

41G-0353-R-2019

December 9, 2020

Montana Water Court

**MICHAEL J. L. CUSICK, ESQ.**  
**JEREMY A. MICHAEL, ESQ.**  
CUSICK, FARVE, MATTICK & REFLING, P.C.  
P.O. Box 1288  
Bozeman, MT 59771-1288  
Ph: (406) 587-5511  
Fax: (406) 587-9079  
Email: office@cmrlawmt.com  
*Attorneys for Claimant/Objector*  
*SRI River Holdings LLC*

**IN THE WATER COURT OF THE STATE OF MONTANA  
UPPER MISSOURI DIVISION  
JEFFERSON RIVER (BASIN 41G)  
PRELIMINARY DECREE**

CLAIMANT: SRI River Holdings LLC

OBJECTORS: SRI River Holdings LLC; United States of  
America (USDA Forest Service)

NOTICE OF INTENT TO APPEAR: United States of America  
(Bureau of Reclamation)

**CASE 41G-0353-R-2019**

41G 195427-00

41G 196917-00

**SRI RIVER HOLDINGS LLC'S UNOPPOSED MOTION TO AMEND  
WATER RIGHT CLAIM 41G 195427-00**

COMES NOW, Claimant and Objector SRI River Holdings LLC ("SRI"), and pursuant to Rule 10, W.R.Adj.R., Rule 19, W.R.Adj.R., and § 85-2-233(6), MCA, hereby submits this Unopposed Motion to Amend Water Right Claim 41G 195427-00 ("Motion") to correct the point of diversion, source, and flow rate. SRI moves the Water Court for an order granting leave of court for SRI to amend water right claim 41G 195427-00, as set forth below and in the Proposed Abstract attached to this Motion as **Exhibit A**, to more accurately describe the historical use of this water right.

The specific grounds for this Motion are further described below.

## **BACKGROUND**

Water right claim 41G 195427-00 was consolidated into Water Court Case 41G-R353.<sup>1</sup> The proceedings in this Case involve this water right claim and water right claim 41G 196917-00, which is also owned by SRI.

SRI objected to the flow rate of water right claim 41G 195427-00 because it was reduced by DNRC during claims examination and the reduced flow rate does not accurately reflect historical beneficial use. The United States of America (Bureau of Reclamation) (“BOR”) filed a notice of intent to appear to water right claim 41G 195427-00 noting that there were no issue remarks on this water right claim and SRI had filed its own objection. Upon further investigation into the flow rate for water right claim 41G 195427-00, SRI has determined that the point of diversion and source also need to be amended to accurately reflect historical beneficial use. These amendments will resolve SRI’s objection to water right claim 41G 195427-00.

Rule 10, W.R.Adj.R. provides the claimants may file motions to amend their claims specifying the requested amendment and the grounds for such amendment, and that the Water Court will determine any additional notice of the amendment required pursuant to § 85-2-233 (6), MCA.

Section 85-2-233(6), MCA, provides that:

- (6)(a) After the issuance of a temporary preliminary decree or preliminary decree, notice must be published once a week for three consecutive weeks in two newspapers of general circulation in the basin where the decree was issued for:
  - (i) a motion to amend a statement of claim that may adversely affect other water rights...

---

<sup>1</sup> The original case number was “41G-R353” when it was consolidated in November 2019, but was subsequently changed by the Water Court to “41G-0353-R-2019” to reflect the Water Court’s new case management system protocol.

\* \* \* \*

(b) The notice must specify that any response or objection to the proposed amendment must be filed within 45 days of the date of the last notice.

(c) The water judge may order any additional notice of the motion as the water judge considers necessary.

(d) The costs of the notice required pursuant to this subsection must be borne by the moving party.

Pursuant to § 85-2-233(6), MCA, notice by publication is required for any motion to amend that may adversely affect other water rights. Unless the Water Court determines SRI's Motion may not adversely affect other water rights, publication of the Motion is required pursuant to § 85-2-233(6), MCA, and additional notice may be ordered if the water judge deems it necessary. As the source and point of diversion for water right claim 41G 195427-00 were not on the objection list for the Basin 41G Preliminary Decree, other water users in Basin 41G were not given notice these elements might be changed during the adjudication process. Therefore, an order for publication of SRI's Motion would provide other water users in Basin 41G with notice of the proposed amendments to claim 41G 195427-00 and an opportunity to object.

#### **AMENDMENT TO POINT OF DIVERSION, SOURCE, AND FLOW RATE**

The specific purpose of the requested amendments is to clarify and correct the point of diversion, source, and flow rate of water right claim 41G 195427-00 so they more accurately reflect the historical beneficial use of this water right claim. SRI is not requesting any changes to other elements of this water right claim; all other elements should remain as they appeared in the Basin 41G Preliminary Decree. SRI notes that the place of use and maximum acres does not need any corrections or changes. The place of use and acres have been examined and confirmed by the DNRC and SRI has

not objected to these elements nor does SRI believe they are inaccurate. This amendment is to clarify that the irrigation water that has historically been used under water right claim 41G 195427-00 does not get to the place of use from the source and point of diversion originally claimed by the original claimants, Gary J. Boldt and Tana L. Boldt. The amended point of diversion, source, and flow rate should be as follows:

Flow Rate: **14.30 CFS** ~~9.47 CFS~~

Source Name: **DONCASTER (LOTT) SLOUGH** ~~JEFFERSON RIVER~~

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

<u>ID</u>	<u>Gov't Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
<del>1</del>		<del>NESWSW</del>	<del>15</del>	<del>3S</del>	<del>6W</del>	<del>MADISON</del>
<b>1</b>		<b>SWNESE</b>	<b>15</b>	<b>3S</b>	<b>6W</b>	<b>MADISON</b>

#### 1. Point of Diversion/Source:

The claimed point of diversion for water right claim 41G 195427-00, as it appeared in the Basin 41G Preliminary Decree, is on the Jefferson River in the NESWSW of Section 15, T3S, R6W, Madison County. The claimed place of use is located in Section 10, T3S, R6W, Madison County, on property that was previously owned by Willard and Beverly Rehm. See Affidavit of Richard Bayers, attached and incorporated herein as **Exhibit B**. The place of use lies generally west of State Highway 41 in the N2S2 and S2N2 of Section 10, T3S, R6W, Madison County and is located north of and is irrigated from a dike and ditch system in the S2 of Section 10, T3S, R6W, Madison County. *Id.*

The ditch system for the place of use in Section 10 diverts water from what is known as Doncaster (Lott) Slough after it crosses under State Highway 41 in the SE of

Section 15; the ditch then runs north along the western edge of the Highway 41 to where it makes a right angle turned to the west in the S2 of Section 10. *Id.*

Doncaster (Lott) Slough originates east of Twin Bridges in Section 27, T3S, R6W, Madison County and has been referred to as both “Lott Slough” and “Doncaster Slough.” See Exhibit B. Doncaster (Lott) Slough is crossed by Bayers Lane and then the Bayers Ditch in the SW¼ of Section 23, near the present site of the Twin Bridges sewage lagoon as it flows north from Section 27. Doncaster (Lott) Slough eventually flows under State Highway 41 in the SE¼ of Section 15, T3S, R6W, Madison County, as depicted on the map from the 1954 Madison County Water Resources Survey. *Id.*

The ditch that diverts water from Doncaster (Lott) Slough on the west side of Highway 41 runs north along the west side of the highway right-of-way for approximately one mile. This ditch then turns at a 90° angle and heads west toward the Jefferson River. The location of this ditch is shown on the aerial photo images attached as Exhibits B and C to the Affidavit of Richard Bayers.

The ditch from Doncaster (Lott) Slough was primarily used by the Bayers Ranch as a drain ditch, but it was also used as an irrigation ditch by neighbors of the Bayers Ranch on the west side of State Highway 41. Richard Bayers recalls that their neighbors Gary and Tana Boldt irrigated lands on the west side of State Highway 41 from this ditch.<sup>2</sup> *Id.* Although Richard Bayers does not specifically know when this ditch was constructed, to the best of his knowledge and recollection the ditch has existed for many years and was in existence prior to July 1, 1973. Mr. Bayers recalls the ditch was in existence while he was still attending high school in Twin Bridges; he graduated from Twin Bridges High School in May of 1973. *Id.*

---

<sup>2</sup> The Boldts filed the original statement of claim for water right 41G 195427-00 in 1982.

Based on the foregoing, the claimed point of diversion and source for water right claim 41G 195427-00 are incorrect as claimed and SRI requests the source be amended from the Jefferson River to Doncaster (Lott) Slough, and correspondingly, that the point of diversion be amended from the NESWSW, Section 15, T3S, R6W to the SWNESE, Section 15, T3S R6W.

## **2. Flow Rate:**

The flow rate is the rate at which water has been diverted, impounded, or withdrawn from the source for beneficial use. Rule 2(a)(27), W.R.C.E.R. The amount of water actually needed for beneficial use within the appropriation will be the *basis, the measure and the limit of the right*. *McDonald v. State*, 220 Mont. 519, 532, 722 P.2d 598, 606, (1986) (Emphasis added).

The original statement of claim for water right claim 41G 195427-00 listed a flow rate of 615 CFS. The flow rate for water right claim 41G 195427-00 has since been reduced by the DNRC twice. First, the flow rate was reduced by DNRC to 13.64 CFS during claims examination for the Basin 41G Temporary Preliminary Decree in the late 1980's. Water right claim 41G 195427-00 appeared in the Basin 41G Temporary Preliminary Decree with this 13.64 CFS flow rate. Second, DNRC further reduced the flow rate of water right claim 41G 195427-00 again to 9.47 CFS during claims examination for the Basin 41G Preliminary Decree based on DNRC guidelines. SRI objected to the flow rate reduction during the objection period for Basin 41G Preliminary as the reduced flow rate does not accurately reflect historical beneficial use.

Jeremy May, P.E., of Genesis Engineering, Inc. was hired by SRI to review and investigate the culvert within the Doncaster (Lott) Slough ditch to determine its capacity

as part of SRI's investigation into the correct historical flow rate water right claim 41G 195427-00. See Affidavit of Jeremy May, P.E., attached and incorporated herein as **Exhibit C**.

The culvert is located under a driveway to the west of State Highway 41 in the NE of Section 15, T3S, R6W and is 90 feet long reinforced concrete pipe. *Id.* There is a stain in the pipe and two methods of calculation were performed; when the upstream water was at a level equal with the top of the pipe and when the water matched the stain in the pipe. *Id.* The flow analysis based on the staining utilized the water staining on the outlet of the pipe to determine tailwater elevation. Mr. May calculated that the modeled pipe capacity using an assumed full pipe is equal to 30.9 CFS and the modeled pipe capacity using the water stains in the pipe is equal to 14.3 CFS. This result indicates that roughly 14 CFS has passed through the pipe often enough to create the defined staining on the inside of the pipe. The water stain model is the conservative estimate for determining the pipe capacity according to Mr. May. *Id.* Further, the culvert is the limiting factor in the ditch system that carries water from Doncaster (Lott) Slough to the place of use in Section 10, T3S, R6W, Madison County. Based on Mr. May's affidavit, the capacity of the culvert is more than sufficient to divert and convey the requested 14.3 CFS flow rate and SRI requests the flow rate be amended as the true basis, measure, and limit of water right claim 41G 195427-00.

### **RELIEF REQUESTED**

Pursuant to Rule 10, W.R.Adj.R., SRI respectfully requests the Water Court determine the notice required for this Motion pursuant to § 85-2-233(6), MCA, and to issue an appropriate order for SRI to provide notice of its Motion by publication or

otherwise pursuant to the statute as required. After publication of any such notice, SRI respectfully requests the Water Court issue an order granting its Motion.

In accordance with the attached Affidavits and accompanying exhibits, the point of diversion, source, and flow rate for water right claim 41G 195427-00 should be amended and decreed as follows:

Flow Rate: **14.30 CFS** ~~9.47 CFS~~

Source Name: **DONCASTER (LOTT) SLOUGH** ~~JEFFERSON RIVER~~

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

<u>ID</u>	<u>Gov't Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
<del>1</del>		<del>NESWSW</del>	<del>15</del>	<del>3S</del>	<del>6W</del>	<del>MADISON</del>
<b>1</b>		<b>SWNESE</b>	<b>15</b>	<b>3S</b>	<b>6W</b>	<b>MADISON</b>

See proposed abstract for water right claim 41G 195427-00 that is attached and incorporated herein as **Exhibit A**.

### **CONCLUSION**

SRI respectfully requests the Water Court issue an order for SRI to provide notice of its Motion by publication or otherwise pursuant to statute. After publication of such notice, SRI respectfully requests the Water Court grant its Motion to amend the preliminary decree for water right claim 41G 195427-00 in accordance with the information provided herein to more accurately describe the historical use of water rights claim 41G 195427-00.

SRI reports that counsel for United States of America (USDA Forest Service) and United States of America (Bureau of Reclamation) has been contacted regarding this

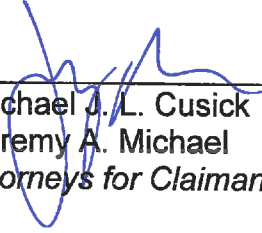


motion and that neither the United States of America (USDA Forest Service) nor the United States of America (Bureau of Reclamation) oppose the motion.

RESPECTFULLY SUBMITTED this 9<sup>th</sup> day of December, 2020.

CUSICK, FARVE, MATTICK & REFLING, P.C.

By

  
Michael J. L. Cusick  
Jeremy A. Michael  
*Attorneys for Claimant SRI*

### CERTIFICATE OF SERVICE

This is to certify that the above and foregoing document was duly served upon the opposing counsel or parties of record at the below addresses and in the manner indicated on this 9 day of December, 2020.

Jennifer A. Najjar  
U.S. Dept. of Justice – ENRD-NRS  
P.O. Box 7611  
Washington, D.C. 20044-7611  
*Attorneys for USA*

<input type="checkbox"/>	U.S. Mail
<input type="checkbox"/>	Facsimile
<input type="checkbox"/>	Hand Delivery
<input checked="" type="checkbox"/>	Email: <a href="mailto:jennifer.najjar@usdoj.gov">jennifer.najjar@usdoj.gov</a> <a href="mailto:MontanaBasins.ENRD@usdoj.gov">MontanaBasins.ENRD@usdoj.gov</a>

  
for Cusick, Farve, Mattick & Refling, P.C.

## PROPOSED ABSTRACT

Water Right No.: 41G 195427-00 STATEMENT OF CLAIM

Version: 5 – REEXAMINED  
Status: ACTIVE

Owners: SRI RIVER HOLDINGS LLC  
% JAIME WOOD  
PO BOX 447  
TWIN BRIDGES, MT 59754-0447

Priority Date: MARCH 5, 1902

Type of Historical Right: FILED

Purpose(uses): IRRIGATION

Irrigation Type: FLOOD

\*Flow Rate: 14.30 CFS 9.47 CFS

~~THE FLOW RATE OF THIS CLAIM HAS BEEN REDUCED TO 17 GPM PER ACRE. THE FLOW RATE MAY BE CONTESTED BY PROPER OBJECTION.~~

\*Volume: THE TOTAL VOLUME OF THIS WATER RIGHT SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE.

Climatic Area: 4- MODERATELY LOW

\*Maximum Acres: 250.00

\*Source Name: DONCASTER (LOTT) SLOUGH JEFFERSON RIVER  
Source Type: SURFACE WATER

\*Point of Diversion and Means of Diversion:

<u>ID</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1		SWNESE NESWSW	15	3S	6W	MADISON

Period of Diversion: MAY 1 TO OCTOBER 31  
Diversion Means: HEADGATE

Period of Use: MAY 1 TO OCTOBER 31

Place of Use:

<u>ID</u>	<u>Acres</u>	<u>Govt Lot</u>	<u>Qtr Sec</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>County</u>
1	80.00		S2NE	10	3S	6W	MADISON
2	40.00		SENW	10	3S	6W	MADISON
3	30.00		SWNW	10	3S	6W	MADISON
4	80.00		N2SE	10	3S	6W	MADISON
5	20.00		NESW	10	3S	6W	MADISON
Total:	250.00						

**Remarks:**

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.

**OWNERSHIP UPDATE RECEIVED**

OWNERSHIP UPDATE TYPE 608 # 27323 RECEIVED 12/06/2005.  
OWNERSHIP UPDATE TYPE DOR # 154269 RECEIVED 09/26/2016.  
OWNERSHIP UPDATE TYPE DOR # 156406 RECEIVED 04/19/2017.  
OWNERSHIP UPDATE TYPE DOR # 166221 RECEIVED 12/27/2017.

**AFFIDAVIT OF RICHARD BAYERS**

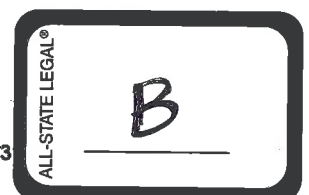
STATE OF MONTANA     )  
COUNTY OF Gallatin     :ss

I, RICHARD BAYERS, being first duly sworn, depose and say as follows:

1.     I am currently 65 years old. I was born and raised in Twin Bridges, Montana. I was raised on a ranch north of Twin Bridges that has been known over the years as the Bayers Hereford Ranch, Bayers Ranch, Inc., 5 B's Cattle Company, and is currently known as Bayers Ranches.

2.     A substantial portion of the Ranch was irrigated, particularly the bottom lands in the vicinity of the Jefferson River. I actively worked on the Ranch every irrigation season from the time I was in about 8<sup>th</sup> grade until I was 30 years old. I was very involved with the Ranch and with the irrigation until approximately 1985, living on the Ranch most of the year with the exception of the time I spent attending Montana State University in Bozeman from the fall of 1973 until the spring of 1978. I currently reside in Buffalo, Wyoming but still have an ownership interest in the Bayers Ranch and make frequent trips to the Twin Bridges area every year. A substantial portion of the original Bayers Ranch is now owned by a neighboring ranch known as the Hamilton Ranch, which I understand is now owned by SRI River Holdings, LLC.

3.     I am familiar with the major ditches that served the irrigated lands of the Bayers Ranch, as well as the major sources of water flowing through the Ranch and the ditch systems that served the adjoining lands of our neighbors. I acquired this familiarity through working on the Ranch and also learned about water rights for the ranch from my



father Arthur Byron Bayers who filed statements of claim for existing water rights for the ranch in the early 1980s for the Montana water adjudication process.

4. I am also familiar with a source of water known as the Lott Slough that originated east of Twin Bridges in Section 27, T3S, R6W, Madison County. I have also heard the Lott Slough referred to as Doncaster Slough. As the Lott Slough flowed north from Section 27, the Slough was crossed by Bayers Lane and then the Bayers Ditch in the SW¼ of Section 23, near the present site of the Twin Bridges sewage lagoon. The Slough eventually flowed under State Highway 41 in the SE¼ of Section 15, T3S, R6W, Madison County, as depicted on the map from the 1954 Madison County Water Resources Survey, attached as Exhibit A.

5. I recall that during my time on the Bayers Ranch there was a ditch that diverted water from Lott Slough on the west side of Highway 41 and that ran north along the west side of the highway right-of-way for approximately one mile, where the ditch then turned at a 90° angle and headed west toward the Jefferson River. The location of this ditch is shown on the aerial photo images attached as Exhibits B and C. This ditch is still in existence today.

6. This ditch was used primarily by the Bayers Ranch as a drain ditch, but it was used as an irrigation ditch by some of our neighbors on the west side of Highway 41. I can recall that our neighbors Gary and Tana Boldt irrigated lands on the west side of Highway 41 from this ditch. I do not specifically know when this ditch was constructed, but to the best of my knowledge and recollection the ditch has existed for many years and was in existence prior to July 1, 1973. To the best of my recollection this ditch was in

existence while I was still attending high school in Twin Bridges. I graduated from Twin Bridges High School in May of 1973.

Further Affiant sayeth naught.

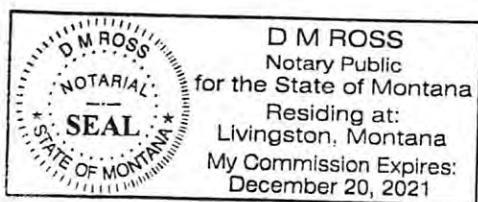
DATED this 6<sup>th</sup> day of July, 2020.

Richard Bayers  
RICHARD BAYERS

STATE OF MONTANA     )  
  :SS  
County of Gallatin     )

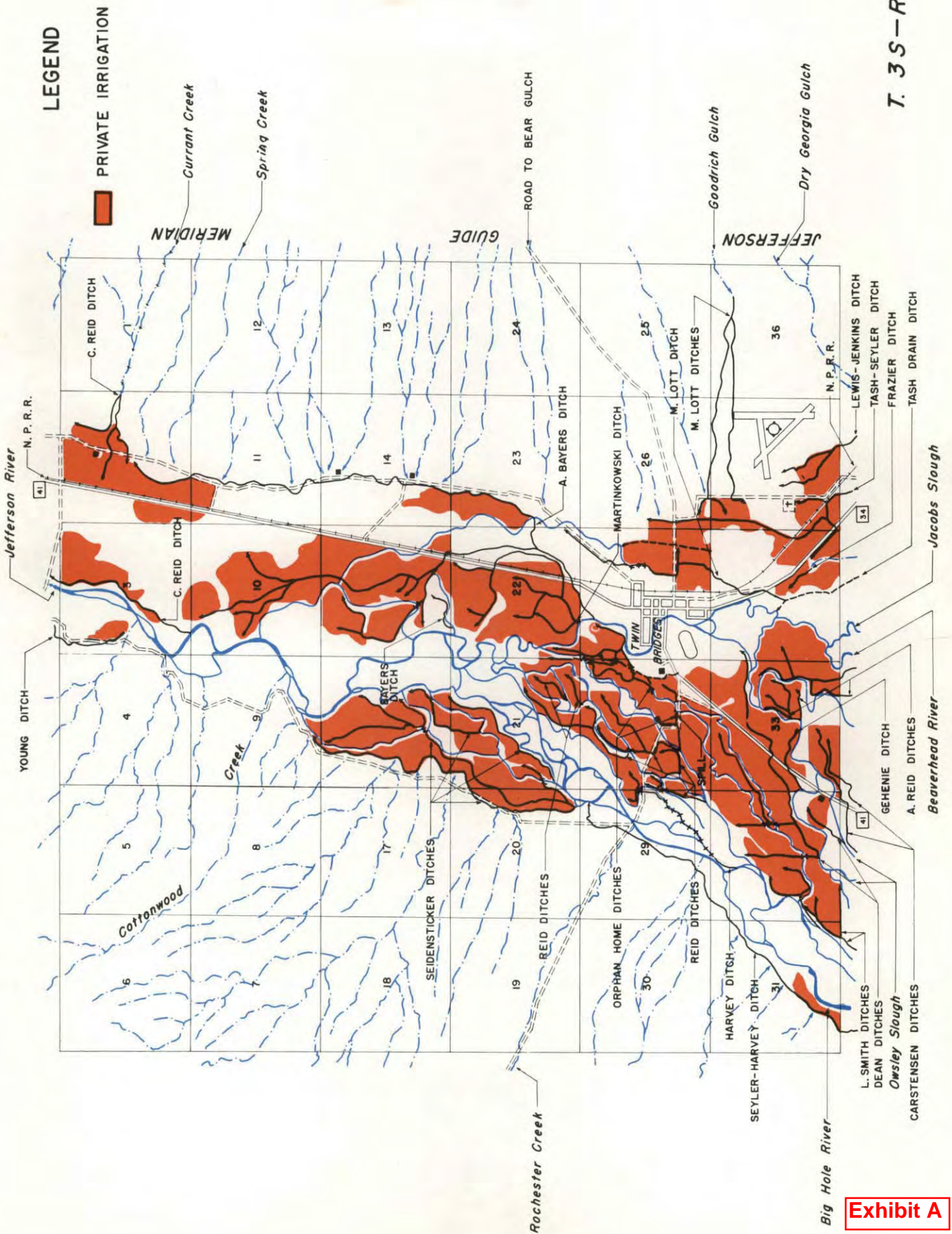
On this 6<sup>th</sup> day of July, 2020, before me, a Notary Public for the State of Montana, personally appeared Richard Bayers, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year in this certificate first hereinabove written.



D M Ross  
Notary Public for the State of Montana






**Exhibit A**


T. 3 S.—R. 6 W



# Ditch from Lott Slough

## Legend

 POD

 POD on Lott Slough SE sec. 15, T3S, R6W

Google Earth

© 2020 Google

Exhibit B




1000 ft





# Ditch from Lott Slough

Write a description for your map.

## Legend

 Ditch Crossing SE of Section 10, T3S, R6W

 Ditch Crossing SE of Section 10, T3S, R6W

Large spring complex 

41

Bayer's-Ranch-Rd


 POD on Lott Slough SE sec. 15, T3S, R6W

Exhibit C

Google Earth

© 2020 Google

4000 ft



**MICHAEL J. L. CUSICK, ESQ.**  
**JEREMY A. MICHAEL, ESQ.**  
CUSICK, FARVE, MATTICK & REFLING, P.C.  
P.O. Box 1288  
Bozeman, MT 59771-1288  
Ph: (406) 587-5511  
Fax: (406) 587-9079  
Email: office@cmrlawmt.com  
*Attorneys for Claimant/Objector*  
*SRI River Holdings LLC*

**IN THE WATER COURT OF THE STATE OF MONTANA  
UPPER MISSOURI DIVISION  
JEFFERSON RIVER (BASIN 41G)  
PRELIMINARY DECREE**

CLAIMANT: SRI River Holdings LLC

OBJECTORS: SRI River Holdings LLC; United States of  
America (USDA Forest Service)

NOTICE OF INTENT TO APPEAR: United States of America  
(Bureau of Reclamation)

**CASE 41G-R353**  
41G 195427-00  
41G 196917-00

**AFFIDAVIT OF JEREMY MAY**

STATE OF MONTANA                    )  
  :ss.  
COUNTY OF GALLATIN            )

I, **Jeremy May, P.E.**, being first duly sworn, depose and say as follows:

1. I am a licensed professional engineer, registered in the State of Montana since 2010, and am employed by Genesis Engineering, Inc. I graduated with my B.S. in Civil Engineering from Montana State University in 2006 and have 14 years of engineering experience. A copy of my resumé is attached as **Exhibit 1**.





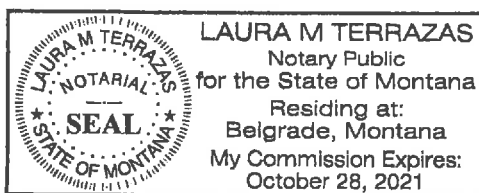
2. I was hired by the claimant SRI River Holdings LLC ("SRI") to investigate the Doncaster Ditch culvert and capacity. Based on my expertise as a civil engineer and my analysis of the culvert for the Doncaster Ditch, I conclude that the modeled pipe capacity based on stains in the pipe is roughly 14.3 CFS and the modeled pipe capacity assuming a full pipe is 30.9 CFS. A copy of my report to SRI regarding the same is attached as **Exhibit 2**. The information in said report is true and correct and I incorporate that information into this affidavit.

FURTHER YOUR AFFIANT SAYETH NAUGHT.

Dated this 18 day of September, 2020.

  
\_\_\_\_\_  
Jeremy May, P.E.

SUBSCRIBED AND SWORN to before me this 18 of September, 2020.



  
\_\_\_\_\_  
Notary Public for the State of Montana

**Jeremy R. May**  
Professional Engineer No. 17579

**EDUCATION**

B.S. Civil Engineering, Montana State University, 2006

**SPECIALIZATION**

Construction Management and Oversight, Commercial Site Planning & Design, Mountain Access Road and Residential Design Processes, Storm Water Design & Permitting, Utility Design & Layout, Parking Lot Design and Construction Supervision, Construction & Topographic Surveying, Computer Aided Design and Drafting, Stream and Wetland Permitting. Software experience: AutoCAD Land Development, AutoCAD Civil 3D, Flowmaster, StormCAD, WaterCAD, Microsoft Project, Adobe Photoshop, and SpectraPave.

**REGISTRATION**

Professional Engineer: Montana (17579 PE)

**PROFESSIONAL ASSIGNMENTS**

2010 to Present    Genesis Engineering, Inc.  
2010 to 2012      Northwest Land Consultants, PLLC  
2005 to 2010      Morrison-Maierle, Inc.

**RELEVANT EXPERIENCE**

- Quantel – 33,000 sqft Commercial Building Site, Design & Infrastructure on 2.8 acre site
- Foundant - 10,000 sqft Commercial Building Site, Design & Infrastructure on 2.0 acre site
- Mesa Laboratories- 82,000 sqft Commercial Building Site, Design & Infrastructure on 9.0 acre site
- Summit - 12,000 sqft Commercial Building Site, Design & Infrastructure on 2.2 acre site
- Play It Again Sports - 7,000 sqft Commercial Building Site, Design & Infrastructure on 1.0 acre site
- Flooring Place - 10,000 sqft Commercial Building Site, Design & Infrastructure on 4.3 acre site
- McCormick Dental - 7,000 sqft Commercial Building Site, Design & Infrastructure on 1.0 acre site
- Goodwill Site Plan - 19,000 sqft Commercial Building Site, Design & Infrastructure on 1.5 acre site
- J&D Family Subdivision, Mixed Use Subdivision, Bozeman, MT
- Billion AutoPlaza II, Dealership Siteplans, Bozeman, MT
- Stanley Village RV Park, Stanley, ND
- Walker Village, Watford City, ND
- Norton Ranch – Sewer Analysis, Bozeman, MT
- Gallatin Field Terminal Expansion, Belgrade, MT
- Gallatin Field Parking Lot, Lighting, Access Road and Utility Improvements, Belgrade, MT
- Gallatin Field Carwash Facility, Belgrade, MT
- Deer Lodge City-County Airport Perimeter Fence Improvements, Deer Lodge, MT
- Yellowstone Preserve – Design of 850 unit Subdivision, Livingston, MT
- Yellowstone Preserve, Main Extensions –Design & DEQ Submittal for River Crossings, Livingston, MT
- Park Street Utility Improvements – Design and DEQ Submittal, Livingston, MT

- Cruiser Lane Road Improvements – Belgrade, MT
- Big EZ Estates, Resort Development, Big Sky, MT
- Gallatin Preserve, Mountain Development, Big Sky, MT
- Dykstra Farms, Preliminary Plat Submittal, Belgrade, MT
- Greathorn Ranch Road and Fire Protection Improvements, Big Sky, MT
- RSH-Yellowstone Preserve, Private Mountain Development, Big Sky, MT
- Section 10-11 Connector Road, Construction & Design Big Sky, MT
- Yellowmule Trail Road, Construction & Design, Big Sky, MT

September 11, 2020

Jaime Wood  
Hamilton Ranch

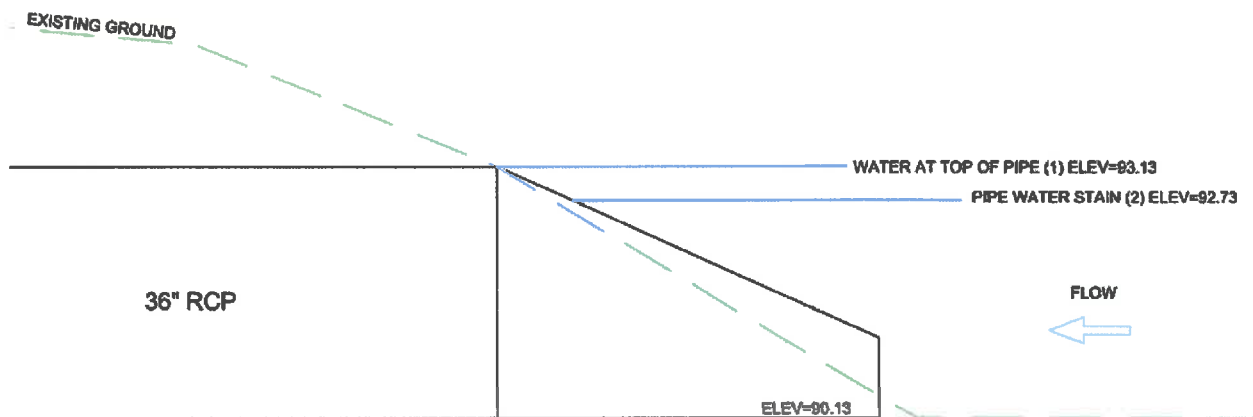
**Re: Culvert Capacity – Doncaster Ditch**

Dear Mr. Wood,

As requested, on September 10<sup>th</sup>, 2020, I visited the culvert of concern within Doncaster Ditch. The culvert is located under a driveway access off the west side of Highway 41 in the Northeast ¼ of Section 15, Township 3 South, Ranch 6 West. The culvert is a 90' long reinforced concrete pipe, sloping towards the north.

The capacity of the culvert was analyzed with two different water levels. These options are shown below in Figure 1.

1. Capacity when the upstream water was at a level equal with the top of pipe.
2. Capacity when the water matched a water stain in the pipe.



*Figure 1 – Pipe capacity head water options*

These capacities assume that the headgates immediately downstream of the pipe are open. There is an additional water mark on the downstream headgates that is roughly seven inches above the high-water mark in the pipe. This water mark is likely from when boards are in the east headgate, pushing water through the smaller headgate to the west.

The pipe capacities were modeled using Bentley's CulvertMaster. The model printouts are attached. The results are as follows.

**Modeled Pipe capacity using water stains in pipe = 14.3 cfs**  
**Modeled Pipe capacity assuming full pipe = 30.9 cfs**

These results show that roughly 14 cfs is passed through this pipe often enough to create a defined water mark inside the pipe. The "water stain" flow analysis utilized a water stain on the outlet to determine the tailwater elevation. The

full flow pipe analysis removed this possible tailwater restriction since the ditch drops rapidly through the main headgate which provides adequate capacity when joined with the west headgate to exceed the pipe flow.

I believe that the "water stain" model is conservative when determining the pipe capacity. If additional capacity is warranted within the pipe, the best way to determine the flow capacity is to take measurements while the ditch is operating at its average flow.

Let us know if you need anything additional.

Sincerely,



Jeremy May, P.E.  
Genesis Engineering, Inc.  
406-581-5730

Enclosures

cc:

H:\1109\013\DOCS\Doncaster Ditch\capacity letter.doc

## Culvert Calculator Report

### 36" RCP pipe stain elev

Solve For: Discharge

#### Culvert Summary

Allowable HW Elevation	92.73 ft	Headwater Depth/Height	0.87
Computed Headwater Elev.	92.73 ft	Discharge	14.30 cfs
Inlet Control HW Elev.	92.60 ft	Tailwater Elevation	92.60 ft
Outlet Control HW Elev.	92.73 ft	Control Type	Outlet Control

#### Grades

Upstream Invert	90.13 ft	Downstream Invert	90.00 ft
Length	90.00 ft	Constructed Slope	0.001444 ft/ft

#### Hydraulic Profile

Profile	M1	Depth, Downstream	2.60 ft
Slope Type	Mild	Normal Depth	1.61 ft
Flow Regime	Subcritical	Critical Depth	1.20 ft
Velocity Downstream	2.20 ft/s	Critical Slope	0.003991 ft/ft

#### Section

Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	3.00 ft
Section Size	36 inch	Rise	3.00 ft
Number Sections	1		

#### Outlet Control Properties

Outlet Control HW Elev.	92.73 ft	Upstream Velocity Head	0.08 ft
Ke	0.20	Entrance Loss	0.02 ft

#### Inlet Control Properties

Inlet Control HW Elev.	92.60 ft	Flow Control	Unsubmerged
Inlet Type	Groove end w/headwall	Area Full	7.1 ft <sup>2</sup>
K	0.00180	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	2
C	0.02920	Equation Form	1
Y	0.74000		



# Culvert Calculator Report

## 36" RCP full

Solve For: Discharge

### Culvert Summary

Allowable HW Elevation	93.13 ft	Headwater Depth/Height	1.00
Computed Headwater Elev.	93.13 ft	Discharge	30.91 cfs
Inlet Control HW Elev.	92.72 ft	Tailwater Elevation	92.50 ft
Outlet Control HW Elev.	93.13 ft	Control Type	Outlet Control

### Grades

Upstream Invert	90.13 ft	Downstream Invert	90.00 ft
Length	90.00 ft	Constructed Slope	0.001444 ft/ft

### Hydraulic Profile

Profile	M2	Depth, Downstream	2.50 ft
Slope Type	Mild	Normal Depth	N/A ft
Flow Regime	Subcritical	Critical Depth	1.80 ft
Velocity Downstream	4.91 ft/s	Critical Slope	0.004738 ft/ft

### Section

Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	3.00 ft
Section Size	36 inch	Rise	3.00 ft
Number Sections	1		

### Outlet Control Properties

Outlet Control HW Elev.	93.13 ft	Upstream Velocity Head	0.36 ft
Ke	0.20	Entrance Loss	0.07 ft

### Inlet Control Properties

Inlet Control HW Elev.	92.72 ft	Flow Control	Unsubmerged
Inlet Type	Groove end w/headwall	Area Full	7.1 ft <sup>2</sup>
K	0.00180	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	2
C	0.02920	Equation Form	1
Y	0.74000		