date 10/30/2015.



Figure 3-40. Turnout D Associated With Permit 2249-2. Photo of the division box being removed and backfilled by the City. Date 10/30/2015.

3.4.4 Permit 2218-2

This permit is for 192.5 acres and 2.16 cfs transferred from Mr. Merlin Stromer.

3.4.4.1 Turnouts

One turnout was associated with Permit 2218-2. The turnout consisted of a pipe inlet, a metal valve well, and an air vent immediately downstream of the valve well, shown in Figure 3-41.

3.4.4.2 Access

The turnout site for Permit 2218-2 is located turning south on Airport Road from Highway 44 and travelling about 0.7 miles to the driveway into Mr. Merlin Stromer's property, then another 0.3 miles south through the Stromer property to South Side Ditch.

3.4.4.3 Disablement

A discussion with Mr. Merlin Stromer in April of 2014 was that after Mr. Stromer sold his water rights to the city, he hired a contractor to disable the turnout. No water can be or has been delivered through the turnout since the water right transfer. Discussion with SD DENR was that this would satisfy abandonment requirements and the turnout would not be disturbed since it has been disabled.



Figure 3-41. Turnout for Permit 2218-2. This turnout has been disabled and will not be disturbed.

3.4.5 Permit 2415-2

This permit is for 146 acres and 1.64 cfs transferred from Mr. Gordon Howie.

3.4.5.1 Turnouts

Four turnouts were associated with Permit 2415-2, designated Turnout A through Turnout D (upstream to downstream on the South Side Ditch). Turnout A consisted of a gate structure composed of timber and is shown in Figure 3-42. A wooden flume was used as a check structure for Turnout A, located approximately 35 feet downstream and shown in Figure 3-43.

Turnout B was also a gate structure composed of timbers. As shown in Figure 3-44, a wooden flume was located next to Turnout B (Turnout B indicated by red arrow) and was used as a check structure.

Turnout C consisted of a wooden gate structure supported by concrete abutments. Figure 3-45 displays Turnout C (red arrow) along with a wooden weir check structure located downstream from Turnout C. The ditch from Turnout C led to a 24-inch-diameter concrete pipe that was used to convey diverted water, shown in Figure 3-46.

Turnout D consisted of a concrete flume/check structure, shown in Figure 3-47. The structure included outlets on both the north and south walls, with timbers used to convey diverted water from the structure. Figures 3-48 and 3-49 show the north and south outlets, respectively.



Figure 3-42. Turnout A for Permit 2415-2. The turnout is composed of timber.



Figure 3-43. Wooden Flume Used as a Check for Turnout A of Permit 2415-2.



Figure 3-44. Turnout B (Red Arrow) and the Flume Associated with Permit 2415-2.



Figure 3-45. Turnout C (Red Arrow) and the Wooden Weir Associated With Permit 2415-2.



Figure 3-46. Turnout C and the 24-Inch-Diameter Concrete Pipe (Red Arrow) Associated With Permit 2415-2.



Figure 3-47. Concrete Flume/Check Structure for Turnout D Associated With Permit 2415-2 (Looking Downstream).



Figure 3-48. North Flume/Check Structure Wall and Outlet for Turnout D Associated With Permit 2415-2.



Figure 3-49. South Flume/Check Structure Wall and Outlet for Turnout D Associated With Permit 2415-2.

3.4.5.2 Access

Turnouts A through D are adjacent to property owned by Mr. Matt Bowen (PINs 3932100003 and 3932200001). The sites are accessed by travelling approximately 1/2 mile south on Bradsky Road from Highway 44 to a private drive just north of the South Side Ditch crossing.

- The Turnout A and Turnout B sites are accessed by travelling west on the private drive for approximately 1/2 mile from Bradsky Road, crossing South Side Ditch, then leaving the private drive and following South Side Ditch along its south bank.
- The Turnout C and Turnout D sites are accessed from the private drive on the north bank of South Side Ditch, approximately 1/2 mile and 1/4 mile west of Bradsky Road, respectively.

3.4.5.3 Disablement

The following are the procedures the City of Rapid City used in disabling the four turnouts associated with Permit 2415-2.

- Turnout A
 - o Removed the timber turnout and the wooden flume structure
 - o Backfilled with compacted embankment material to match existing ditch cross section

- Turnout B
 - o Removed the timber turnout and the wooden flume structure
 - o Backfilled with compacted embankment material to match existing ditch cross section
- Turnout C
 - o Removed the wooden gate turnout structure, concrete abutments, and wooden weir check structure from South Side Ditch
 - o Backfilled ditch banks with compacted embankment material to match existing ditch cross section
 - o Backfilled existing turnout ditch from South Side Ditch to existing concrete pipe with compacted material to match existing adjacent grade
- Turnout D
 - o Removed the concrete inlets and wooden turnouts from the north and south banks.
 - o Backfilled with compacted embankment material to match existing ditch cross section.

Figures 3-50 through 3-57 document the disablement of the structures associated with the four turnouts.



Figure 3-50. Removal of Turnout A associated with Permit 2415-2. Date 7/30/2015



Figure 3-51. Turnout A Wooden Flume Structure Associated With Permit 2415-2, removed. Date 7/30/2015



Figure 3-52. Turnout B Associated With Permit 2415-2. Timber Turnout Removed. Date 7/30/2015.



Figure 3-53. Turnout B Associated With Permit 2415-2. Wooden Flume Structure Removed. Date 7/30/2015.



Figure 3-54. Turnout C Associated With Permit 2415-2 Timber Gate Turnout Structure, Concrete Abutments, and Timber Weir Check Structure Removed. Date 7/30/2015.



Figure 3-55. Turnout C Associated With Permit 2415-2. Turnout ditch filled in. Date 7/30/2015.



Figure 3-56. Turnout D Associated With Permit 2415-2. Headgate removed and concrete plug put in place for south turnout. Date 7/30/2015



Figure 3-57. Turnout D Associated With Permit 2415-2. Headgate removed and concrete plug put in place for north turnout. Date 7/30/2015.

3.4.6 Permit 2217-2

This permit is for 29.2 acres and 0.33 cfs transferred from Mr. Leonard Keller.

3.4.6.1 *Turnouts*

No turnouts associated with this permit were located.

3.4.6.2 *Access*

The site is along Back Country Trail off of Bradsky Road.

3.4.6.3 *Disablement*

This turnout was previously disabled.

3.4.7 Permit 2296-2 and Permit 2360-2

Permit 2296-2 is for 253.4 acres and 2.85 cfs transferred from Mr. Donald Jundt. Permit 2360-2 is for 32.6 acres and 0.37 cfs transferred from Mr. Soetaert.

3.4.7.1 Turnouts

The turnout structure associated with transferred Permit 2296-2 and transferred Permit 2360-2, shown in Figure 3-58, also serves the active Permit 2526-2 for 0.71 cfs currently serving 50 acres of irrigated land owned by Mr. Donald Jundt. The turnout will not be disabled.



Figure 3-58. Turnout Associated With Permit 2296-2 and Permit 2360-2, Currently Serving an Active Permit for 50 Acres Irrigated by Mr. Donald Jundt.

3.4.7.2 Access

The turnout for Permit 2296-2 and Permit 2360-2 is located approximately 1/2 mile south of Highway 44 on the east side of Bradsky Road at the South Side Ditch. All associated structures are on property owned by Mr. Donald Jundt.

3.4.7.3 Disablement

No disablement was required.

4.0 PERMITS AND REGULATIONS

4.1 CLEAN WATER ACT SECTION 404 PERMIT

According to the U.S. Army Corps of Engineers [2007]:

“Under Section 404(f)(1)(C) of the CWA (see also 33 CFR 323.4(a)(3) and 40 CFR 232.3(c)(3)), discharges of dredged or fill material associated with construction or maintenance of irrigation ditches, or the maintenance (but not construction) of drainage ditches, are not prohibited by or otherwise subject to regulation under Section 404 of the CWA (i.e., these activities are exempt from the need to obtain a Section 404 Permit from the Department of the Army (DA)). Discharges of dredged or fill material associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant to and functionally related to irrigation ditches are included in the exemption for irrigation ditches.”

A 404 Permit was not required.

4.2 CLEAN WATER ACT SECTION 402 PERMIT

According to the South Dakota Department of Environment and Natural Resources [2010] Section 2.2.2:

“Storm water discharges from operators disturbing less than one acre that are part of a larger common plan of development or sale that, combined, disturb one or more acres.”

The combination of ground area disturbed by the combination of all disablements associated with this project did not exceed 1 acre.

A 402 Permit was not required.

4.3 FLOODPLAIN DEVELOPMENT PERMITS

After reviewing both the Pennington County and Rapid City Flood Insurance Rate Maps, it was determined that none of the disablement sites lie within the 100-year floodplain.

Floodplain permits were not required.

4.4 HISTORIC PRESERVATION

As required by State Preservation Law (South Dakota Codified Law (SDCL) 1-19A-11.1), the Office of History was given notice and an opportunity to investigate and comment on this proposed project. The Office of History concluded that the irrigation ditches in Rapid Valley are listed on neither the State nor the National Register of Historic Places. Additionally, because federal funding will not be used for this proposed project, Section 106 of the National Historic Preservation Act did not apply.

5.0 REFERENCES

City of Rapid City and Pennington County, 2012. *RapidMap*, retrieved September 19, 2012, from <http://www.rcgov.org/GIS/rapidmap.html>

South Dakota Department of Environment and Natural Resources, 2012. *South Dakota Water Rights*, retrieved September 19, 2012, from <http://denr.sd.gov/des/wr/dbwrsearch.aspx>

South Dakota Department of Environment and Natural Resources, 2010. *General Permit for Storm Water Discharges Associated With Construction Activities*, prepared by the South Dakota Department of Environment and Natural Resources, Pierre, SD.

Stroup, D. E., 2005. *Rapid City – Rapid Valley Water Rights Transfers*, internal memorandum from D. E. Stroup, South Dakota Department of Environment and Natural Resources, Water Rights Program, Pierre, SD, to G. Eberle, South Dakota Department of Environment and Natural Resources, Water Rights Program, Pierre, SD, September 30.

U.S. Army Corps of Engineers, 1990. *Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches under Section 404 of Clean Water Act*, Regulatory Guidance Letter, prepared by U.S. Army Corps of Engineers, Washington, DC, July 4.

U.S. Bureau of Reclamation, 1990. *Rapid Valley Water Management Study*, prepared by U.S. Bureau of Reclamation, Newell, South Dakota.

APPENDIX A

TURNOUT VICINITY MAPS

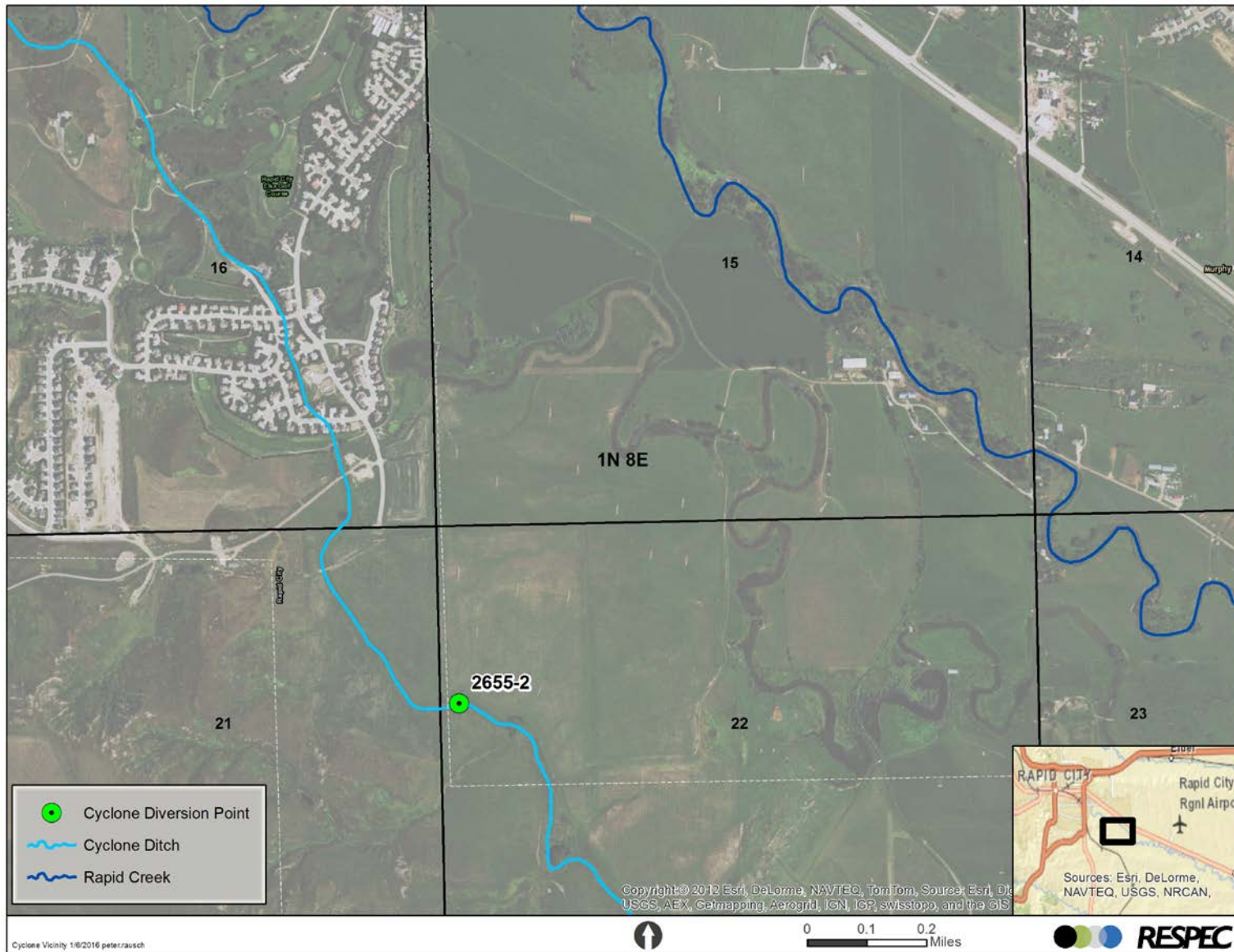


Figure A-1. Cyclone Ditch Turnout Vicinity Map.



Figure A-2. Hawthorne Ditch Turnout Vicinity Map.

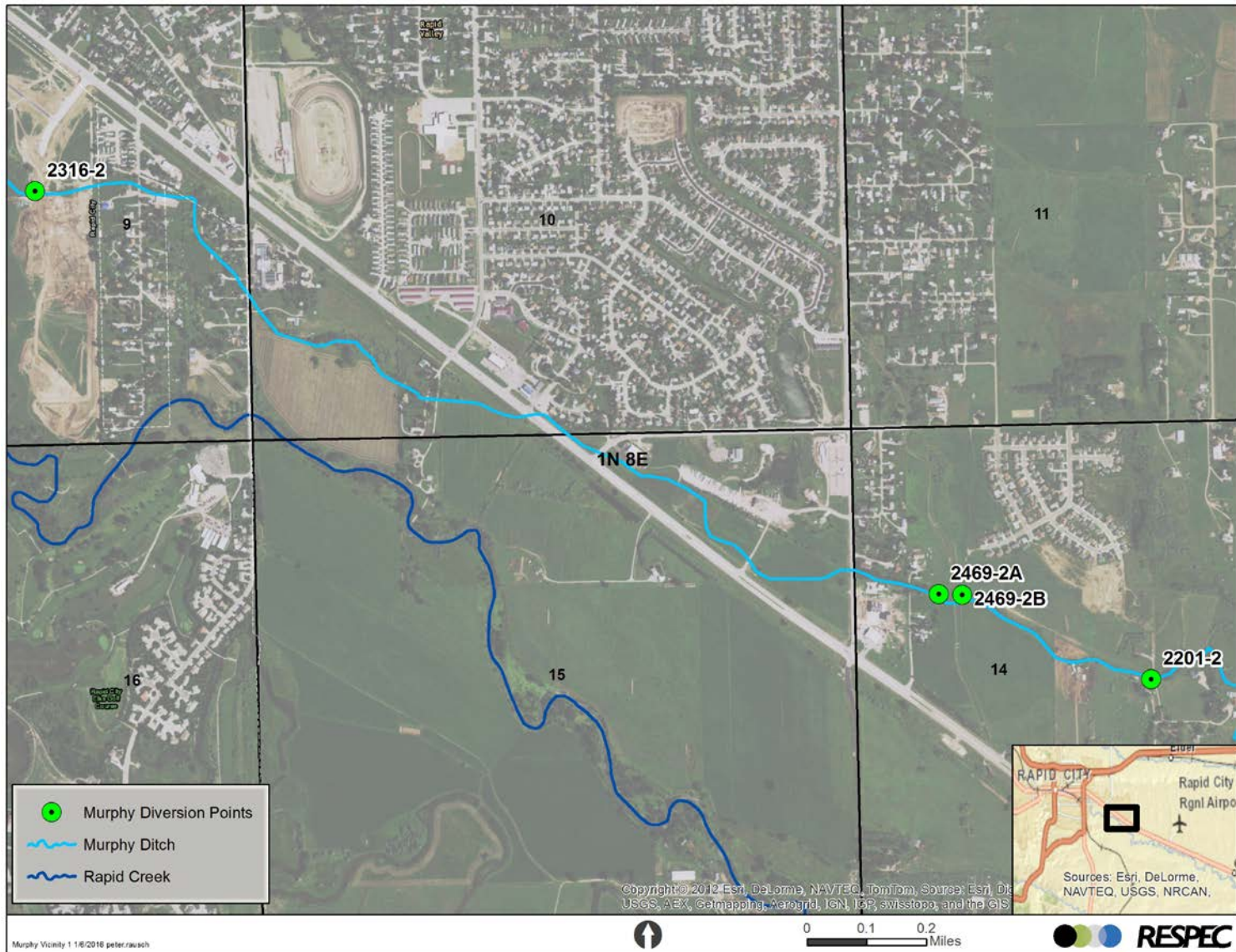


Figure A-3. Murphy Ditch Turnout Vicinity Map (1 of 2).

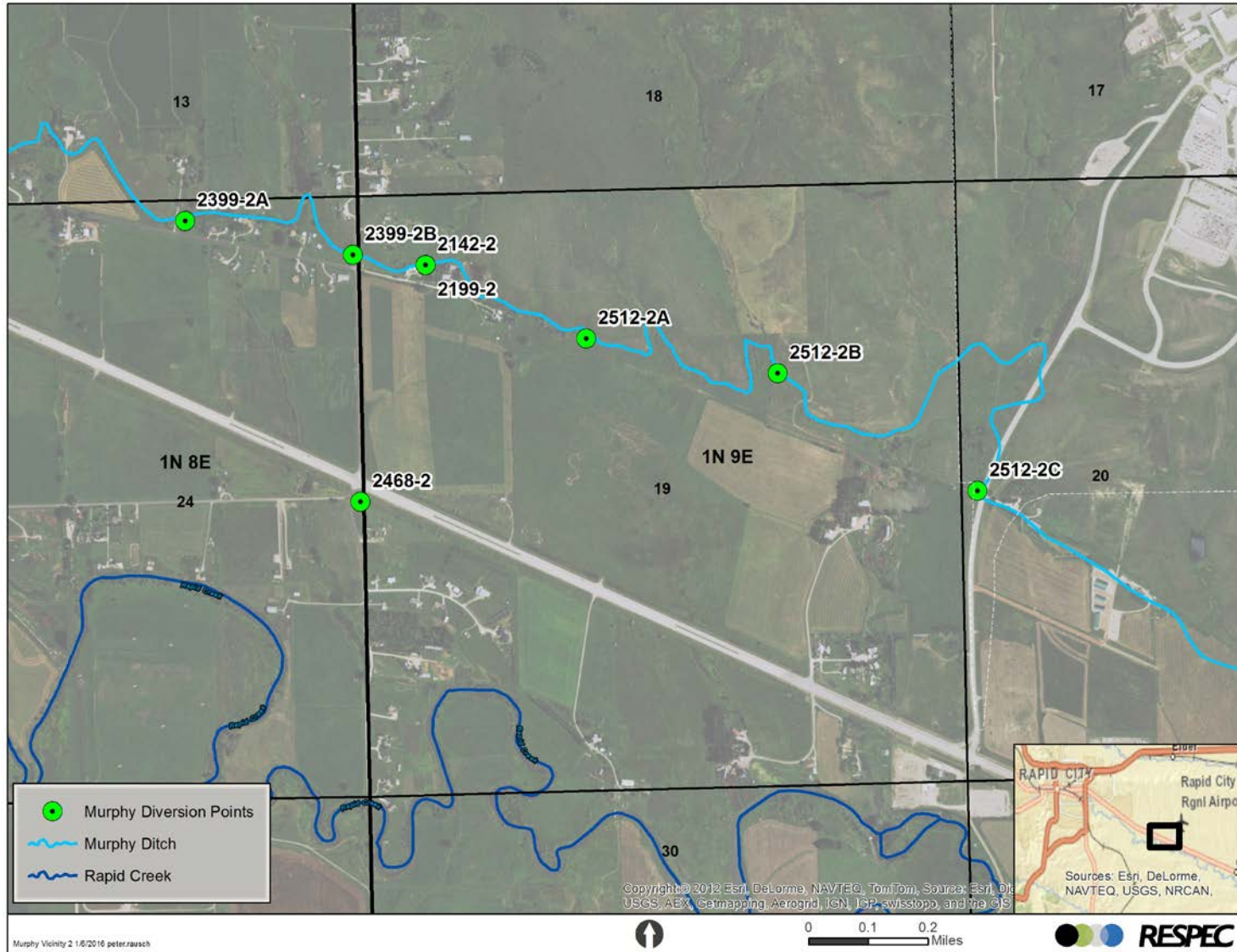


Figure A-4. Murphy Ditch Turnout Vicinity Map (2 of 2).



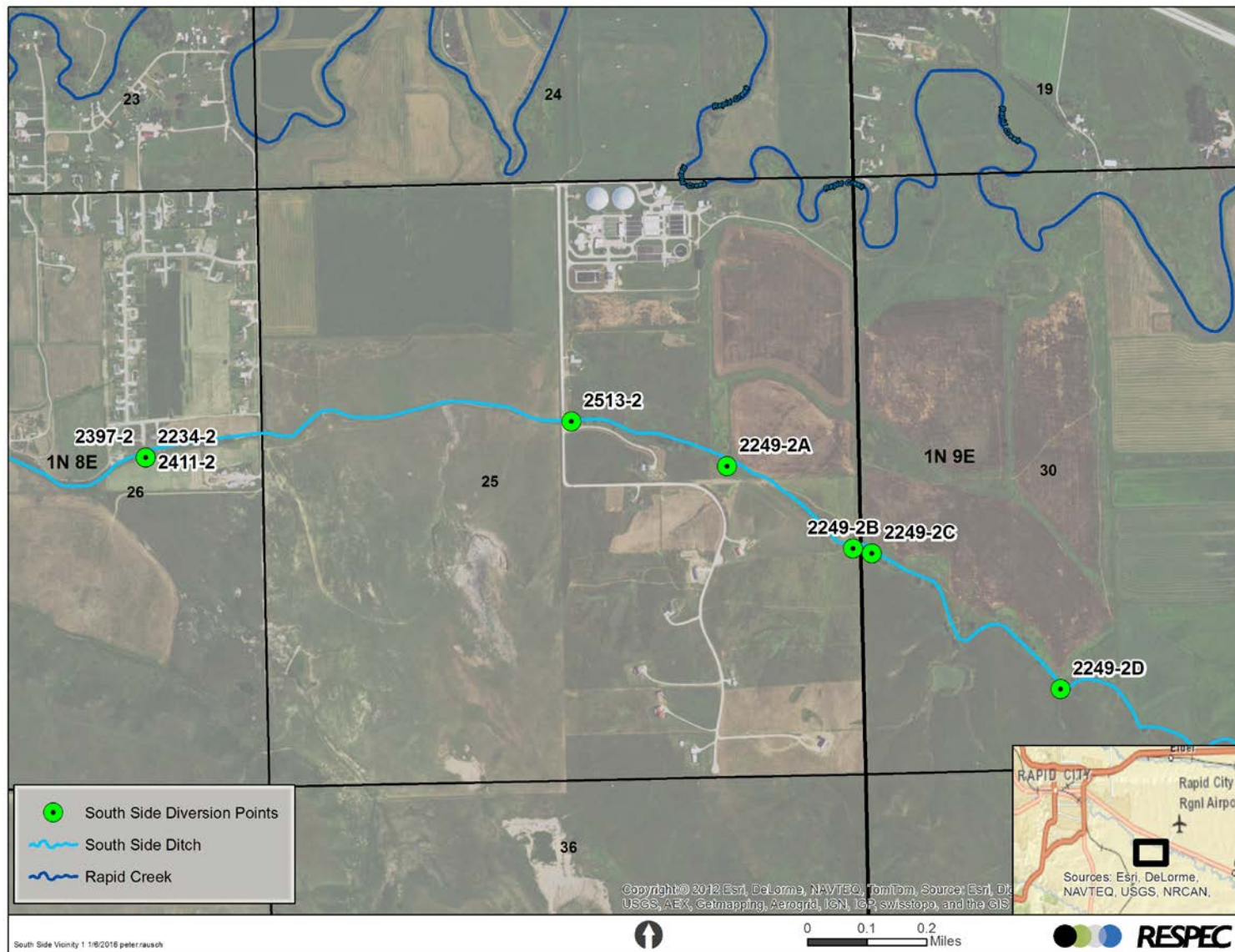


Figure A-5. South Side Ditch Turnout Vicinity Map (1 of 2).

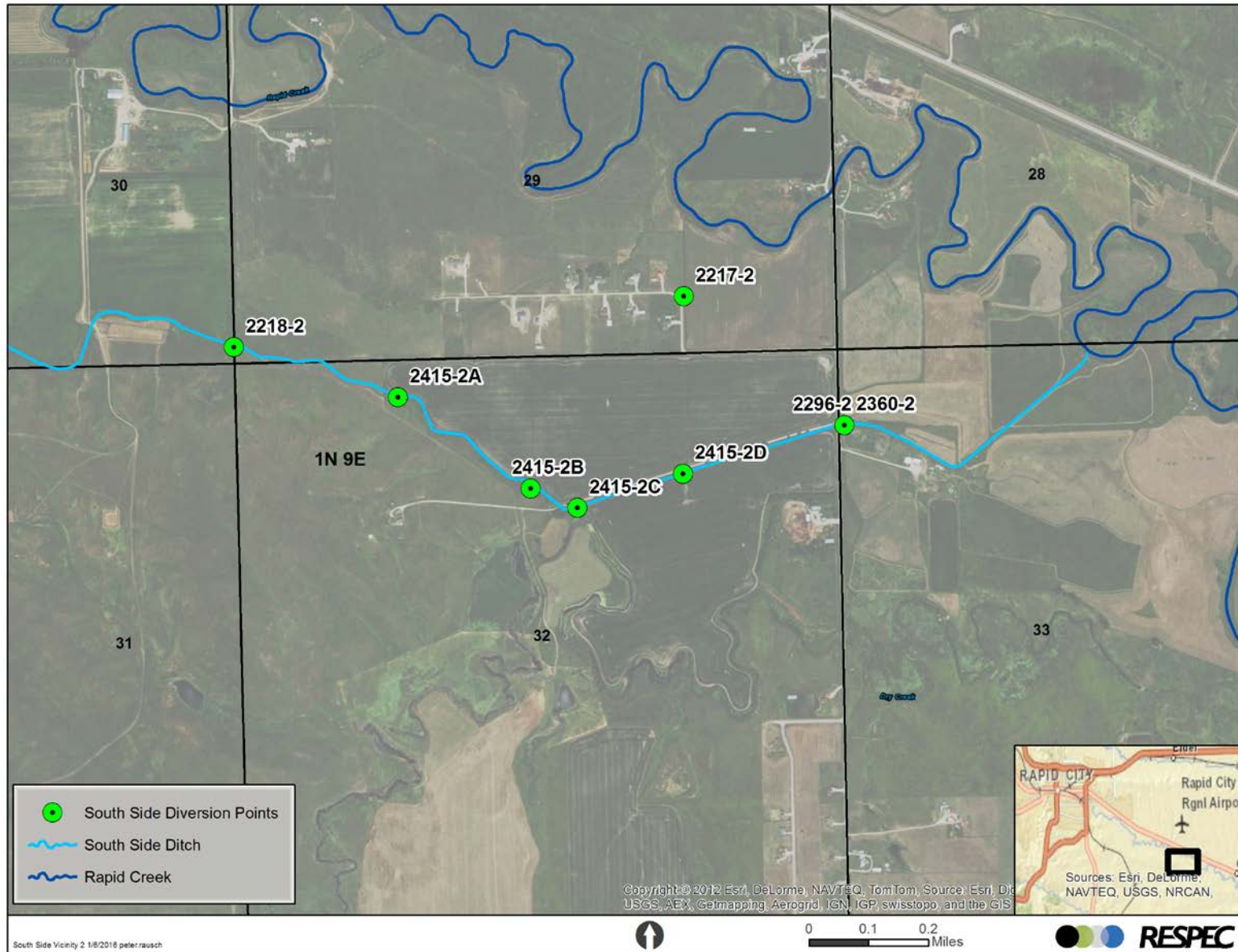


Figure A-6. South Side Ditch Turnout Vicinity Map (2 of 2)