Authorization

- Form 650-Temporary Lease Authorization

Authorization

STATE OF MONTANA

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

1424 9TH AVENUE P.O. BOX 201601 HELENA, MONTANA 59620-1601

CHANGE AUTHORIZATION

UPON FINDING THE REQUIREMENTS OF SECTION 85-2-428, MCA HAVE BEEN MET, APPLICATION TO CHANGE WATER RIGHT NUMBER 43A-30173614 SUBMITTED ON JANUARY 20, 2026, IS APPROVED.

Application Form: CMR RANCH OWNER LLC
%MIKE DUCUENNOIS
602 S FERGUSON AVE STE 2
BOZEMAN, MT 59718 6483

Water Right Number(s) Changed:	Wr #	Ext	Type
	43A-40464	00	STATEMENT OF CLAIM

Change Description:

THIS IS A TEMPORARY LEASE AUTHORIZED PURSUANT TO 85-2-428, MCA AND IS VALID FOR USE UP TO 5 YEARS DURING THE TEN-YEAR PERIOD ENDING IN NOVEMBER OF 2035. THE APPLICANT IS AUTHORIZED TO LEASE STATEMENT OF CLAIM 43A 40464-00 TO THE CLUB AT CRAZY MOUNTAIN RANCH, LLC – LESSEE. THE AUTHORIZED USE IS FOR IRRIGATION OF 95 ACRES GENERALLY LOCATED IN SECTIONS 11, 13, 14, AND 23, T2N, R10E, PARK COUNTY. THE AUTHORIZED PROJECT WILL ADD A PLACE OF STORAGE – RAINBOW LAKE – IN SECTION 14, T2N, R10E, PARK COUNTY. THE APPLICANT IS AUTHORIZED TO LEASE UP TO 215.3 AF AT A MAXIMUM FLOW RATE OF 3 CFS FROM ROCK LAKE WITH THE POINT OF DIVERSION AT THE ROCK LAKE DAM IN THE NESWSW SECTION 11, T3N, R11E, PARK COUNTY UNDER CLAIM 43A 40464-00. THE AUTHORIZED FORTY-DAY PERIOD OF DIVERSION FOR THE LEASE OF CLAIM 43A 40464-00 IS MAY 9 THROUGH JUNE 17. THE APPLICANT WILL CEASE IRRIGATION ON ALL HISTORICAL ACRES DURING ANY YEAR WHEN LEASED WATER IS USED.

Additional Information:

THIS PROJECT INVOLVES THREE TEMPORARY LEASES OF WATER RIGHTS FILED CONCURRENTLY. APPLICATION 43A 30173612 IS FOR LEASE OF STATEMENT OF CLAIM 43A 40444-00. APPLICATION 43A 30173613 IS FOR LEASE OF STATEMENT OF CLAIM 43A 40446-00. APPLICATION 43A 30173614 IS FOR LEASE OF STATEMENT OF CLAIM 43A 40464-00. THE THREE LEASED WATER RIGHTS WILL BE USED TO IRRIGATE THE SAME AUTHORIZED 95 ACRES. EACH WATER RIGHT HAS A DIFFERENT AUTHORIZED FORTY-DAY PERIOD OF DIVERSION. THE WATER RIGHTS HAVE AN AUTHORIZED PERIOD OF USE FROM APRIL 1 TO NOVEMBER 15. RAINBOW LAKE WILL BE ADDED AS A PLACE OF STORAGE TO ALL THREE LEASED WATER RIGHTS. THE MAXIMUM FLOW RATE AUTHORIZED FOR LEASE IS 3 CFS, DIVERTED THROUGH THE UPPER CRISWELL DITCH. THE MAXIMUM VOLUME AUTHORIZED FOR LEASE IS 325.4 AF. THE MAXIMUM VOLUME INCLUDES ALL VOLUME ASSOCIATED WITH CONVEYANCE AND STORAGE REQUIRED FOR THE AUTHORIZED LEASE. THE APPLICANT WILL CEASE ALL IRRIGATION ON ANY OF THE CLAIMED ACRES WITH THESE WATER RIGHTS AND ALL SUPPLEMENTAL WATER RIGHTS NOT INCLUDED IN THIS LEASE DURING ANY YEAR WHEN LEASED WATER IS USED.

CONDITIONAL APPROVAL

THIS AUTHORIZATION IS LIMITED TO THE AMOUNT OF THE HISTORIC USE RECOGNIZED BY THE DEPARTMENT IN THIS PROCEEDING AS SUBJECT TO CHANGE, AND WILL THEREAFTER NOT EXCEED THAT AMOUNT. IF THE HISTORIC USE IS REDUCED UNDER ADJUDICATION PROCEEDINGS PURSUANT TO TITLE 85, CHAPTER 2, PART 2, MCA, THIS AUTHORIZATION WILL BE LIMITED TO A LESSER AMOUNT.

FAILURE TO COMPLY WITH ANY OF THESE TERMS AND CONDITIONS MAY RESULT IN THE LOSS OF THIS CHANGE AUTHORIZATION.

Witness Signature

Water Resources Division

DATE ISSUED: FEBRUARY 19, 2026

THE INFORMATION SHOWN BELOW REFLECTS THE ENTIRE WATER RIGHT.
AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM ALTERED BY THIS CHANGE AUTHORIZATION.

Water Right Number: 43A 40464-00 STATEMENT OF CLAIM
Version: 6 -- CHANGE AUTHORIZATION
Version Status: ACTIVE

Owners: CMR RANCH OWNER LLC
%MIKE DUCUENNOIS
602 S FERGUSON AVE STE 2
BOZEMAN, MT 59718-6483

Priority Date: SEPTEMBER 3, 1901
Enforceable Priority Date: SEPTEMBER 3, 1901
Purpose (Use): IRRIGATION
Maximum Volume: 215.30 AC-FT
Maximum Acres: 95.00
Source Name: ROCK LAKE
Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

ID	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1		NESWSW	11	3N	11E	PARK

Period of Diversion: MAY 9 TO JUNE 17
Diversion Means: DAM
Ditch Name: ROCK LAKE DAM
Reservoir: ON STREAM **Reservoir Name:** ROCK LAKE

Govt Lot	Qtr Sec	Sec	Twp	Rge	County
	NESWSW	11	3N	11E	PARK

Dam Height: 13.00 FEET
Depth: 153.30 FEET
Surface Area: 52.03 ACRES
Current Capacity: 2,585.00 ACRE-FEET
***Reservoir:** ON STREAM **Reservoir Name:** HAMMOND CREEK RESERVOIR

Govt Lot	Qtr Sec	Sec	Twp	Rge	County
	SE	14	2N	10E	PARK

Dam Height: 40.00 FEET
Depth: 26.00 FEET
Surface Area: 23.44 ACRES
Current Capacity: 237.00 ACRE-FEET
Purpose (Use) IRRIGATION
Irrigation Type: SPRINKLER/FLOOD
Climatic Area: 3 - MODERATE
Volume: 215.30 AC-FT
Period of Use: APRIL 1 to NOVEMBER 15
***Place of Use:**

ID	Acres	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
*1	6.83		N2NW	23	2N	10E	PARK
*2	81.59			14	2N	10E	PARK
*3	0.80		W2W2NW	13	2N	10E	PARK
*4	5.78		S2SE	11	2N	10E	PARK
Total:	95.00						

IMPORTANT INFORMATION

HAMMOND CREEK RESERVOIR ALSO KNOWN AS RAINBOW LAKE

WHEN WATER IS BEING LEASED, STATEMENTS OF CLAIM 43A 40444-00, 43A 40446-00, AND 43A 40464-00 IRRIGATE THE SAME 95 ACRES.

WHEN WATER IS BEING LEASED, STATEMENTS OF CLAIM 43A 40444-00, 43A 40446-00, AND 43A 40464-00 WILL SHARE A PLACE OF STORAGE WITH CLAIM 43A 40431-00.

WHEN WATER IS NOT BEING LEASED, THIS WATER RIGHT WILL OPERATE AS DONE HISTORICALLY. PLEASE REFER TO VERSION 5 FOR DETAILS.

THE CLUB AT CRAZY MOUNTAIN RANCH, LLC IS THE LESSEE.

NO WATER WILL BE DIVERTED OR USED FOR IRRIGATION ON ANY OF THE CLAIMED ACRES WITH THIS WATER RIGHT AND ALL SUPPLEMENTAL WATER RIGHTS NOT INCLUDED IN THIS LEASE DURING ANY YEAR WHEN LEASED WATER IS USED.

UP TO 3 CFS WILL BE DIVERTED INTO THE SECONDARY POINT OF DIVERSION AT THE UPPER CRISWELL DITCH DURING YEARS WHEN WATER IS LEASED.

THE PERIOD OF DIVERSION REFLECTS THE PERIOD WHEN WATER IS BEING STORED IN ROCK LAKE UNDER CLAIM 43A 40464-00 DURING YEARS WHEN WATER IS LEASED. WATER MAY BE RELEASED FROM ROCK LAKE AND USED FOR IRRIGATION ANY TIME DURING PERIOD OF USE.

WATER MEASUREMENT-TEMPORARY LEASE

WATER LEASED PURSUANT TO SECTION 85-2-428, MCA MUST BE MEASURED AT THE POINT OF DIVERSION BY A METER APPROVED BY THE DEPARTMENT. THE APPROPRIATOR SHALL REPORT THE AMOUNT OF WATER MEASURED AT THE END OF EACH YEAR IN WHICH WATER WAS LEASED OR UPON REQUEST OF THE DEPARTMENT.

OWNERSHIP UPDATE RECEIVED

OWNERSHIP UPDATE TYPE 608 # 221951 RECEIVED 07/13/2021.

OWNERSHIP UPDATE TYPE 608 # 230308 RECEIVED 12/30/2021.

DNRC
2273 Boot Hill Ct, STE 110
Bozeman, MT 59715
406-556-4500

February 19, 2026

CMR Ranch Owner, LLC
602 S Ferguson Ave, Suite 2
Bozeman, MT 59718

Subject: Authorization of Temporary Lease Application No. 43A 30173614

Dear CMR Ranch Owner, LLC:

The Department of Natural Resources and Conservation (DNRC) has authorized your Temporary Lease Application. A Change Authorization is enclosed with this letter. This temporary lease expires on November 30, 2035.

This approval will be published on the Department's website. Notices have been sent to potentially affected appropriators identified by the Department that are proximate to the point of diversion. These notices were sent on January 30, 2026. If a valid objection is received within 30 days of the temporary lease being authorized, the Department will notify you that authorization is suspended. The lease was authorized on February 19, 2026, and the deadline to object is March 21, 2026. If this approval is suspended, you may request a hearing on the objection within 15 days of the suspension notice.

Sincerely,

Lyra Reynolds
Hydrologist/Water Resources Specialist
Bozeman Water Resources Office
Water Resources Division

CC, via email: Deborah Stephenson, stephenson@dmsnaturalresources.com

Outlook

Authorization of Temporary Leases

From Reynolds, Lyra <Lyra.Reynolds@mt.gov>
Date Thu 2/19/2026 3:27 PM
To Stephenson, Deborah <Stephenson@dmsnaturalresources.com>
Cc Strasheim, Kerri <kstrasheim@mt.gov>

3 attachments (7 MB)

43A-30173613_CMRRanch_Authorization.pdf; 43A-30173614_CMRRanch_Authorization.pdf; 43A-30173612_CMRRanch_Authorization.pdf;

Hi Deb-

Attached are the Change Authorizations for Temporary Lease Application Nos. 43A 30173612, 43A 30173613, and 43A 30173614. I have also attached the Authorization Letters. The letters and Authorizations were mailed to the applicant today, February 19, 2026.

The authorizations and application files will be posted to the DNRC website on the Application Status and Environmental Assessment webpage. No additional notice documents were mailed for these authorizations. The only notice documents that were sent to potentially affected appropriators were mailed out on January 30, 2026. The period in which appropriators may object begins today and ends on March 21, 2026.

Please let me know if you have any other questions at this time.
-Lyra

Lyra Reynolds (they/them/she/her) | Hydrologist/Specialist
Bozeman Water Resources Office
Montana Department of Natural Resources and Conservation
2273 Boot Hill Court, Suite 110; Bozeman, MT 59715
DESK: 406-556-4500 **EMAIL**: lyra.reynolds@mt.gov
Website | Facebook | X (Twitter) | Instagram
How did we do? Let us know here: Feedback Survey

Public Notice for Objections

- Public Notice for Objections Package
  - Notice Area List
  - Notice Area Map

Public Notice for Objections

NOTICE AREA

Application No. **43A 30173614**					Regional Office # **10**
Applicant's Name **CMR Ranch Owner LLC**					
Indian Reservation		Yes	x	No	If yes, Reservation
Irrigation District		Yes	x	No	If yes, District
Specialist **Lyra Reynolds**					Date **1/29/2026**

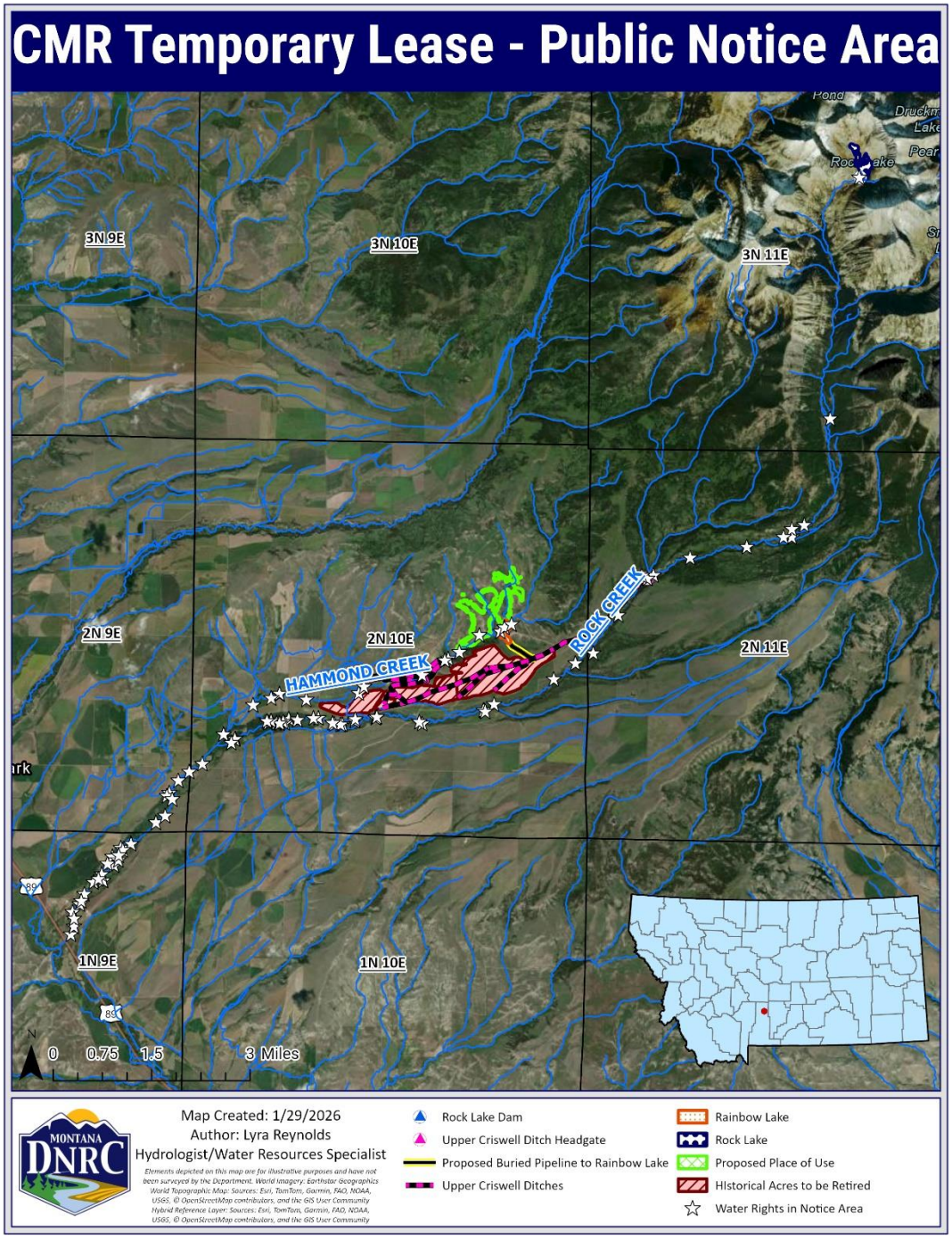

Figure 1. Map of Public Notice for Temporary Lease Application No. 43A 30173614. See the Remarks Section on the next page for a description of the notice area and which owners were noticed.

Water Right Owner	Water Right # (Basin, ID, and Number)
Applicant: CMR RANCH OWNER	43A 40464-00
Consultant/Attorney: DMS NATURAL RESOURCES	OID 350090
Lessee: The Club at Crazy Mountain Ranch, LLC	
0BZM DEPT OF NATURAL RESOURCES & CONSERVATION	
1BIA BUREAU OF INDIAN AFFAIRS	
1BOR US DEPT OF INTERIOR	
1DSL MONTANA BOARD OF LAND COMMISSIONERS	
1EQC ENVIRONMENTAL QUALITY COUNCIL	
1FWP DEPT OF FISH WILDLIFE & PARKS	
1NWE NORTHWESTERN ENERGY	
1SCH CANYON FERRY PROJECT OFFICE	
1TUL MT TROUT UNLIMITED	
1WQB DEPT OF ENVIRONMENTAL QUALITY	
2FWP DEPT OF FISH WILDLIFE & PARKS	
5FWS US FISH & WILDLIFE SERVICE	
0PCD PARK CONSERVATION DISTRICT	
A SAMUEL (SAM) GILBERT	43A 191904 00
AARON T JENKINS; TARA JENKINS	43A 190642 00
ANDREW T MARTIN; JENNIFER E MARTIN; RICHVILLE LAND CO LTD; SHIELDS VALLEY LAND AND CATTLE LLC	43A 191279 00
ANNE K MILKOVICH; THOMAS K MILKOVICH	43A 191287 00
ANNE K MILKOVICH; THOMAS K MILKOVICH	43A 192607 00
ARTHUN RANCH INC	43A 30133604
ATKINSON, MELISSA P REVOCABLE TRUST	43A 114311 00
ATKINSON, MELISSA P REVOCABLE TRUST; CARLSON FAMILY TRUST	43A 193621 00
BARBARA U MARSHALL; JAMES W MARSHALL; ANNE K MILKOVICH; THOMAS K MILKOVICH	43A 191285 00
BRADLEY E BERENDTS	43A 30152662
BRENDA R GILBERT; CHARLES P GILBERT	43A 191893 00
BRIAN C CARLSON	43A 30124861
BRIDGER LIVESTOCK INC; DEWITT DOMINICK; FLOYD FORBES; VARUNA FORBES; DORIS GUSE; SHANNON R GUSE; HOLM, DEAN A TRUST; MAC R MCKINLEY; DAVID C MILLER; OLSEN-OLSEN LTD PARTNERSHIP; ROCKING LH LLC; DONALD E SMITH; JEANNE F SMITH; AILEEN WARREN; GLENN P WARREN	43A 192605 00
BRIDGER LIVESTOCK INC; FLOYD FORBES; VARUNA FORBES; DORIS GUSE; SHANNON R GUSE; HOLM, DOUGLAS A TRUST; DAVID C MILLER; ROCKING LH LLC; DONALD E SMITH; JEANNE F SMITH; AILEEN WARREN; GLENN P WARREN	43A 191288 00
BUDGER ENTERPRISES LLC	43A 38502 00
CAMERON G CLARK; SHIELDS VALLEY LAND AND CATTLE LLC	43A 190643 00
DALE M JONES; DARREN M JONES; JACKIE L JONES; LOREN M JONES; PEGGY S SUNDLING; TIMOTHY R SUNDLING	43A 191909 00
DAVID E PALMER	43A 191961 00
DAVID E VATER	43A 191143 00
DELILAH SMITH; TODD C SMITH	43A 191039 00
DOUGLAS R DUNN; SHARON LM DUNN	43A 39060 00
DUANE C COLMEY; ANDREW T MARTIN; JENNIFER E MARTIN; RICHVILLE LAND CO LTD; SHIELDS VALLEY LAND AND CATTLE LLC; DEBRA K TEDSTROM; BROOKS WATSON	43A 30155727

DUANE C COLMEY; SHIELDS VALLEY LAND AND CATTLE LLC; DEBRA K TEDSTROM; BROOKS WATSON	43A 130086 00
FIDDLE CREEK LAND CO LLC	43A 35348 00
FORKUS FAMILY TRUST	43A 191282 00
JACK CW DAVIS; JESSICA DAVIS; GLENDA A MYRSTOL; RONALD A MYRSTOL; CHRISTINA NELSON; JACOB NELSON	43A 193166 00
JAMES J SARRAZIN	43A 125031 00
JAMES K JOHNSON; MARY J TAYLOR	43A 191157 00
JAMES M TAYLOR	43A 30480 00
JAMIE A LANNEN; KATRINA LANNEN	43A 16822 00
JAMIE A LANNEN; KATRINA LANNEN; HUNTER RUNG; KAMERON RUNG	43A 16825 00
JENNIFER ESTES; LEE ESTES	43A 190614 00
JERRY L KIGER	43A 30103813
JOAN T DANIEL; PEGGY S SUNDLING; TIMOTHY R SUNDLING	43A 9366 00
JOHN M MELVIN; LYNN D MELVIN	43A 192077 00
JOHN S MICHAEL; LYNN E MICHAEL	43A 29086 00
LORETTA A LARSON; PETER J LARSON	43A 191747 00
LOWER ROCK CREEK WATER USERS ASSOC	43A 2995 00
MCCREA FAMILY REV TRUST; DELILAH SMITH; TODD C SMITH	43A 191977 00
MICHAEL P ATKINSON; ATKINSON, MELISSA P REVOCABLE TRUST; CARLSON FAMILY TRUST	43A 155812 00
MILLER S G RANCH CO INC	43A 3277 00
MONTANA STATE BOARD OF LAND COMMISSIONERS	43A 137631 00
MONTANA, STATE OF DEPT OF FISH WILDLIFE & PARKS	43A 30017748
PEGGY S SUNDLING; TIMOTHY R SUNDLING	43A 191906 00
QUEEN RANCHES INC	43A 191907 00
QUEEN RANCHES INC; PEGGY S SUNDLING; TIMOTHY R SUNDLING	43A 8505 00
QUEEN RANCHES INC; ROCKY CREEK LANE LLC	43A 8506 00
R F BAR RANCH INC	43A 20839 00
RACHEL MANGANIELLO	43A 20806 00
ROBERT B BOYD	43A 191865 00
SHIELDS VALLEY LAND AND CATTLE LLC	43A 190640 00
SHIELDS VALLEY LAND AND CATTLE LLC; BACH-CUC PHAM STEELE; BENJAMIN J STEELE	43A 191283 00
TAMI KEEFER	43A 190646 00
USA (DEPT OF AGRICULTURE FOREST SERVICE)	43A 60615 00

REMARKS: The following methodologies were employed to determine an appropriate public notice area:

1. All Bozeman Regional Office public notice standard for Park County were included in the mailing.
2. The following method was used to identify water rights for public notice:
   The notice area included water rights on Rock Creek and Hammond Creek. All active and severed water rights with the source of Rock Creek were included. Water rights on Hammond Creek with point of diversion between the Rainbow Lake Dam in the NESWSE Section 14, T2N, R10E, and the confluence of Rock Creek and Hammond Creek in the NWSW Section 30, T2N, R10E, were included. All water rights with a source of Rock Lake were also included. A total of 159 water rights exist in the public notice area, as seen in Figure 1. Owners with multiple water rights were only noticed one time. The lowest water right number in the notice area for each owner is listed above. Owners of 54 water rights were noticed.

Application Materials

- Application
- Any information submitted with Application including maps

Application Materials

DMS Natural Resources, LLC
Deborah Stephenson, M.B.A.
602 S. Ferguson Ave., Suite 2
Bozeman, MT 59718
406-600-1422
stephenson@dmsnaturalresources.com

NATURAL RESOURCES

Januray 20, 2026

DNRC Bozeman
2273 Boot Hill Court, Suite 110
Bozeman, MT 59715

Re: Temporary Lease of Appropriation Right – Form 650 - 43A 40444 00, 43A 40446 00, 43A 40464 00

Dear DNRC,

Enclosed are three form 650's Temporary Lease of Appropriation Right for water rights 43A 40444 00, 43A 40446 00, 43A 40464 00. A check for the filing fee of $1,200 is also enclosed.

Our understanding is that the DNRC must determine within 30 days if the applications are correct and complete and approve or deny the application. If the DNRC determines the applications are not correct and complete and/or denies the applications, the applicant respectfully request that the DNRC provide an explanation of the deficiencies and issues. Thank you.

Sincerely,

Deborah Stephenson

43A 40464 00

The Montana Department of Natural Resources & Conservation

For Department Use Only

RECEIVED

JAN 20 2026

DNRC
Bozeman Water Resources

Application # 30173614 Basin 43A
Received By AC
Fee Received $ 400/1206 Check # 2295
Deposit Receipt # BUS 2614127-01
Payor DMS Natural Resources LLC
Refund $ _____ Date/Time 9:33

Temporary Lease of Appropriation Right

85-2-428, MCA
Form No. 650 *(Revised 10/2025)*

FILING FEE

$400

TO USE THIS FORM, THE FOLLOWING MUST APPLY:

- The amount of water leased may not exceed the total consumptive use of the appropriation right. For an irrigation right, the consumptive volume may not exceed 2 acre-feet per acre irrigated. The Montana Department of Natural Resources and Conservation (DNRC) will use the standards in ARM, 36.12.2102(3) for estimating consumptive use.
- The water right must have been used within the last 5 years.
- The water right may be leased only during the period of diversion for the appropriation right.
- The water right may not be leased for more than 5 years during any consecutive 10-year period.
- The water right may not be leased for more than 40 days a year.
- The water right may only be leased for a beneficial use as defined in 85-2-102, MCA.
- The flow rate and volume of water leased may not exceed the appropriator's original water right.
- The point of diversion of the water right may not be changed on this form—a Change Application must be filed to change the point of diversion.
- The use of an appropriation right (e.g., a supplemental water right) on a place of use associated with leased water is prohibited during any year that leased water is put to beneficial use.
- Storage may be temporarily added during the term of the leased appropriation right if the water is diverted at the original point of diversion and subsequently put to a beneficial use.
- Leased water cannot be transported outside the state of Montana.
- Leased water must be measured at the point of diversion by a meter approved by the DNRC and the amounts reported to at the end of the year in which the lease occurred or upon request of the DNRC.
- Only one water right can be leased per form, per place of use.

ADDITIONAL INFORMATION

- All required information must be provided for your application to be considered correct and complete as required under 85-2-428, MCA. There will be no opportunity for you to correct deficiencies with your application. If the application is not correct and complete, it will be denied.

- Please note, if an application is approved, DNRC will provide notice to other users it deems may be adversely affected by the temporary lease; information will also be posted on the DNRC website. For a period of 30 days from the date an application is authorized, the DNRC will accept correct and complete objections to the temporary lease. If valid objections are received, the approval of the lease is suspended and no water may be used pursuant to the lease. The owner of the water right whose lease approval was suspended may request a hearing on the objection within 15 days of notice of the suspension. The owner will be required to show proof that the temporary lease will not adversely affect other users. DNRC will issue an order after the hearing indicating whether the lease can be reinstated or whether it will be revoked.

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1. **Water right owner(s) information:**
Name(s) CMR Ranch Owner, LLC

Mailing Address 602 S. Ferguson Ave., Suite 2

City Bozeman State MT Zip 59718-6483

Phone Number (406) 539-5176 Email mducuennois@lonemountainland.com

Note: *If there are additional owners, attach the water right owner information labeled as Attachment #1.*

Contact Person: ☐ Applicant ☑ Consultant ☐ Attorney ☐ Other _____

Contact Name DMS Natural Resources, LLC

Mailing Address 602 S. Ferguson Ave., Suite 2

City Bozeman State MT Zip 59718-6483

Phone Number (406) 582-4988 Email stephenson@dmsnaturalresources.com

Note: *If a contact person is identified as an attorney, all communications will be sent only to the attorney unless the attorney provides written instruction to the contrary. Unless the contact person is an attorney, the water right owner will receive all correspondence, and a copy may be sent to the contact person.*

2. **Lessee information:**
Name(s) The Club at Crazy Mountain Ranch, LLC

Mailing Address 515 Rock Creek Rd.

City Livingston State MT Zip 59047

Phone Number (406) 640-2795 Email dhardwick@crazymountainranch.com

Note: *If there are additional lessees, attach the lessee information labeled as Attachment #2.*

3. **Lease dates:** In the table below, enter the begin and end dates and total days that the lease will be in effect each year. The water right may not be leased for more than 5 years during any consecutive 10-year period. The water right may not be leased for more than 40 days a year. The dates entered must match those specified in the executed lease agreement (see question 11.a.) If the lease agreement does not specify the exact period of use for each year of the lease or if the period of use is described generally (e.g., "any 40 days within the period of use for the original version of the leased right") the period of use for the original version of the leased right should be used for the begin and end dates in this table. If the lease agreement does not specify the total number of days water will be leased in a given year, enter "no more than 40" in the total days column.

Year	Begin date *(MM/DD/YYYY)*	End date *(MM/DD/YYYY)*	Total Days
1	05/09/2026	06/17/2026	40.0
2	05/09/2027	06/17/2027	40.0
3	05/09/2028	06/17/2028	40.0
4	05/09/2029	06/17/2029	40.0
5	05/09/2030	06/17/2030	40.0

***Note**: If the periods of use for the leased water do not cleanly fit in the table above (e.g., if leased water will be used during multiple different periods in the same year), include an attachment that accurately describes when leased water will be put to use each year. Label the attachment as Attachment #3.*

4. **Water right number (only one water right can be leased per form, per place of use):**
43A 40464 00

5. **Source of water:** Rock Lake

6. **Diverted flow rate leased:** 3.0 ☐ **GPM** ☑ **CFS**

7. **Volume leased (only the consumptive volume of the original right is available for lease as specified in ARM 36.12.2102(3)):**
Unless the consumptive use of the water right proposed for lease has been calculated by the DNRC through a previous change application, the DNRC will use the standards specified in ARM 36.12.2102(3) for estimating consumptive use. Ensure that the leased volume requested below conforms to these standards.

VOLUME LEASED: 215.3 acre-feet

***Note:** Attach a description of how the consumptive use value estimated. Use the standards in ARM 36.12.2102(3), to estimate consumptive use. Label the attachment as Attachment #7.*

8. **Purpose of use for leased water:**
Irrigation

9. **Place of use for leased water purpose (Attach additional sheets if necessary, labeled as Attachment #9):** Describe the location of the place of use to the nearest 10 acres if possible. Legal land descriptions, subdivisions, and certificate of survey information may be obtained from the county records, tax statements, or from the Montana Cadastral system at: http://gis.mt.gov/. See Addendum A
____1/4____1/4 _____1/4 ____1/4 of Section____ Township____ ☐N ☐ S Range_____ ☐ E ☐ W
Gov't Lot # _____ County_____ Tract # _____ COS # _____
Subdivision Name _____ Lot _____Block _____
Physical Address, including City, State & Zip Code of the place of use for the leased water/new purpose:

10. **Will temporary storage be added?** ☑ **Yes** ☐ **No** (If yes, provide the legal land description of the storage location, identify the capacity of the storage facility and describe of how the capacity was calculated.)

a. **Legal land description of temporary storage**:
____1/4 _____1/4 SE 1/4 of Section 14 Township 2 ☑N ☐S Range 10 ☑E ☐W
County Park

b. Temporary **storage** capacity: 237 **acre-feet**
Note: *Attach a description of how the temporary storage capacity was calculated. Use bathymetry data, survey, or engineering plans for capacity. Label the attachment as Attachment # 10b. Include the data sources used with this attachment. If these data sources are unavailable, use the following equation:*
Surface Acres x Maximum Depth (FT) x 0.5 = Capacity acre-feet.

11. **Attach the following:** (Check the box next to each question (a-g) to indicate that each has been attached to this application. Label each attachment with the corresponding letter (Attachment 11a-11g). **If a required box is not checked and/or the required materials are not attached, the form will be denied.**)

a. ☑ A copy of the executed lease agreement. See Addendum A See Exhibit 11.a
b. ☑ Evidence that the water right has been used within the last 5 years.
c. ☑ **A statement of potential adverse effect explaining what potential adverse effect could occur from the change in use under the temporary lease and how this determination was made.**
d. ☑ A description of planned actions that will be taken to **prevent potential adverse effects that, in aggregate, demonstrate no adverse effects.**
e. ☑ Explain in detail **how the existing beneficial use of the leased water right and any supplemental water rights will cease on the existing place of use during the lease period. The explanation must account for the full volume of water proposed for lease and must clearly indicate where the beneficial use will cease, including the number and location of acres to be removed from irrigation, if applicable.**
f. ☑ Provide a map **that clearly indicates where the existing beneficial use will cease, including the number and location of acres to be removed from irrigation, if applicable.** See Exhibit 11.f
g. ☑ A description of the plan for measuring and reporting the amount of leased water.

Signature(s): *All owners must sign the form.*

I DECLARE UNDER PENALTY OF PERJURY AND UNDER THE LAWS OF THE STATE OF MONTANA THAT THE FOREGOING IS TRUE AND CORRECT.

Water Right Owner Signature Sam Byrne (Jan 16, 2026 08:50:25 PST) Date 01/16/2025

Printed Name Sam Byrne, Managing Partner and President of CMR Ranch Owner, LLC

Water Right Owner Signature _____ Date _____

Printed Name _____

Addendum A

3. Lease dates

For all of the water rights being leased, the period of diversion will not exceed 40 days. For the natural flow water rights being leased, the period of use will largely match the period of diversion except as follows: (i) the 5-day buffer volume will be diverted during the first lease period (5/1 – 6/9), stored in Rainbow Lake, and may be used anytime during the irrigation season or to the extent not used in the irrigation season held in Rainbow Lake over-winter for use the following season[1]; and (ii) any volume diverted to Rainbow Lake under a specific water right that is not applied to the golf course during the period of diversion for that specific lease (i.e., less conveyance loss is experienced than estimated, seasonal conditions are wetter than expected reducing irrigation demand, etc...) will be held in Rainbow Lake and could be applied to the golf course later in the season or held in Rainbow Lake over-winter for use the following season.

For the stored water right being leased, the point of diversion is the Rock Lake dam and the period of diversion is the time period when the water is accumulating, or being stored, in Rock Lake. Thus, the period of diversion for the leased stored water rights will be when water is filling in Rock Lake. The measurement devices at Rock Lake (described further in Section 11.g) allow the Applicant to determine the daily inflow into Rock Lake. Based on records from 2024, 1,258 AF of water inflowed into, and was stored in, Rock Lake from May 9 through June 17. A copy of the Rock Lake records is provided as Exhibit 3.2. The Applicant proposes to Lease water stored under 43A 40464 00 during the 40-day period from May 9 through June 17. Once diverted and stored in Rock Lake, it may be released from Rock Lake and utilized on the golf course at any time[2]. Based on past experience when the natural flow rights have been called out of priority and the use of stored water has commenced, it is expected to be approximately July 19 through November 15 each year, but the exact date stored water usage began historically varied, and will continue to vary, from year-to-year. Any Rock Lake stored water that has been diverted and re-stored in Rainbow Lake but is not used for golf course irrigation in that irrigation season will be held over-winter and may be applied to the golf course during the early season of the following irrigation year when the Upper Criswell Ditch may still be iced in. Thus, for 43A 40464 00, the period of use during the first year of the Lease (2026) will begin on the date that stored water is first released from Rock Lake and continue through November 15. For all subsequent years, water from 43A 40464 00 may be used anytime between April 1 through November 15.

[1] Pursuant to email correspondence on October 3, 2025 from Nate Ward and Luke Ward of DNRC to DMS, the 40-day limitation applies only to the period of diversion of a leased water right. If storage is involved, as long as the leased water is diverted into storage during the 40-day lease period of diversion, the leased water in storage may be used at any time. See email enclosed as Exhibit 3.1.
[2] Ibid.

The lease term is ten years, but Applicant expects to use the Leased water each of the first five years of the lease, or until the Applicants permanent change applications (43A 30170988 and 43A 30170989) are authorized.

Table 1 – Period of Diversion and Period of Use of Leased Water Rights

Water Right	Period of Diversion	Period of Use
43A 40446 00	5/1 – 6/9	4/1 to 11/15
43A 40444 00	6/10 – 7/18	4/1 to 11/15
43A 40464 00	5/9 – 6/17	4/1 to 11/15

6. Diverted flow rate leased

From the natural flow claims (43A 40446 00 and 43A 40444 00), the Applicant proposes to lease a flow rate of up to a maximum of 3.0 cfs throughout the term of the Lease, beginning in the 2026 irrigation season. For these natural flow claims (43A 40446 00 and 43A 40444 00), the point of diversion (POD) is the Upper Criswell Ditch, where the leased water will be diverted and measured.

The stored water claim (43A 40464 00) is not administered based on flow rate. Under this claim, the Applicant stores a volume of water over the late fall/winter/spring, and is legally allowed to release stored water at any flow rate. The Applicant expects to release the leased stored water at a maximum rate of 3.0 cfs. The Applicant is able to measure the flow rate of the stored water released from Rock Lake, and will ensure that the flow rate released from Rock Lake for the Applicant under the terms of the Lease is the same as the flow rate diverted from Rock Creek into the secondary point of diversion, the Upper Criswell Ditch.

The maximum 3.0 cfs flow rate proposed for lease under the natural flow claims is calculated based on the maximum flow rate to be diverted into Rainbow Lake via the buried pipeline from Upper Criswell Ditch, backed up to the headgate of the Upper Criswell Ditch on Rock Creek. A maximum flow rate of 800 GPM (1.78 cfs) will be diverted at the secondary POD from the Upper Criswell Ditch into the pipeline to Rainbow Lake. A copy of the design specifications showing that the pipeline has the capacity to divert 800 GPM is provided as Exhibit 6.1.

Conveyance loss and the flow rate required at the headgate of the Upper Criswell Ditch is calculated based on 2025 flow measurements collected by the Applicant with two flumes in the Upper Criswell Ditch. The "upper" flume is located in the SESESE of Section 7, T2N R11E, directly down-ditch of the Upper Criswell Ditch headgate from Rock Creek. The "lower" flume is located in the NENENW of Section 24, T2N R11E. In 2024, DNRC collected several flow measurements in an attempt to determine the accuracy of the upper flume. DNRC's November 1, 2024 memo entitled "2024 Flow Measurements of Rock Creek" including a summary of DNRC's findings is provided as Exhibit 6.2. As set forth in DNRC's November 1, 2024 memo, the DNRC concluded that the upper flume was not reading correctly, under-

estimating diverted flow rate by an average of 32.95%[3]. Thus, the Applicant calculated the "corrected" diverted flow rate based on the staff gage readings in 2025, see Exhibit 6.3. Based on the corrected 2025 diversion records, the Upper Criswell Ditch had an average conveyance loss of 24.97%, and a maximum conveyance loss of 39.98%. The 1.78 cfs flow rate required at the secondary diversion into the pipeline to Rainbow Lake backed up to the Upper Criswell Diversion based on the *average* 2025 corrected conveyance loss is 2.4 cfs, and 3.0 cfs based on the *maximum* 2025 corrected conveyance loss[4].

The exact flow rate diverted during the term of the Lease will vary from day-to-day, but will not exceed 3.0 cfs. The Applicant expects that the diverted flow rate will typically be around 2.4 cfs. However, as shown by the 2025 measurements and as is common in all ditches, there is day-to-day variation in conveyance loss in the Upper Criswell Ditch. Additionally, the 800 GPM flow rate required at the secondary diversion from Upper Criswell Ditch to Rainbow Lake is based on the maximum demand of the course which will occur around July and August. Earlier and later in the season, the flow demand at the secondary diversion point may be less due to lower irrigation demand for the golf course. The Applicant is proposing to irrigate only the golf course during the term of the Lease. The Applicant has never historically operated with such limited acres of irrigation and low flows in the Upper Criswell Ditch. Thus, variability in the diverted flow rate will be needed to fine tune the operation of the Upper Criswell Ditch at the contemplated flows requested during the term of the Lease.

7. Volume leased

The Applicant proposes to lease a total of 325.4 AF/year during the term of the Lease across all of the leased water rights. The Applicant calculated the proposed leased volume based on the historic consumptive use of 519.9 acres and based on the standards in ARM, 36.12.2102(3). A summary of the Applicant's assumptions and calculations is provided as Table 2:

Table 2 – Calculation of Historic Consumptive Use for Proposed Lease

Assumption	Value
NIR for Pre-1973 Flood Irrigation [inches][5]	13.2
Pre-1973 Management Factor[6]	0.569
AF CU per acre pre-1973 Flood Irrigation [AF/acre]	0.6259
Acres Irrigated in Last 5 Years[7]	519.9
Total Historic CU Available for Lease	519.9 acres * 0.6259 AF/acre = **325.4 AF**

[3] DNRC's 2024 measurements set forth in the memorandum showed percent errors of 25.38%, 30.38%, and 43.10%. The Applicant calculated the average percent errors as 32.96%. The Applicant was not informed of DNRC's 2024 measurements, or the November 1, 2024 DNRC memorandum and conclusions, until late in the 2025 season. Thus, the Applicant was not aware of any required repairs to the flume until after the 2025 flume readings were recorded. All 2025 readings relevant to this application were adjusted based on the average and maximum percent error found in DNRC's November 1, 2024 memo. The upper flume was replaced by the Applicant on November 10, 2025.

[4] 1.78 cfs / (1-0.2497) = 2.4 cfs; 1.78 cfs / (1-0.3998) = 3.0 cfs.

[5] 36.12.2102(3) Crop consumptive use as calculated using the methodology from ARM 36.12.1902(14) through 36.12.1902(16)(f). 13.2 NIR for flood based on 36.12.1902, Park County, Wilsall station.

[6] 36.12.2102(3).

[7] Includes pivots and flood irrigated field at east end of historic POU. See Exhibit 11.f.

The volume proposed for lease from each individual water right is shown in Table 3 below. Diverted volume by month was calculated based on the golf course demand at the pump in Rainbow Lake plus expected conveyance loss (based on the average 24.97% corrected conveyance loss from 2025) from the diversion at Upper Criswell Ditch to the pump in Rainbow Lake. For rights which include only part of a month, the diverted volume for that month was split proportionately based on the number of days the water right will be leased in the month.

Table 3 – Total Proposed Leased Diverted Volume by Water Right

Period of Diversion[8]	Water Right Number	Diverted Volume by Water Right (AF)
May 1 – June 9	43A 40446 00	43.9
June 10 – July 18	43A 40444 00	66.2
May 9 – June 17	43A 40464 00	215.3
Total		***325.4***

9. Place of use for leased water purpose

Proposed place of use for leased water on the golf course is provided below in Table 4.[9]

Table 4 – Acres by Legal Land Description for Proposed Golf Irrigation

ID	Acres[10]	Gov Lot	Qtr Sec	Sec	Twp	Rge	County
1	5.78		S2SE	11	2N	10E	Park
2	0.80		W2W2NW	13	2N	10E	Park
3	81.59			14	2N	10E	Park
4	6.83		N2NW	23	2N	10E	Park
Total:	95.00						

10.b. Will temporary storage be added?

Rainbow Lake will be added as a temporary place of storage for the term of the proposed lease. A copy of Hydrometrics, Inc.'s May 20, 2024 Spillway Assessment Report is provided as Exhibit 10.b.

[8] Irrigation of the golf course will begin in April of 2026. However, historically and currently, the Upper Criswell Ditch typically is not opened until early May due to ice and snow build up in the ditch. The Applicant proposes to supply the April 2026 irrigation requirement of the golf course by trucking in water and/or by obtaining water from an exempt well. For 2027 and beyond, if the Applicant is able to carry water over in Rainbow Lake from the prior irrigation season, the Applicant will utilize the Rock Creek water stored in Rainbow Lake for early season irrigation, supplemented as needed with water trucked in and/or from exempt wells.

[9] Nothing in this application or actions related to this application or the related lease implies any intention or undertaking on the part of the Applicant to abandon or permanently retire acres within the place of use under its decreed irrigation claims or to otherwise waive any or all of Applicant's legal interest in said rights.

[10] Irrigation of the golf course during the term of the Lease will consist of 85 acres of irrigated turf grass, plus 10 acres of native seeding around the greens. The maps provided with this application depict the 85 acres of turf grass irrigation. The location of the 10 acres of native seeding is generally spread out around the golf course irrigated area, but the exact location is not known at this time. Thus these 10 acres are not included on the attached maps and the acre count breakdown by legal land description may change marginally depending on the as-built location of the 10 acres of native seeding. However, the aggregate irrigation will not exceed 95 acres within the legal land descriptions shown in Table 4.

Rainbow Lake is permitted for non-consumptive fish and wildlife purposes under 43A 40431 00. The majority of water stored in Rainbow Lake will be stored under 43A 40431 00. Evaporative loss from Rainbow Lake is permitted under 43A 40431 00, and there will be no increase in storage in, or evaporative losses from, Rainbow Lake[11].

Once the Upper Criswell Ditch is opened for the season, on or around May 1, the proposed irrigation requirement for the golf course will be conveyed through the pipeline from Upper Criswell Ditch into Rainbow Lake and then diverted at a secondary pump site in Rainbow Lake to the golf course. Water will be pumped from Rainbow Lake by means of a Watertronics variable frequency drive vertical turbine pump station with 2,700 GPM capacity. However, as the pipeline from the Upper Criswell Ditch to Rainbow Lake has only an 800 GPM capacity, the pipeline operates for a longer period each day than the secondary pump site from Rainbow Lake. The exact hours the golf course will be irrigated will vary from day-to-day depending on operational needs, but the typical period of heavy use will be during the hours of 9 pm to 6 am (up to approximately 9 hours a day). Water will be diverted from the Upper Criswell Ditch into Rainbow Lake for up to 24 hours a day.

The Applicant proposes to temporarily store up to 5 days of water for the golf course, 11.8 AF[12], in Rainbow Lake to buffer daily temporal differences between the golf course pumping requirements vs. inflow from the Upper Criswell Ditch. This "buffer water" will also protect against disruptions from potential issues with the Upper Criswell Ditch delivery system, and/or to account for gaps between use of natural flow and stored water if the Applicant's natural flow claims are called out of priority sooner than expected. Accounting for conveyance loss from the headgate of the Upper Criswell Ditch to the pump in Rainbow Lake, the 'buffer water" equates to a diverted volume of 15.7 AF[13]. The "buffer water" will be diverted during the first natural flow leased water right 43A 40446 00, and stored in Rainbow Lake.

The 800 GPM flow rate at the secondary diversion from Upper Criswell Ditch into the pipeline to Rainbow Lake allows for a total diversion into Rainbow Lake of 1,152,000 gpd (3.5 AF/day)[14], while the applied volume requirement for the golf course in May is approximately 129,032 gpd (0.4 AF/day). Thus, the applicant has the capacity to divert an additional 3.1 AF/day in excess of the daily irrigation requirement during the month of May to build up the "buffer water" in Rainbow Lake (i.e., the Applicant can divert the "buffer water" into Rainbow Lake over approximately 4 days). This "buffer water" will displace water held in Rainbow Lake pursuant to claim number 43A 40431 00. If the "buffer water" is used during the irrigation season, it can be refilled by the water right that is being leased at the time (or the next water right being leased if the buffer is used at the end of a lease period). The Applicant will not divert more than 325.4 AF during any one season, so the number or timing of any

[11] Regardless of evaporation being accounted for under 43A 40431 00, evaporation from temporary storage does not need to be calculated as part of a temporary lease application. Per DNRC's rule making file, SB178 Final Proposed Rules Adopted Rules Comments, Pg. 25, *"it is not necessary to determine evaporative losses from the temporary storage because the entire volume of the leased water can be consumed."*

[12] Based on the Applicant's water use calculations for the proposed golf course, the maximum daily water use for the proposed golf course will be approximately 768,709 gallons per day at the pump in Rainbow Lake, based on maximum daily use during the month of July, which equates to 768,709 gallons * 5 days = 3,843,545 gallons / 325,851 = 11.8 AF (at the pump in Rainbow Lake).

[13] 11.8 AF / (1-0.2497) = 15.7 AF diverted volume.

[14] 800 gpm * 60 minutes/hour = 48,000 gph * 24 hours/day = 1,152,000 gpd. 1,152,000 gpd / 325,851 = 3.54 AF/day.

potential refills of the "buffer water" will not exceed the total diverted volume proposed under the Lease. If the "buffer water" is not applied to the golf course by the end of the same irrigation season it is diverted, it will be stored over-winter in Rainbow Lake and applied to the golf course early in the following season.

The Applicant expects that all of the 325.4 AF/year of proposed diverted volume under the term of the Lease will either be applied to the golf course or be lost as conveyance loss within the same year that it is diverted. However, depending on seasonal conditions during the irrigation season, it is possible that the golf course applied volume requirement will be less than expected and/or conveyance losses will be less. Additionally, the Applicant may not need to use all of the "buffer water" in a given season. Any portion of the 325.4 AF/year diverted and conveyed into Rainbow Lake, but not applied to the golf course during the season in which it is diverted, will be stored over-winter in Rainbow Lake and used in the following year(s) prior to the opening of the Upper Criswell Ditch. This "carry over" volume may consist of all or part of the "buffer water", plus any additional volume diverted and conveyed to Rainbow Lake but not applied to the golf course. It is not possible to specify in advance what the exact carry over volume will be in Rainbow Lake during any given year. However, the Applicant's measurement plan described in Section 11.g will allow the Applicant to account for all water diverted into and out of Rainbow Lake, and thus quantify the carry-over volume stored in Rainbow Lake over the winter.

At the end of the irrigation season, the amount of Hammond Creek water in Rainbow Lake under 43A 40431 00 will be lower by the volume of Hammond Creek water displaced out of Rainbow Lake by the temporary storage of Rock Creek and/or Rock Lake water in Rainbow Lake. The volume of Hammond Creek water displaced out of Rainbow Lake will depend on fluctuations in volume actually applied to the golf course due to seasonal conditions and actual experienced conveyance losses in the Upper Criswell Ditch. The Applicant's proposed measurement plan, and ability to control the outflow from Rainbow Lake via the gate valve in the bottom of the face of the Rainbow Lake dam, will allow the Applicant to ensure that Hammond Creek water is not used to refill Rainbow Lake due to the temporary lease and use of Rainbow Lake as storage for Rock Creek/Rock Lake water[15].

11.a A copy of the executed lease agreement.

See attached Exhibit 11.a.

[15] In the unlikely event that Rainbow Lake has to be partially or completely drained for routine maintenance of Rainbow Lake unrelated to the water management in the temporary lease (e.g., physical issues are identified which require draining the reservoir to complete repair work), then Hammond Creek water will be used to refill Rainbow Lake pursuant to 43A 40431 00 (as has been the historic use practices under 43A 40431 00). However, Hammond Creek water will not be used to refill stored water under 43A 40431 00 displaced by Rock Creek and/or Rock Lake water conveyed into, and stored in, Rainbow Lake pursuant to the temporary Lease.

11.b Evidence that the water right has been used within the last 5 years.

For the purposes of the calculations in this temporary lease, the Applicant bases its leased water consumptive calculations on 519.9 acres[16]. These 519.9 acres have been irrigated consistently for the past 5 years. Irrigation of the POU within the last 5 years is supported by aerial imagery from 2021 and 2024, provided as Exhibit 11.b.1, as well as affidavits of Ty Ferguson, Director of Agricultural Operations for CMR Ranch Owner LLC., provided as Exhibit 11.b.2. Water commissioner records from 2020 through 2025 further supporting the Applicant's diversions are provided as Exhibit 11.b.3[17].

11.c. A statement of potential adverse effect explaining what potential adverse effect could occur from the change in use under the temporary lease and how this determination was made.

Based on the statutory language, implementing regulations, and application requirements for short-term leasing, the Applicant believes the constraints imposed on the use of leased water prevent potential adverse effects on other appropriators. Specifically, the volume of water available for lease is limited to the consumptive use of the subject water right(s), based only on acres irrigated within the last five years. Additionally, there can be no change in the point of diversion and no irrigation in the place of use for the leased water rights. Taken together, these constraints ensure that other appropriators on the source will not be adversely affected because the entire unconsumed fraction of the leased water right(s) will remain in the source.

While it is true that leasing water under the statutory and regulatory constraints may alter the magnitude, timing and location of unconsumed water that may have returned to the source, that fact alone does not create any adverse effect. As a rule, if other appropriators can exercise their water rights there is no adverse effect. Moreover, a water user cannot be compelled to use water rights for the benefit of others. They may choose not to divert water from the source instead. By definition, any resulting alteration in the magnitude, timing and location of unconsumed water returning to the source does not cause adverse effect. In the same way, the short-term leasing statute eliminates the potential for adverse effects by prohibiting any diversion of the unconsumed portion of a leased water right.

11.d. A description of planned actions that will be taken to prevent potential adverse effects that, in aggregate, demonstrate no adverse effects.

The Applicant is proposing not to irrigate anywhere within the decreed place of use, 763.2 acres of historic irrigation under the Applicant's natural flow claims plus stored water claims 43A 40463 00, 43A 40464 00 and 43A 40465 00. While this proposal is probably over-conservative, the Applicant

[16] The Applicant is limiting calculations in this change application to the 519.9 acres irrigated within the last 5 years pursuant to MCA 85-2-428. The Applicant is not abandoning the remainder of the historically irrigated acres that are not utilized for calculation purposes in this temporary lease application, nor modifying or waiving any rights or positions described in change applications 43A 30170988 and 43A 30170989.

[17] The Applicant has been provided with water commissioner records from 2020, 2021, and 2025, provided in Exhibit 11.b.3. As of the date of this application, the Applicant has not been provided with water commissioner records from the 2022, 2023, and 2024 seasons. The lack of water commissioner records from 2022, 2023, and 2024 does not indicate a lack of diversions during these years, it is only that the Applicant has not received its invoices and records of delivery from the water commissioner for those years.

believes that diverting only the leased (consumed) volume of water prevents any potential for adverse effects[18].

In addition, the Applicant is proposing to convey no more than 3.0 cfs of leased water using the Upper Criswell Ditch. This is substantially less flow than what the Applicant has diverted during each of the past five years. For example, the maximum diversion during the 2025 season was 10.94 cfs at the primary POD of the Upper Criswell Ditch based on the corrected flume readings (see Exhibit 6.3). The proposed use represents a substantial reduction in the volume and flow rate of water that will be diverted. These proposed actions ensure there will be no increase in the historic consumptive use and no adverse effect on third-party water users in the Rock Creek drainage.

The Applicant is also proposing to use Rainbow Lake in the Hammond Creek drainage for temporary storage of leased water. Hammond Creek water users will be protected from any potential adverse effects under Applicant's proposed measurement plan and use of the existing release valve, as necessary, to ensure that Hammond Creek outflow from Rainbow Lake remains equal to Hammond Creek inflow, less evaporative losses, at all times. See Section 11.g for a detailed description of the measurement plan. In addition to measuring and reporting Hammond Creek inflow and outflow, the Applicant will also measure and report the volume of water diverted into Rainbow Lake from the Upper Criswell Ditch and the volume of water pumped out of Rainbow Lake to irrigate the proposed place of use for leased water to confirm that no Hammond Creek water is being diverted or used as part of the golf course irrigation.

11.e. Explain in detail how the existing beneficial use of the leased water right and any supplemental water rights will cease on the existing place of use during the lease period. The explanation must account for the full volume of water proposed for lease and must clearly indicate where the beneficial use will cease, including the number and location of acres to be removed from irrigation, if applicable.

For the pendency of the Lease, the Applicant will cease all irrigation of the historically irrigated acres under the lease rights (763.2 acres of historic irrigation under the Applicant's natural flow claims plus stored water claim 43A 40464 00) – see Exhibit 11.f. There will be no irrigation of these acres from any of the rights proposed for lease, nor from any of the Applicant's supplemental water rights not included in the Lease. The Applicant will accomplish this by not diverting water onto the agricultural irrigation fields. The leased water conveyed in the Upper Criswell Ditch will connect to the pipeline to Rainbow Lake. In order to provide adequate head into the Rainbow Lake pipeline, some extra flow may be diverted which is in addition to the 800 GPM diverted into the pipeline to Rainbow Lake. If this occurs, any additional flow will not be applied to the agricultural irrigation fields, but will rather be returned to Rock Creek via the return ditch in Section 23 (see Exhibit 11.f). The Applicant plans to

[18] The Applicant is not waiving its right to file an amended, or new, temporary lease application in future years that includes some irrigation within the decreed place of use. A new or amended application would be subject to DNRC review and third-party objection.

improve the efficiency of the Upper Criswell Ditch to minimize the amount of excess flow that is returned to Rock Creek.

11.g. A description of the plan for measuring and reporting the amount of leased water.

During the term of the Lease, leased water will be measured daily at the point(s) of diversion. For natural flow water rights 43A 40444 00 and 43A 40446 00, the point of diversion is the headgate of the Upper Criswell Ditch from Rock Creek. For Rock Lake stored water right 43A 40464 00, the point of diversion is the Rock Lake dam. There is no conveyance loss between the Rock Lake dam and the headgate of the Upper Criswell Ditch[19]. Thus, the flow rate / volume of stored water released from the Rock Lake dam is equal to the flow rate / volume of stored water conveyed from Rock Creek into the Upper Criswell Ditch.

The Applicant proposes to measure daily the water diverted from Rock Creek and Rock Lake, as well as all inflows and outflows for Rainbow Lake. The proposed measurement plan consists of the following measurements / measurement locations:

1. Rock Lake
    a. All stored water released from Rock Lake will be measured by the existing control infrastructure in the tunnel diversion from Rock Lake which includes the ability to remotely monitor and control the tunnel from the ranch offices and adjust / measure release as low as 25 GPM or less with +/- 5% accuracy. Engineering drawings for the new controls at the Rock Lake tunnel are provided as Exhibit 11.g.3, and pictures are provided as Exhibit 11.g.4.
    b. The measurement infrastructure at Rock Lake enables the Applicant to determine how much the lake is filling/storing the water each day over the winter/spring. This allows the Applicant to discern when water is being diverted (stored) under 43A 40464 00 for the purposes of the Lease.
    c. The measurement infrastructure at Rock Lake also enables the Applicant to quantify, and release through Rock Lake, the natural flow of Rock Creek later in the irrigation season (i.e., distinguish releases of stored water vs natural flow running through Rock Lake).
2. Upper Criswell Ditch
    a. All water diverted from Rock Creek will be measured at the "upper flume" below the headgate of the Upper Criswell Ditch, located in the SESESE of Section 7, T2N R11E. The "upper flume" was replaced in November of 2025 and the Applicant's engineers will test it in the spring of 2026 to ensure it is set correctly (and adjust it if necessary).

[19] DNRC did not find any conveyance loss in Rock Creek in the technical analysis for the prior, withdrawn change application (see Irrigation Change Application Technical Report, dated March 27, 2024 for change application 43A 30159760). This was confirmed by Applicant in 2025 through regular measurements of the flow rates released from Rock Lake, the diversions into Upper Criswell Ditch, and in Rock Creek immediately below the Upper Criswell Diversion. See releases from Rock Lake in Exhibit 11.g.1, measurements of the flow in Rock Creek immediately below the Upper Criswell Diversion in Exhibit 11.g.2 and the diversions in Upper Criswell Ditch in Exhibit 6.3 and discussed above in the response to question #6.

A diagram of the new flume is provided as Exhibit 11.g.5, and pictures are provided as Figures 1 and 2 below.

b. A second flume, the "lower flume," will measure all water in the Upper Criswell Ditch at the east (up-gradient) edge of the historic POU prior to any secondary diversions from the ditch. The "lower flume" is located in the NENENW of Section 24, T2N R11E.

c. All water diverted into the pipeline from the Upper Criswell Ditch to Rainbow Lake will be measured with a Lindsay Growsmart magnetic flow meter located in the diversion of the pipeline from the Upper Criswell Ditch (SENWNW of Section 24, T2N R10E).

3. Rainbow Lake

   a. Inflows and outflows from Hammond Creek will be measured at the following three locations. A full summary of the Rainbow Lake measurement plan provided by Hydrometrics, Inc. is provided as Exhibit 11.g.6.

      i. Inflow from Hammond Creek into Rainbow Lake will be measured by means of a radar water level sensor installed on the existing weir in Hammond Creek above Rainbow Lake.

      ii. Outflow from Rainbow Lake will be measured by a radar water level sensor installed on the existing Parshall flume in the channel of Hammond Creek below (west of) the outflow from the Rainbow Lake dam. Water can be released from Rainbow Lake via the spillway, or by means of a hand-wheel operated gate at the bottom of the dam when the level of Rainbow Lake drops below the spillway intake.

      iii. A pressure transducer will be installed in Rainbow Lake at the location of the golf course pumphouse to measure the water level in Rainbow Lake and to determine the outflow through the spillway.

   b. Water diverted from Rainbow Lake for irrigation of the golf course will be measured with the existing flow meter at the secondary pump site from Rainbow Lake in the NESWSE of Section 14, T2N R10E. See design plans for the wet well pump site in Rainbow Lake (Exhibit 11.g.7)

Measurement at the "upper flume" (measurement #1) and the "lower flume" (measurement #2) will capture the total water diverted under the proposed lease, as well as the conveyance loss in the Upper Criswell Ditch. Measurements of all water into and out of Rainbow Lake will ensure that no Hammond Creek water is inadvertently used for irrigation of the golf course or to refill Rainbow Lake. The Applicant will ensure that diversions from Rainbow Lake to the golf course (measurement #6) do not exceed Rock Creek and Rock Lake water conveyed into Rainbow Lake via the pipeline from the Upper Criswell Ditch (measurement #4). From Hammond Creek, only the evaporative volume which is part of Hammond Creek claim 43A 40431 00, calculated and apportioned monthly based on the 23.44-acres surface area of Rainbow Lake and DNRC's gridded net evaporation GIS data, will be retained/used in Rainbow Lake. The monthly net evaporative volume by month and associated daily flow rate for the period of April through October is provided as Table 5.

Table 5 – Monthly Net Evaporation from Rainbow Lake for Period of April through October

Month	Net Evaporation Rate (inches)[20]	Rainbow Lake Net Evaporation (AF)[21]	Rainbow Lake Net Evaporation Flow Rate (gpm)[22]
April	1.1	2.15	16.21
May	1.09	2.13	15.54
June	1.08	2.11	15.91
July	1.89	3.69	26.95
August	4.46	8.71	63.59
September	4.6	8.99	67.78
October	3.38	6.60	48.19
Total	***17.6***	***34.38***	

The Applicant's proposed measurement plan will allow the Applicant to accurately and efficiently measure all water diverted and conveyed under the leased water rights during the pendency of the temporary lease, and to ensure that 1) only the amount of the Applicant's stored water released from the Rock Lake tunnel is diverted into the Upper Criswell Ditch; 2) all water diverted from Rainbow Lake for irrigation of the proposed golf facility is water diverted from Rock Creek and conveyed through Rainbow Lake; and 3) the natural flow of Hammond Creek, minus the evaporative volume of water under 43A 40431 00, flows through Rainbow Lake via the spillway and/or the gate valve at the bottom of the Rainbow Lake dam.

[20] Per DNRC gridded net evaporation GIS data, provided to DMS by Jack Landers, July 11, 2023.
[21] Calculated based on the net evaporation rate, converted to feet, multiplied by the 23.44-acre surface area of Rainbow Lake.
[22] Flow rate calculated as the monthly net evaporation volume divided by the days in each month, multiplied by 226.29 to yield the flow rate in gpm associated with the monthly net evaporation from Rainbow Lake.

Figure 1: Looking up-ditch (east) at new flume in Upper Criswell Ditch, SESESE Section 7, T2N R11E, November 10, 2025.

Figure 2: Looking down-ditch (west) at new flume in Upper Criswell Ditch, SESESE Section 7, T2N R11E, November 10, 2025.

43A 40464 00_TempLeaseForm650_Combined

Final Audit Report 2026-01-16

Created:	2026-01-16
By:	Reilly Tunby (tunby@dmsnaturalresources.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAmnMj2BPPes69yb56uANx16yHBM86itmq

"43A 40464 00_TempLeaseForm650_Combined" History

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Agreement completed.
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Exhibit 3.1

Exhibit 3.1

stephenson dmsnaturalresources.com

From: Ward, Luke <Lucas.Ward@mt.gov>
Sent: Friday, October 3, 2025 10:57 AM
To: stephenson dmsnaturalresources.com
Cc: Scharf, Mallory; Ward, Nathaniel
Subject: Response to MCA 85-2-428 & ARM 36.12.2102 Follow Up

Hi Deb,

Thanks for getting in touch. We appreciate you pointing out the ARM citation error – we have updated the form and republished it online.

In response to your two other questions, I can confirm you are correct on both counts.

Let me know if you have any other questions on temporary leases.

Thanks,
Luke Ward

--

From: stephenson dmsnaturalresources.com <stephenson@dmsnaturalresources.com>
Sent: Wednesday, October 1, 2025 4:29 PM
To: Ward, Nathaniel <NWard@mt.gov>
Subject: [EXTERNAL] MCA 85-2-428 & ARM 36.12.2102 Follow Up

Nate

Thanks for your time on the phone Monday helping to explain MCA 85-2-428 & ARM 36.12.2102.

I am wondering if the form has a typo on page 1 – it references ARM 36.12.210**3**. Should it say ARM 36.12.210**2(3)**?

On our call Monday, this is what I understood you to say about use of a leased, and any supplemental rights, right on the place of use: *One can partially lease a right. So for example, if you have a 500 acre place of use, and assuming for example purposes your consumptive use calc is 1 AF CU per acre. You only are leasing 75 AF to the shared ditch user. Then you have to FULLY retire 75 acres of irrigation (to "free up" 75 AF CU for lease), from all water rights (both the leased right and supplemental rights), for the full season. However, you can still irrigate your remaining 425 acres of the place of use (with the leased right and any supplemental rights).* Could you please confirm if I understood you correctly?

I also want to clarify question #3 on the form. It discusses the 40 days of use in relation to the period of use. However, I want to confirm, that if one adds storage (which is allowable under 85-2-428), that the 40 day limitation is only on the period of diversion. I.e. the leasee is limited to divert the leased water for only 40 days. But if they put some of the water into storage, they can use it from storage (which would be the period of use) for more than 40 days correct?

Thanks for helping to confirm and clarify.

Sincerely,

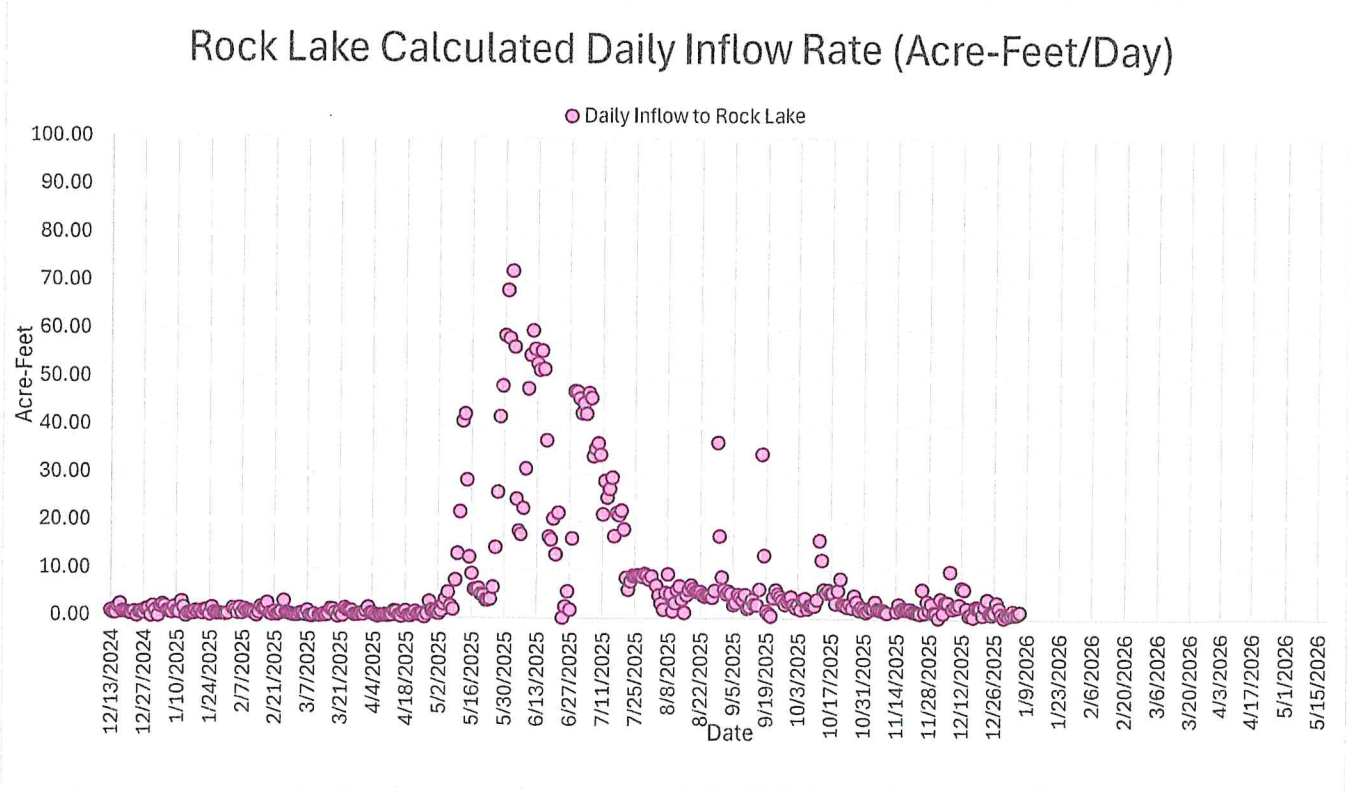
Deborah Stephenson
DMS Natural Resources, LLC
602 S. Ferguson Ave., Suite 2
Bozeman, MT 59718
Office: 406-582-4988
Cell: 406-600-1422
stephenson@dmsnaturalresources.com
www.dmsnaturalresources.com [dmsnaturalresources.com]

Luke Ward | New Appropriations Program Specialist
Water Rights Bureau
Montana Department of Natural Resources and Conservation
DESK: 406-444-0092 **EMAIL:** lucas.ward@mt.gov
Website | **Facebook** | **X (Twitter)** | **Instagram**
How did we do? Let us know here: Feedback Survey

Exhibit 3.2

Exhibit 3.2

CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 3.2



Data obtained from lake level transducer equipment located at Rock Lake.

CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 3.2

Date	Daily Inflow to Rock Lake (AF)
10/19/2024	6.24
10/23/2024	5.18
10/27/2024	1.34
10/28/2024	1.23
10/29/2024	1.44
10/30/2024	1.68
10/31/2024	1.21
11/1/2024	1.65
11/2/2024	1.02
11/3/2024	1.76
11/4/2024	1.25
11/5/2024	3.86
11/6/2024	1.21
11/7/2024	0.79
11/8/2024	1.26
11/9/2024	1.28
11/10/2024	1.37
11/11/2024	1.87
11/12/2024	0.00
11/13/2024	0.00
11/14/2024	0.00
11/15/2024	1.56
11/16/2024	2.19
11/17/2024	1.53
11/18/2024	0.85
11/19/2024	2.35
11/20/2024	0.95
11/21/2024	1.76
11/22/2024	0.97
11/23/2024	1.95
11/24/2024	1.20
11/25/2024	1.20
11/26/2024	1.32
11/27/2024	1.62
11/28/2024	0.00
11/29/2024	0.00
11/30/2024	0.00
12/1/2024	0.79
12/2/2024	0.89
12/3/2024	1.09
12/4/2024	0.71
12/5/2024	0.71
12/6/2024	0.72
12/7/2024	0.73
12/8/2024	1.02
12/9/2024	2.48
12/10/2024	1.21
12/11/2024	1.12
12/12/2024	1.13
12/13/2024	0.71
12/14/2024	0.72
12/15/2024	1.98
12/16/2024	2.48
12/17/2024	0.93
12/18/2024	0.89
12/19/2024	0.77
12/20/2024	0.59
12/21/2024	0.55
12/22/2024	0.89
12/23/2024	0.00
12/24/2024	0.83
12/25/2024	0.97
12/26/2024	0.67
12/27/2024	1.39
12/28/2024	1.52
12/29/2024	0.00
12/30/2024	2.06
12/31/2024	1.12
1/1/2025	0.00
1/2/2025	2.02
1/3/2025	2.39
1/4/2025	2.06
1/5/2025	1.11
1/6/2025	1.07
1/7/2025	0.77
1/8/2025	1.82
1/9/2025	0.98
1/10/2025	0.74
1/11/2025	3.05
1/12/2025	1.75
1/13/2025	0.01
1/14/2025	0.62
1/15/2025	0.62
1/16/2025	0.57
1/17/2025	1.09
1/18/2025	0.76
1/19/2025	1.00
1/20/2025	0.59
1/21/2025	1.26
1/22/2025	1.32
1/23/2025	0.34
1/24/2025	1.77
1/25/2025	0.76
1/26/2025	0.52
1/27/2025	0.56
1/28/2025	0.51
1/29/2025	0.44
1/30/2025	0.44
1/31/2025	0.57
2/1/2025	-0.14
2/2/2025	1.62
2/3/2025	1.27
2/4/2025	0.72
2/5/2025	1.69
2/6/2025	0.66
2/7/2025	1.47
2/8/2025	0.93
2/9/2025	1.06
2/10/2025	0.82
2/11/2025	0.60
2/12/2025	0.17
2/13/2025	0.83
2/14/2025	2.05
2/15/2025	1.64
2/16/2025	1.86
2/17/2025	2.94
2/18/2025	0.70
2/19/2025	0.55
2/20/2025	0.99
2/21/2025	0.52
2/22/2025	0.69
2/23/2025	1.06
2/24/2025	3.33
2/25/2025	0.87
2/26/2025	0.79
2/27/2025	0.61
2/28/2025	0.47
3/1/2025	0.43
3/2/2025	0.47
3/3/2025	0.78
3/4/2025	0.82
3/5/2025	0.42
3/6/2025	1.33
3/7/2025	0.29
3/8/2025	0.18
3/9/2025	0.56
3/10/2025	-0.60
3/11/2025	0.33
3/12/2025	0.41
3/13/2025	0.62
3/14/2025	0.41
3/15/2025	0.66
3/16/2025	1.70
3/17/2025	1.62
3/18/2025	0.91
3/19/2025	0.14
3/20/2025	1.10
3/21/2025	0.36
3/22/2025	1.89
3/23/2025	1.53

Data obtained from lake level transducer equipment located at Rock Lake.

CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 3.2

Date	Daily Inflow to Rock Lake (AF)
3/24/2025	1.42
3/25/2025	1.38
3/26/2025	0.60
3/27/2025	0.58
3/28/2025	0.65
3/29/2025	0.92
3/30/2025	0.70
3/31/2025	1.33
4/1/2025	2.06
4/2/2025	0.92
4/3/2025	0.83
4/4/2025	0.46
4/5/2025	0.22
4/6/2025	0.51
4/7/2025	0.42
4/8/2025	0.61
4/9/2025	0.40
4/10/2025	0.48
4/11/2025	0.60
4/12/2025	1.33
4/13/2025	1.25
4/14/2025	0.43
4/15/2025	0.23
4/16/2025	1.15
4/17/2025	1.40
4/18/2025	0.47
4/19/2025	0.41
4/20/2025	0.78
4/21/2025	1.26
4/22/2025	0.69
4/23/2025	0.66
4/24/2025	0.82
4/25/2025	0.14
4/26/2025	0.84
4/27/2025	3.41
4/28/2025	1.52
4/29/2025	1.19
4/30/2025	1.33
5/1/2025	0.86
5/2/2025	1.46
5/3/2025	2.93
5/4/2025	4.00
5/5/2025	5.38
5/6/2025	2.47
5/7/2025	1.75
5/8/2025	7.91
5/9/2025	13.38
5/10/2025	22.08
5/11/2025	40.92
5/12/2025	42.48

Date	Daily Inflow to Rock Lake (AF)
5/13/2025	28.70
5/14/2025	12.66
5/15/2025	9.21
5/16/2025	5.92
5/17/2025	5.98
5/18/2025	6.10
5/19/2025	4.93
5/20/2025	4.65
5/21/2025	3.76
5/22/2025	3.78
5/23/2025	3.92
5/24/2025	6.40
5/25/2025	14.69
5/26/2025	26.16
5/27/2025	41.91
5/28/2025	48.33
5/29/2025	58.86
5/30/2025	68.28
5/31/2025	58.22
6/1/2025	72.21
6/2/2025	56.48
6/3/2025	24.76
6/4/2025	18.13
6/5/2025	17.41
6/6/2025	22.83
6/7/2025	31.09
6/8/2025	47.79
6/9/2025	54.81
6/10/2025	59.84
6/11/2025	56.01
6/12/2025	53.02
6/13/2025	51.68
6/14/2025	55.67
6/15/2025	51.86
6/16/2025	36.96
6/17/2025	16.89
6/18/2025	16.28
6/19/2025	20.71
6/20/2025	13.18
6/21/2025	21.92
6/22/2025	-2.38
6/23/2025	0.01
6/24/2025	2.35
6/25/2025	5.48
6/26/2025	1.68
6/27/2025	16.55
6/28/2025	47.27
6/29/2025	47.09
6/30/2025	45.73
7/1/2025	42.66

Date	Daily Inflow to Rock Lake (AF)
7/2/2025	44.68
7/3/2025	42.53
7/4/2025	46.90
7/5/2025	45.89
7/6/2025	33.70
7/7/2025	35.30
7/8/2025	36.43
7/9/2025	34.03
7/10/2025	21.60
7/11/2025	28.51
7/12/2025	25.08
7/13/2025	26.86
7/14/2025	29.19
7/15/2025	17.05
7/16/2025	21.82
7/17/2025	21.40
7/18/2025	22.33
7/19/2025	18.43
7/20/2025	8.31
7/21/2025	5.90
7/22/2025	7.63
7/23/2025	8.71
7/24/2025	8.67
7/25/2025	8.93
7/26/2025	8.77
7/27/2025	8.58
7/28/2025	9.14
7/29/2025	8.75
7/30/2025	8.01
7/31/2025	8.67
8/1/2025	1207.00
8/2/2025	6.77
8/3/2025	4.71
8/4/2025	2.97
8/5/2025	1.70
8/6/2025	5.26
8/7/2025	9.12
8/8/2025	5.06
8/9/2025	1.39
8/10/2025	3.12
8/11/2025	5.80
8/12/2025	6.58
8/13/2025	3.85
8/14/2025	1.08
8/15/2025	4.73
8/16/2025	5.88
8/17/2025	6.77
8/18/2025	5.99
8/19/2025	5.51
8/20/2025	5.43

Data obtained from lake level transducer equipment located at Rock Lake.

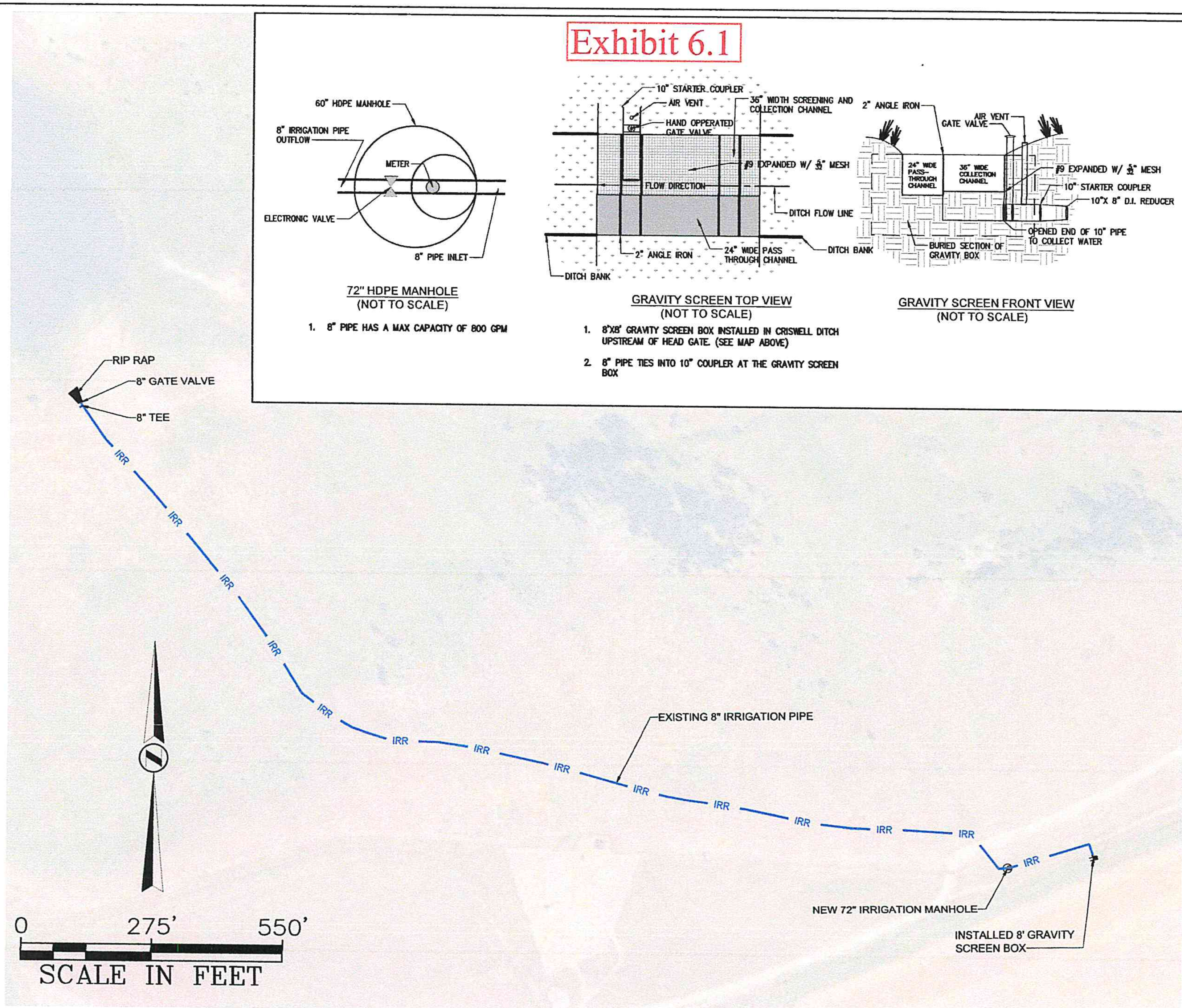
CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 3.2

Date	Daily Inflow to Rock Lake (AF)
8/21/2025	5.41
8/22/2025	4.73
8/23/2025	4.42
8/24/2025	4.66
8/25/2025	4.60
8/26/2025	4.22
8/27/2025	5.70
8/28/2025	36.58
8/29/2025	17.03
8/30/2025	8.47
8/31/2025	5.84
9/1/2025	4.98
9/2/2025	5.48
9/3/2025	5.05
9/4/2025	2.70
9/5/2025	3.15
9/6/2025	4.80
9/7/2025	4.24
9/8/2025	3.75
9/9/2025	4.82
9/10/2025	1.95
9/11/2025	2.28
9/12/2025	3.73
9/13/2025	2.77
9/14/2025	2.66
9/15/2025	5.96
9/16/2025	34.19
9/17/2025	12.98
9/18/2025	1.41
9/19/2025	0.85
9/20/2025	0.36
9/21/2025	4.17
9/22/2025	5.82
9/23/2025	4.91
9/24/2025	4.37
9/25/2025	3.58
9/26/2025	2.87
9/27/2025	3.60
9/28/2025	4.16
9/29/2025	4.46
9/30/2025	2.80
10/1/2025	2.22
10/2/2025	2.84
10/3/2025	1.84
10/4/2025	3.93
10/5/2025	4.12
10/6/2025	2.03
10/7/2025	2.71
10/8/2025	2.83
10/9/2025	2.66
10/10/2025	3.95
10/11/2025	16.29
10/12/2025	12.16
10/13/2025	6.01
10/14/2025	5.37
10/15/2025	5.90
10/16/2025	5.33
10/17/2025	5.32
10/18/2025	3.15
10/19/2025	5.81
10/20/2025	8.28
10/21/2025	2.92
10/22/2025	2.75
10/23/2025	2.43
10/24/2025	3.02
10/25/2025	2.19
10/26/2025	4.72
10/27/2025	3.46
10/28/2025	1.79
10/29/2025	2.32
10/30/2025	1.99
10/31/2025	1.41
11/1/2025	1.70
11/2/2025	2.28
11/3/2025	2.17
11/4/2025	3.52
11/5/2025	1.99
11/6/2025	1.84
11/7/2025	1.77
11/8/2025	1.51
11/9/2025	1.28
11/10/2025	-0.93
11/11/2025	-1.71
11/12/2025	-4.03
11/13/2025	1.59
11/14/2025	3.01
11/15/2025	1.88
11/16/2025	2.13
11/17/2025	1.89
11/18/2025	1.91
11/19/2025	1.94
11/20/2025	1.54
11/21/2025	1.46
11/22/2025	1.26
11/23/2025	1.13
11/24/2025	6.14
11/25/2025	1.32
11/26/2025	3.65
11/27/2025	1.84
11/28/2025	3.17
11/29/2025	1.28
11/30/2025	1.18
12/1/2025	0.23
12/2/2025	4.19
12/3/2025	1.28
12/4/2025	3.54
12/5/2025	3.41
12/6/2025	9.89
12/7/2025	2.17
12/8/2025	2.63
12/9/2025	2.40
12/10/2025	3.07
12/11/2025	6.43
12/12/2025	6.20
12/13/2025	2.20
12/14/2025	0.75
12/15/2025	1.05
12/16/2025	0.48
12/17/2025	2.44
12/18/2025	2.44
12/19/2025	2.29
12/20/2025	0.81
12/21/2025	2.63
12/22/2025	4.07
12/23/2025	1.17
12/24/2025	0.98
12/25/2025	1.38
12/26/2025	3.42
12/27/2025	2.23
12/28/2025	1.04
12/29/2025	0.35
12/30/2025	0.92
12/31/2025	0.69
1/1/2026	1.11
1/2/2026	1.62
1/3/2026	1.05
1/4/2026	1.07
1/5/2026	1.48

Data obtained from lake level transducer equipment located at Rock Lake.

Exhibit 6.1

Exhibit 6.1


60" HDPE MANHOLE
8" IRRIGATION PIPE OUTFLOW
METER
ELECTRONIC VALVE
8" PIPE INLET
72" HDPE MANHOLE
(NOT TO SCALE)
1. 8" PIPE HAS A MAX CAPACITY OF 800 GPM
10" STARTER COUPLER
AIR VENT
HAND OPPERATED GATE VALVE
36" WIDTH SCREENING AND COLLECTION CHANNEL
#9 EXPANDED W/ 3/32" MESH
FLOW DIRECTION
DITCH FLOW LINE
DITCH BANK
2" ANGLE IRON
24" WIDE PASS THROUGH CHANNEL
GRAVITY SCREEN TOP VIEW
(NOT TO SCALE)
1. 8"X8' GRAVITY SCREEN BOX INSTALLED IN CRISWELL DITCH UPSTREAM OF HEAD GATE. (SEE MAP ABOVE)
2. 8" PIPE TIES INTO 10" COUPLER AT THE GRAVITY SCREEN BOX
2" ANGLE IRON
AIR VENT
GATE VALVE
24" WIDE PASS-THROUGH CHANNEL
36" WIDE COLLECTION CHANNEL
#9 EXPANDED W/ 3/32" MESH
10" STARTER COUPLER
10"X 8" D.I. REDUCER
OPENED END OF 10" PIPE TO COLLECT WATER
BURIED SECTION OF GRAVITY BOX
DITCH BANK
GRAVITY SCREEN FRONT VIEW
(NOT TO SCALE)
RIP RAP
8" GATE VALVE
8" TEE
IRR
EXISTING 8" IRRIGATION PIPE
NEW 72" IRRIGATION MANHOLE
INSTALLED 8' GRAVITY SCREEN BOX
0
275'
550'
SCALE IN FEET

CRISWELL DITCH TIE IN

CRAZY MOUNTAIN RANCH

PARK COUNTY, MONTANA

DESIGNED: LJM
DRAWN: LJM
CHECKED: KWT
DATE: 01/09/2026

SHEET
E 1.0

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HELENA Phone:(406)442-8594

8" MH-1 Butterfly ValvesControlling Flow into Pipeline to Rainbow Lake

ES-BF-03-M2/BF-04-M2 2306

Engineering Specification

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

LEAD FREE*

Butterfly Valves

Series BF-03-M2 Full Lug and BF-04-M2 Wafer

Sizes: 2" – 12"** 200psi (13.8 bar)
14" – 24"** 150psi (10.3 bar)

Watts Series BF resilient seated butterfly valve is available in sizes 2" – 24"** in wafer or lug body design. Incorporating a 200psi (13.8 bar) pressure rating for 2" – 12"** and a 150psi (10.3 bar) pressure rating 14" – 24"**, the BF series butterfly is standardly constructed of a ductile iron body with a choice of either ductile iron, aluminum bronze, or 316 stainless steel discs and 416 stainless steel or 316 stainless steel shaft. A phenolic-backed seat (2"-12")** or aluminum-backed seat (14" – 24")** prevents the seat from collapsing or dislodging. Standard seat materials available include EPDM, Buna-N and Viton. The BF Series mounting pad is designed to ISO 5211 standard to accommodate lever handles, gear operators, or actuation.

The Watts Series BF butterfly valves are designed and manufactured for use with ANSI 125 or 150 Class flanges and comply with API 609 and MSS-SP 67 standards to meet the stringent requirements of HVAC, Irrigation, OEM, Commercial, Institutional, and Industrial applications.

Approvals

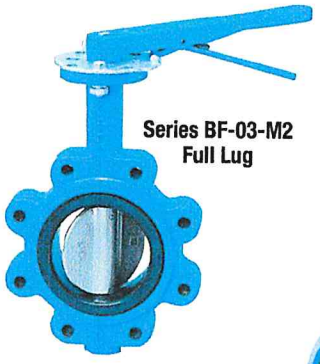
The valves are MSS-SP-67 Type I – Valves for tight shut-off (tested per section 10.2.1). As specified in MSS-SP-67, we conduct 100% shell testing at 1.5 times rated pressure and seat leakage testing at 1.1 times rated pressure.

Features

- **Body** – Available in Full Lug (BF-03-M2) and Wafer (BF-04-M2) styles designed for use between ANSI 125 and 150 flanges. Face-to-face dimensions comply with API 609 and MSS-SP-67. All valves are designed to accommodate 2" of insulation. The mounting pad is designed to ISO 5211 standard. The body material is ASTM A-536 ductile iron.
- **Disc** – Disc edge is machined and polished 360 degrees to assure leak-tight shutoff while minimizing operating torque. Positive, disc-to-shaft connection is provided by stainless steel precision taper pins. Discs are available in ductile iron, aluminum bronze, or 316 stainless steel.
- **Seat** – Phenolic or aluminum backed, non-collapsible, resilient seat is mechanically secured to allow for dead-end service usage to the full pressure rating in lug style valves. Full 360 degrees sealing isolates the body components from the media and provides the primary shaft seal. Seats are available in EPDM, Buna-N, and Viton.

NSF Certified to NSF/ANSI 61-G

EPDM seat only



Series BF-03-M2 Full Lug

Series BF-04-M2 Wafer

- **Shaft** – One-piece shaft delivers positive disc-to-seat location with maximum strength. 416SS is standard shaft with ductile iron and aluminum bronze disc. 316SS shaft is standard with 316SS disc models.

  Three shaft bushings provide shaft support for proper alignment and minimal shaft deflection. Bi-directional shaft seals prevent external contamination of the stem area and provide backup for the primary shaft seal formed by the disc/seat interface.
- **Handle** – ISO 5211 top work design allows for standard 10 position handle 2" – 6"** and manual, worm gear operators for 8" – 24"** sizes. An infinite positioning locking handle is an available option on 2" – 12"** valves. The posi-lok handle provides an infinite position stop, a memory stop, and a pad-locking device in the fully closed position.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

NOTICE

Inquire with governing authorities for local installation requirements

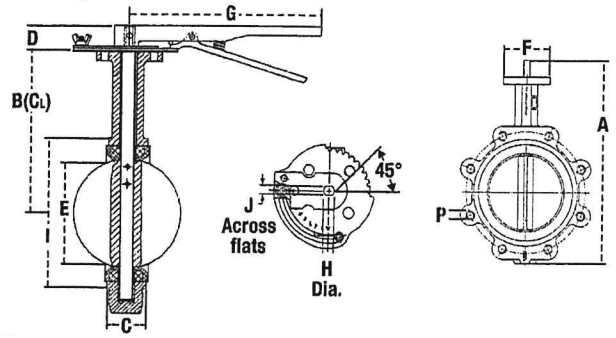
***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

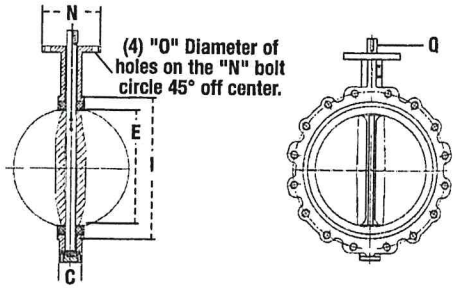
****This product is produced with ASME/ANSI flanged end connections.**

WATTS®

Dimensions

2" through 24"





SIZE	DIMENSIONS																	
	A		B		C		D		E		F		G		H		I		J	
in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2	10¼	273	6⅜	161	1⅝	42	1¼	32	2⅛	54	3⅛	77	10½	267	½	13	3¾	95	⅜	9
2½	11⅝	295	6⅞	175	1¾	45	1¼	32	2½	64	3⅛	77	10½	267	½	13	4¼	108	⅜	9
3	12⅛	308	7⅛	181	1¾	45	1¼	32	3⅛	79	3⅛	77	10½	267	½	13	4¾	120	⅜	9
4	13⅜	346	7⅞	200	2	52	1¼	32	4⅛	105	3⅝	92	10½	267	⅝	16	6⅛	154	⅞	11
5	14⅜	372	8⅜	213	2⅜	56	1¼	32	4⅞	124	3⅝	92	10½	267	¾	19	7⅛	181	½	13
6	15⅝	397	8⅞	226	2⅜	56	1¼	32	6⅛	156	3⅝	92	10½	267	¾	19	8⅜	208	½	13
8	18⅞	479	10¼	260	2⅜	60	1¼	32	8	202	5	125	14	356	⅞	22	10¼	260	⅝	16
10	21¼	540	11½	292	2⅝	66	1¾	45	9⅞	251	5	125	14	356	1⅛	29	12⅝	320	13/16	21
12	24⅜	626	13¼	337	3	76	1¾	45	11⅞	301	6	150	14	356	1¼	32	14¾	375	–	–
14	26¾	679	14½	368	3	76	1¾	45	13⅛	333	6	150	–	–	1¼	32	15⅝	405	–	–
16	30	762	15¾	400	3½	87	2	50	15⅜	391	6⅝	175	–	–	1 1/16	33	18½	470	–	–
18	31½	800	16⅝	422	4⅛	105	2	50	17⅜	442	6¾	175	–	–	1½	38	20 1/16	525	–	–
20	35 5/16	897	18⅞	480	5⅛	130	2⅛	53	19⅜	493	8¼	210	–	–	1⅝	41	22¼	565	–	–
24	42⅞	1088	22⅛	562	6	152	2¼	58	23⅜	594	8¼	210	–	–	2	50	27 5/16	693	–	–

SEATING TORQUE BUNA-N, EPDM	
SIZE	NORMAL CONDITIONS
in.	Wet in.-lbs.	Dry in.-lbs.
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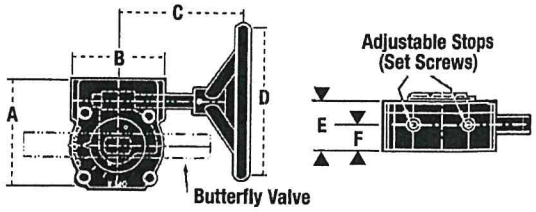
2	134	214
2½	190	289
3	250	387
4	390	644
5	600	959
6	907	1,542
8	1,697	2,919
10	2,500	4,857
12	3,300	7,071
14	3,500	7,305
16	5,500	10,027
18	8,200	13,437
20	10,000	17,925
24	18,680	28,020

GEAR DIMENSIONS: STD. WEATHERPROOF W/ HANDWHEEL								
VALVE SIZE	DEPTH	WIDTH	CL TO HW	HW. DIA.	HEIGHT	CL TO MT PAD	TURNS OPEN/ CLOSE	UNIT WEIGHT
in.	A	B	C	D	E	F		lbs.
2, 2½, 3	5.0	4.2	6.5	6.0	2.7	1.5	7.0	10.0
4	5.0	4.2	6.5	6.0	2.7	1.5	7.0	10.0
5, 6	5.0	4.2	6.5	6.0	2.7	1.5	7.0	10.0
8	7.0	6.2	9.5	12.0	3.0	1.8	7.5	27.5
10	7.0	6.2	9.5	12.0	3.0	1.8	7.5	27.5
12, 14	7.8	6.4	9.5	12.0	3.0	2.0	12.5	33.0
16	11.5	9.6	15.0	16.0	4.2	2.5	20.0	70.5
18	11.5	9.6	15.0	16.0	4.2	2.5	20.0	70.5
20	11.5	9.6	15.0	16.0	4.2	2.5	20.0	70.5
24	12.6	9.1	15.0	24.0	4.5	2.0	20.0	80.0

SIZE	TOP PLATE DRILLING				TAPPED LUG DATA		KEY WAY		WEIGHT LBS.†	
	N		O		BOLT CIRCLE	NO.	BOLT	Q		
in.	in.	mm	in.	mm	in.	mm	Holes	P	in.	mm	88	87
2	2	50	¼	7	4¼	121	4	5/8"-11UNC x 1⅝"	–	–	8	6
2½	2	50	¼	7	5½	140	4	5/8"-11UNC x 1¾"	–	–	10	7
3	2	50	¼	7	6	150	4	5/8"-11UNC x 1¾"	–	–	10	7
4	2¾	70	⅜	10	7½	191	8	⅝"-11UNC x 2"	–	–	17	12
5	2¾	70	⅜	10	8½	216	8	¾"-10UNC x 2 3/16"	–	–	25	16
6	2¾	70	⅜	10	9½	241	8	¾"-10UNC x 2 3/16"	–	–	27	20
8	4	102	½	13	11¾	298	8	¾"-10UNC x 2⅜"	–	–	40	29
10	4	102	½	13	14¼	362	12	⅞"-9UNC x 2⅝"	–	–	63	48
12	5	125	½	13	17	432	12	⅞"-9UNC x 3"	¼ x 1¼	6 x 32	107	78
14	5	125	½	13	18¾	476	12	1"-8UNC x 3"	¼ x 1¼	6 x 32	156	99
16	5½	140	1 1/16	18	21¼	540	16	1"-8UNC x 3½"	5/16 x 1 3/16	8x46	203	140
18	5½	140	1 1/16	18	22¾	578	16	1⅛"-7UNC x 4⅛"	⅜ x 1 5/16	10x40	269	188
20	5½	165	⅛	22	25	635	20	1⅛"-7UNC x 5⅛"	⅜ x 1 5/16	10x40	392	248
24	5½	165	⅛	22	29½	750	20	1¼"-7UNC x 6"	½ x 2⅜	13x60	593	450

†Weights are for valves with ductile iron or aluminum bronze discs. 2" – 12" have levers; 14" – 24" have bare shafts. Refer to Watts F-CDBF for gear operator weights.

C_v RATING (Full Open)	
Size	C_v Rating
in.	C_v
2	135
2½	220
3	302
4	600
5	1,022
6	1,579
8	3,136
10	5,340
12	8,250
14	11,917
16	16,388
18	21,705
20	27,908
24	43,116



How to Order Watts Series BF-M2

14 BF 03 121 1G M2

Size: 2" thru 24"

Series: 03: Full Lug, 04; Wafer

Body: 1: Ductile Iron

Disc:
1: Ductile Iron
2: Aluminum Bronze
3: 316 Stainless Steel*

Shaft:
1: 416 Stainless Steel
316SS on stainless steel disc models*

Seat:
1: EPDM 3: Viton
2: Buna-N

Operator:
0: No handle - 2" thru 24"
G: Gear Operator - 2" thru 24"
5: Standard handle (10-position only) - 2" thru 12"
P: Positioning / Locking Kit with handle - 2" thru 12"

M2 = Series

Materials

Body:	ASTM A-536 Ductile Iron epoxy electrostatic sprayed (RAL5015F-NSF).
Bushing:	Duralon(3): Teflon® - Dacron inner liner bonded to fiberglass - epoxy resin outer shell 2"-12"**, Bronze 14"-24"**
Stem O-rings:	Buna-N
Disc:	ASTM A-395 Ductile Iron / Electroless Nickel Plated ASTM B-148 Aluminum Bronze ASTM A-351 316 Stainless Steel
Shaft:	416 Stainless Steel 316 Stainless Steel on 316SS Disc Models
Seat:	EPDM: +5°F to 248°F (-15°C to +120°C) Buna-N: +14°F to 176°F (-10°C to +80°C) Viton: -4°F to 302°F (-20°C to +150°C)

NOTICE

Do not use EPDM when hydrocarbons are present.

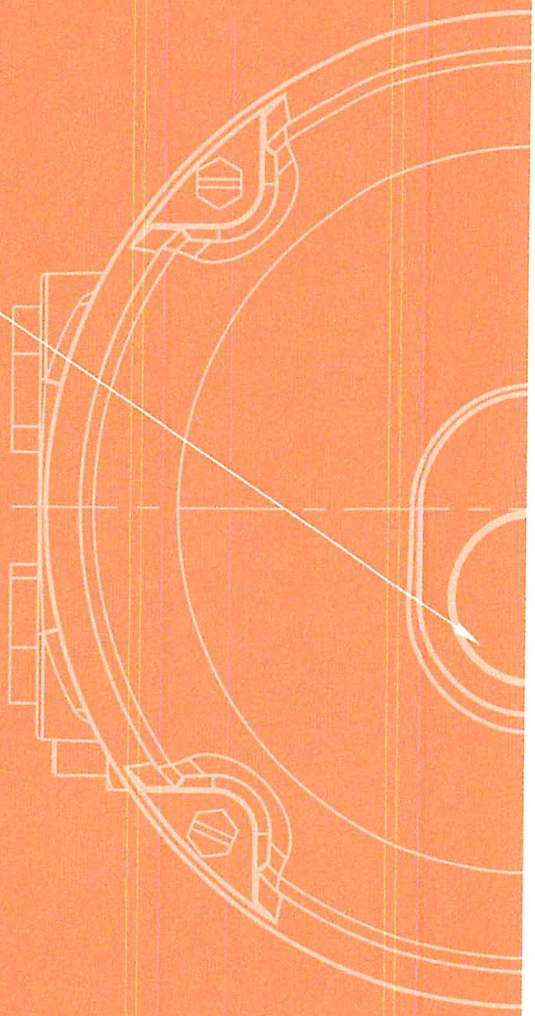
USA: T: (978) 689-6066 • Watts.com
Canada: T: (888) 208-8927 • Watts.ca
Latin America: T: (52) 55-4122-0138 • Watts.com

AQ Switch - actuators for the 8" MH-1 valve

LABEL

FIRST BC

BERNARD® CONTROLS



Invest in Confidence

New

Weatherproof Quarter-turn Actuators
Servomoteurs Quart de tour Etanches

AQ RANGE / GAMME AQ

PRODUCT SPECIFICATIONS / SPÉCIFICATIONS PRODUIT

>AQ RANGE / GAMME AQ

Weatherproof Quarter-turn Actuators
Servomoteurs Quart de tour Etanches

FIRST BC LABEL
The essentials

AQL

AQ1L-AQ3L-AQ7L

- 1x85-260V AC 50/60Hz +24V DC
- 12V DC (on request)

On-Off Class A as standard

> OPTIONS

+ Position transmitter (4-20mA out)
+ Positioner (4-20mA in/out) **> Class B**

AQ SWITCH

AQ5-AQ10-AQ15-AQ25-AQ30-AQ50
AQ80-AQ120-AQ250
AQ430-AQ610-AQ830-AQ1000

- 1x115/220/230V AC 50/60Hz
- 3x380-415V AC 50/60Hz
- 3x440-480V AC 60Hz
- 24V DC *(except AQ80 to AQ1000)*

On-Off Class A as standard

> OPTIONS

+ Low temp. -40°
+ Position potentiometer (1000 Ω) **> Class B (POT)**
+ Position Transmitter (4-20mA out) **> Class B (TAM)**
+ Positioner (4-20mA in/out) **> Class B and Class III**

AQ LOGIC

AQ5-AQ10-AQ15-AQ25-AQ30-AQ50
AQ80-AQ120-AQ250
AQ430-AQ610-AQ830-AQ1000

- 1x115/220/230V AC 50/60Hz
- 3x380-415V AC 50/60Hz
- 3x440-480V AC 60Hz
- 24V DC *(up to AQ50)*

On-Off Class A as standard

> OPTIONS

+ Low temp. -40°
+ Class B (Positioner 4-20mA or 0-10V)
+ Class III (Positioner 4-20mA or 0-10V)
+ 4 additional signaling relays
+ Profibus DPV1
+ Modbus RTU

Contents / Sommaire

BERNARD® CONTROLS

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PRODUCT SPECIFICATIONS - AQL / SPÉCIFICATIONS PRODUIT - AQL

GENERAL / GÉNÉRAL	Description / Description	AQL actuators include a multi-voltage board to supply a 24VDC motor, compact gear case, emergency manual override and standard star-shaped output	Les servomoteurs AQL contiennent une carte multi tension pour alimenter un moteur 24V CC, un mécanisme compact, une commande manuelle d'urgence et une sortie standard en forme d'étoile
	Torque range / Gamme de couple	15N.m to 70N.m	De 15N.m à 70N.m
	Duty Classification / Type de fonctionnement	Adapted to process requirements: • On-Off: Class A actuators complying with EN15714-2 • Inching/Positioning: Class B actuators complying with EN15714-2	Adapté aux besoins du processus : • Tout ou Rien : Servomoteurs Classe A conformes à la norme EN15714-2 • Positionnement pas à pas : Servomoteurs Classe B conformes à la norme EN15714-2
ENCLOSURE - PROTECTION / BOÎTIER - PROTECTION	Casing / Enveloppe	• Aluminium die casting • Cover fastened by captive and stainless steel screws	• Fonderie en aluminium moulé sous pression • Fixation du couvercle par vis imperdables en inox
	External Protection / Peinture - Protection extérieure	• Type : Epoxy powder coating as standard • Protection: C4 according to ISO 12944 • For colors and finishes, please consult us	• Type : Peinture epoxy en poudre en standard • Protection : C4 selon ISO 12944 • Pour les couleurs et finitions, consultez-nous
	Weatherproofness / Étanchéité	IP68 NEMA 4X as standard *Relative humidity: 0 to 95%.*	IP68 NEMA 4X en standard *Hygrométrie: 0 to 95%.*
	Ambient temperature range / Température ambiante de fonctionnement	-20...+60°C / -4 ... +140°F Other temperatures, please consult us	-20...+60°C / -4 ... +140°F Pour d'autres températures, consultez-nous
MOTOR / MOTEUR	Motor technology / Technologie moteur	DC motors	Moteurs à courant continu
	Motor duty rating / Service de fonctionnement moteur	On/Off operation (complying with EN15714-2 Class A) and Inching/Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 120 starts per hour at peak of operation. *(Voltage ±10%, frequency ±2%)*	Tout ou Rien (conforme à la norme EN15714-2 Classe A) & Positionnement pas à pas (conforme à la norme EN15714-2 Classe B) : facteur de marche S4-30%. Jusqu'à 120 démarrages par heure en pic de fonctionnement. *(Voltage ±10%, fréquence ±2%)*
MECHANICAL SPECIFICATIONS / SPÉCIFICATIONS MÉCANIQUES	Gear design / Chaîne cinématique	Actuator is mechanically self-locking	Chaîne cinématique mécaniquement irréversible
	Manual emergency operation / Commande manuelle d'urgence	Manual emergency operation via manual hexagonal output 10mm	Commande manuelle d'urgence via sortie hexagonale de 10mm
	Output flange / Bride de sortie	Actuator flanges comply with ISO 5211	Les brides sont conformes à la norme ISO 5211
	Lubrication / Lubrification	The actuators are lubricated for the product lifetime and do not require any special service.	Les servomoteurs sont lubrifiés pour toute la durée de vie du produit et ne requièrent aucune maintenance spécifique.

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PRODUCT SPECIFICATIONS - AQL / SPÉCIFICATIONS PRODUIT - AQL

ELECTRICAL SPECIFICATIONS / SPÉCIFICATIONS ÉLECTRIQUES	Power supply / Alimentation électrique	• The actuators can operate on a range of single phase power supply from 85VAC to 260VAC. • A 24VDC power supply is also possible with the same power board. • AQL actuators include both power supply on different terminals. • On request, AQL models are available with 12 or 24 VDC power supply in 2 wires connection	• Les servomoteurs peuvent fonctionner sur une plage de tensions monophasées allant de 85V CA à 260V CA. • Une version 24V CC est également disponible avec la même alimentation électrique. • Les servomoteurs AQL incluent les deux types d'alimentations sur terminaux différents. • Sur demande, les modèles AQL sont disponibles en 12V ou 24 V CC avec connection bifilaire
	Terminal compartment / Borniers de raccordement	Screw-type terminals for controls and power supply. Internal earth grounding post.	Borniers à vis pour la commande et la puissance. Borne de masse interne.
ELECTRICAL SPECIFICATIONS / SPÉCIFICATIONS ÉLECTRIQUES	Conduit entries / Entrée des câbles	2 x M20 as standard	2 x M20 en standard
POSITION SENSORS / CAPTEURS DE POSITION	Travel limit systems / Systèmes de fin de course	• Limit switches actuated by adjustable camblock • 2 SPDT switches as standard (Open and Close) + 2 auxiliary switches (for signaling); 250VAC-5A/ 48VDC-2.5A (resistive load)	• Interrupteurs de fin de course actionnés par came autobloquantes • 2 contacts SPDT en standard (Ouvert et Fermé) + 2 contacts auxiliaires (pour la signalisation) ; 250V CA-5A / 48V CC-2.5A (pour une charge résistive)
	Position Transmitter / Recopie de position	**POSITION TRANSMITTER OPTION:** 2 wires for 4-20mA	**OPTION RECOPIE DE POSITION :** 2 fils pour 4-20mA
CONTROLS / CONTRÔLES	Control / Contrôle	• Pre-wired version as standard • Positioner Option	• Version pré-câblée en standard • Positionneur disponible
	Visual position indication / Indicateur de position	Mechanical position indicator (as standard)	Indicateur de position mécanique (en standard)
	Inching/Positioning control / Positionnement et Régulation	**POSITIONER OPTION:** • Input (setpoint) and output (feedback) signals are fully isolated from each other • Input signal: 4-20 mA - output signal: 4-20mA (4=closed; 20=open)	**OPTION POSITIONNEUR :** • Les signaux d'entrée (consigne) et de sortie (recopie de position) sont complètement isolés l'un de l'autre. • Signal d'entrée : 4-20 mA - signal de sortie : 4-20mA (4=fermé ; 20=ouvert)
SETTINGS / RÉGLAGES	Application for mobile device / Application pour smartphone	BERNARD CONTROLS new mobile application is available as standard. BERNARD CONTROLS mobile interface allows the user to: • Access to the documentation relative to the selected actuator (enter the Serial number) or scan the QR code on the nameplate of the actuator • Access to BERNARD CONTROLS contact information according to the area concerned	La nouvelle application mobile de BERNARD CONTROLS est disponible en standard. L'interface mobile de BERNARD CONTROLS permet à l'utilisateur de : • Accéder à la documentation relative au servomoteur sélectionné (saisir le numéro de série) ou scanner le QR code sur la plaque signalétique du servomoteur • Accès aux coordonnées de BERNARD CONTROLS en fonction de la zone concernée
CONFORMITY TO EC DIRECTIVES / CONFORMITÉ AUX DIRECTIVE CE	Compliance with EC Directives / Conformité aux directives CE	AQL actuators comply with: • directive 2004/108/EC Electromagnetic compatibility • directive 2006/95/EC Low voltage • the following harmonised standards: EN 61000- 6-4: Generic emissions standard for industrial environments; EN 61000-6-2: Generic immunity standard for industrial environments; EN 60034-1: Rotating electrical machines; EN 60529: Degrees of protection provided by enclosures (IP ratings code)	Les servomoteurs AQL sont conformes à : • la directive 2004/108/EC Compatibilité électromagnétique • la directive 2006/95/EC Basse tension • aux normes harmonisées suivantes : Norme générique émission - Environnement industriel EN 61000-6-4 ; Norme générique immunité standard - Environnement industriel EN 61000-6-2 ; Machines électriques tournantes EN 60034-1 ; Degrés de protection fournis par les enveloppes (code IP) EN 60529

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PRODUCT SPECIFICATIONS - AQ SWITCH / SPÉCIFICATIONS PRODUIT - AQ SWITCH

GENERAL / GÉNÉRAL	Description / Description	All AQ actuators include motor with thermal protection, gear case, emergency handwheel, travel limit switches, torque switches (for torque >150Nm), output drive with removable socket and anti-condensation heater.	Les servomoteurs AQ comprennent un moteur avec protection thermique, une chaîne cinématique irréversible, une commande manuelle, des contacts de fin de course et de limiteur d'effort (pour couple >150Nm), une douille d'entraînement amovible ainsi qu'une résistance anti-condensation.
	Torque range / Gamme de couple	Direct: 50 to 2500 N.m Up to 10 000 N.m with Gearbox	Direct : 50 à 2500 N.m Jusqu'à 10 000 N.m avec réducteur
	Duty Classification / Type de fonctionnement	Adapted to process requirements: • On-Off: Class A actuators complying with EN15714-2 • Inching/Positioning: Class B actuators complying with EN15714-2	Adapté aux besoins du processus : • Tout ou Rien : Servomoteurs Classe A conformes à la norme EN15714-2 • Positionnement pas à pas : Servomoteurs Classe B conformes à la norme EN15714-2
ENCLOSURE - PROTECTION / BOÎTIER - PROTECTION	Casing / Enveloppe	• Aluminium die casting • Cover fastened by captive and stainless screws	• Fonderie en aluminium moulé sous pression • Fixations du couvercle par vis imperdables et inoxydables
	External Protection / Peinture - Protection extérieure	• Type: Epoxy powder coating as standard • Protection: C4 according to ISO 12944 • For colors and finishes, please consult us	• Type : Peinture epoxy en poudre en standard • Protection : C4 selon ISO 12944 • Pour les couleurs et finitions, consultez-nous
	Weatherproofness / Étanchéité	IP68 NEMA 4X as standard *Relative humidity: 0 to 95%.*	IP68 NEMA 4X en standard *Hygrométrie: 0 to 95%.*
	Ambient temperature range / Température ambiante de fonctionnement	• -20...+60°C / -4 ... +140°F • -40°C (-40°F) as an option Other temperatures, please consult us	• -20...+60°C / -4 ... +140°F • -40°C (-40°F) en option Pour d'autres températures, consultez-nous
MOTOR / MOTEUR	Motor technology / Technologie moteur	• 3-phase or single-phase asynchronous motor, Class F insulation with integral thermal overload protection. • DC motors	• Moteur asynchrone mono ou triphasé, isolation Classe F avec protection thermique intégrée. • Moteur à courant continu
	Motor duty rating / Service de fonctionnement moteur	• On/Off operation (complying with EN15714-2 Class A) and Inching/ Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 360 starts per hour at peak of operation. S4-50% as an option. • BC Modulating Class III (complying with EN15714- 2 Class C): S4-50% motor duty rating. Up to 1 200 starts per hour at peak of operation. *(Voltage ±10%, frequency ±2%)*	• Tout ou Rien (conforme à la norme EN15714-2 Classe A) & Positionnement pas à pas (conforme à la norme EN15714-2 Classe B) : facteur de marche S4-30%. Jusqu'à 360 démarrages par heure en pic de fonctionnement. S4-50% en option. • Régulation : Classe III (conforme à la norme EN15714-2 Classe C) : service moteur S4-50%. Jusqu'à 1 200 démarrages par heure en pic de fonctionnement. *(Voltage ±10%, fréquence ±2%)*
MECHANICAL SPECIFICATIONS / SPÉCIFICATIONS MÉCANIQUES	Gear design / Chaîne cinématique	Actuator is mechanically self-locking	Chaîne cinématique mécaniquement irréversible
	Manual emergency operation / Commande manuelle d'urgence	Manual override handwheel Automatic declutch	Volant pour commande manuelle Débrayage automatique
	Output flange / Bride de sortie	Actuator flanges comply with ISO 5211	Les brides sont conformes à la norme ISO 5211
	Lubrication / Lubrification	The actuators are lubricated for the product lifetime and do not require any special service.	Les servomoteurs sont lubrifiés pour toute la durée de vie du produit et ne requièrent aucune maintenance spécifique.

PRODUCT SPECIFICATIONS - AQ SWITCH / SPÉCIFICATIONS PRODUIT - AQ SWITCH

ELECTRICAL SPECIFICATIONS / SPÉCIFICATIONS ÉLECTRIQUES	Power supply / Alimentation électrique	The actuators can operate on a wide variety of power supplies: • 3-phase, single-phase or DC *(except AQ80 to AQ1000)* • 50 or 60 Hz ...	Les servomoteurs peuvent fonctionner grâce à une grande variété d'alimentations : • triphasé, monophasé ou courant continu *(à l'exeption des AQ80 à AQ1000)* • 50 ou 60 Hz ...
	Terminal compartment / Borniers de raccordement	Screw-type terminals for controls and power supply. Internal earth grounding post.	Borniers à vis pour la commande et la puissance. Borne de masse interne.
	Conduit entries / Entrées de câbles	2 x M20 as standard (or 2 x 3/4")	2 x M20 en standard (ou 2 x 2/4")
POSITION & TORQUE SENSORS / CAPTEURS DE COUPLE ET DE POSITION	Travel limit systems / Systèmes de fin de course	• Limit switches actuated by adjustable camblock • 2 SPDT switches as standard (Open and Close) + 2 auxiliary switches (for signaling)	• Contacts de fin de course actionnés par bloc de cames ajustables • 2 contacts SPDT en standard (Ouverture et Fermeture) + 2 contacts auxiliaires (signalisation)
	Torque limiting system / Système de limitation de couple	• Torque limitation available from AQ25 • The torque limiting system is calibrated at the factory • 2 switches as standard (1 in opening and 1 in closing); SPDT; 250VAC-5Amax (resistive load) • Adjustable torque from 40 to 100% of max torque (intrusive setting)	• Le limiteur d'effort est disponible à partir du modèle AQ25 • Le système limiteur d'effort est calibré en usine • 2 contacts SPDT en standard (1 en ouverture et 1 en fermeture) ; 250V CA-16Amax. (charge résistive) • Couple réglable de 40 à 100% du couple maximum (réglage intrusif)
	Position Transmitter (option) / Recopie de position (option)	**POSITION TRANSMITTER OPTION:** • 2 wires for 4-20mA Position Transmitter • POT 1000Ω	**OPTION RECOPIE DE POSITION :** • 2 fils pour Transmetteur de position 4-20mA • POT 1000Ω
CONTROLS / CONTRÔLES	Visual position indication / Indicateur de position	Mechanical position indicator	Indicateur de position mécanique
	Inching/Positioning control / Positionnement et Régulation	**POSITIONER OPTION:** • Input (setpoint) and output (feedback) signals are fully isolated from each other • Input signal: 4-20 mA - output signal: 4-20mA (4=closed; 20=open)	**OPTION POSITIONNEUR :** • Les signaux d'entrée (consigne) et de sortie (recopie de position) sont complètement isolés l'un de l'autre. • Signal d'entrée : 4-20 mA - signal de sortie : 4-20mA (4=fermé ; 20=ouvert)
SETTINGS / RÉGLAGES	Actuator on valve settings / Réglages sur vanne	Easy and quick setting of position and torque camblocks with a standard screwdriver	Réglage facile et rapide des blocs de came position et couple avec un tournevis standard
	Application for mobile device / Application pour smartphone	BERNARD CONTROLS new mobile application is available as standard. BERNARD CONTROLS mobile interface allows the user to: • Access to the documentation relative to the selected actuator (enter the Serial number) or scan the QR code on the nameplate of the actuator • Access to BERNARD CONTROLS contact information according to the area concerned	La nouvelle application mobile de BERNARD CONTROLS est disponible en standard. L'interface mobile de BERNARD CONTROLS permet à l'utilisateur de : • Accéder à la documentation relative au servomoteur sélectionné (par saisie du numéro de série ou en scannant le QR code sur la plaque signalétique de l'actionneur) • Accès aux coordonnées de BERNARD CONTROLS en fonction de la zone d'installation
CONFORMITY TO EC DIRECTIVES / CONFORMITÉ AUX DIRECTIVES CE	Compliance with EC Directives / Conformité aux directives CE	AQ actuators comply with: • directive 2004/108/EC Electromagnetic compatibility • directive 2006/95/EC Low voltage • the following harmonised standards: EN 61000- 6-4: Generic emissions standard for industrial environments; EN 61000-6-2: Generic immunity standard for industrial environments; EN 60034-1: Rotating electrical machines; EN 60529: Degrees of protection provided by enclosures (IP ratings code)	Les servomoteurs AQ sont conformes à : • la directive 2004/108/EC Compatibilité électromagnétique • la directive 2006/95/EC Basse tension • les normes harmonisées suivantes : Norme générique émission - Environnement industriel : EN 61000-6-4 ; Norme générique Immunité standard - Environnement industriel : EN 61000-6-2 ; Machines électriques tournantes : EN 60034-1 ; Degrés de protection fournis par les enveloppes (code IP) : EN 60529

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PRODUCT SPECIFICATIONS - AQ LOGIC / SPÉCIFICATIONS PRODUIT - AQ LOGIC

GENERAL / GÉNÉRAL	Description / Description	All AQ actuators include motor with thermal protection, gear case, emergency handwheel, position sensor, torque sensor (for torque >150Nm), output drive with removable socket and anti-condensation heater. AQ LOGIC models also include: • integrated controls • built-in motor reversing starters • local commands with large LCD display	Les servomoteurs AQ comprennent un moteur avec protection thermique, une chaîne cinématique irréversible, une commande manuelle, des contacts de fin de course et de limiteur d'effort (pour couple >150Nm), une douille d'entraînement amovible, ainsi qu'une résistance anti-condensation. Les modèles AQ LOGIC incluent également : • des contrôles intégrés • des contacteurs inverseurs intégrés au moteur • des commandes locales avec un large écran LCD
	Torque range / Gamme de couple	Direct: 50 to 2500 N.m Up to 10 000 N.m with Gearbox	Direct : 50 à 2500 N.m Jusqu'à 10 000 N.m avec réducteur
	Duty Classification / Type de fonctionnement	Adapted to process requirements: • On-Off: Class A actuators complying with EN15714-2 • Inching/Positioning: Class B actuators complying with EN15714-2 • Modulating: Class III actuators with higher duty performance and specification of additional performance criteria compared to EN15714-2 Class C basic design requirements	Adapté aux besoins du processus : • Tout ou Rien : Servomoteurs Classe A conformes à la norme EN15714-2 • Positionnement pas à pas : Servomoteurs Classe B conformes à la norme EN15714-2 • Régulation : servomoteurs de classe III avec des performances de service plus élevées et spécification de critères de performance supplémentaires par rapport aux exigences de conception de base de la norme EN15714-2 Classe C
ENCLOSURE - PROTECTION / BOÎTIER - PROTECTION	Casing / Enveloppe	• Aluminium die casting • Cover fastened by captive and stainless screws	• Fonderie en aluminium moulé sous pression • Fixations du couvercle par vis imperdables en inox
	External Protection / Peinture - Protection extérieure	• Type: Epoxy powder coating as standard • Protection: C4 according to ISO 12944 • For colors and finishes, please consult us	• Type : Peinture epoxy en poudre en standard • Protection : C4 selon ISO 12944 • Pour les couleurs et finitions, consultez-nous
	Weatherproofness / Étanchéité	IP68 NEMA 4X as standard *Hygrométrie: 0 to 95%.*	IP68 NEMA 4X en standard *Hygrométrie: 0 to 95%.*
	Ambient temperature range / Température ambiante de fonctionnement	• -20...+60°C / -4 ... +140°F • -40°C (-40°F) as an option Other temperatures, please consult us	• -20...+60°C / -4 ... +140°F • -40°C (-40°F) en option Pour d'autres températures, consultez-nous
MOTOR / MOTEUR	Motor technology / Technologie moteur	• 3-phase or single-phase asynchronous motor, Class F insulation with integral thermal overload protection • DC motors	• Moteur asynchrone mono ou triphasé, isolation Classe F avec protection thermique intégrée • Moteur à courant continu
	Motor duty rating / Service de fonctionnement moteur	• On/Off operation (complying with EN15714-2 Class A) and Inching/ Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 360 starts per hour at peak of operation. S4-50% as an option. • BC Modulating Class III (complying with EN15714- 2 Class C): S4-50% motor duty rating. Up to 1 200 starts per hour at peak of operation. *(Voltage ±10%, frequency ±2%)*	• Tout ou Rien (conforme à la norme EN15714-2 Classe A) & Positionnement pas à pas (conforme à la norme EN15714-2 Classe B) : facteur de marche S4-30%. Jusqu'à 360 démarrages par heure en pic de fonctionnement. S4-50% en option. • Régulation : Classe III (conforme à la norme EN15714-2 Classe C) : service moteur S4-50%. Jusqu'à 1 200 démarrages par heure en pic de fonctionnement. *(Voltage ±10%, fréquence ±2%)*
MECHANICAL SPECIFICATIONS / SPÉCIFICATIONS MÉCANIQUES	Gear design / Chaîne cinématique	The gear are mechanically self-locking	Chaîne cinématique mécaniquement irréversible

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PRODUCT SPECIFICATIONS - AQ LOGIC / SPÉCIFICATIONS PRODUIT - AQ LOGIC

MECHANICAL SPECIFICATIONS / SPÉCIFICATIONS MÉCANIQUES	Manual emergency operation / Commande manuelle d'urgence	• Manual override handwheel • Automatic declutch	• Volant pour commande manuelle • Débrayage automatique
	Output flange / Bride de sortie	Actuator flanges comply with ISO 5211.	Les brides sont conformes à la norme ISO 5211.
	Lubrication / Lubrification	The actuators are lubricated for the product lifetime and do not require any special service.	Les servomoteurs sont lubrifiés pour toute la durée de vie du produit et ne requièrent aucune maintenance spécifique.
ELECTRICAL SPECIFICATIONS / SPÉCIFICATIONS ÉLECTRIQUES	Power supply / Alimentation électrique	The actuators can operate on a wide variety of power supplies: • 3-phase , single-phase or DC *(except AQ80 to AQ1000)* • 50 or 60 Hz ...	Les servomoteurs peuvent fonctionner grâce à une grande variété d'alimentations : • triphasé, monophasé ou courant continu *(à l'exeption des AQ80 à AQ1000)* • 50 ou 60 Hz ...
	Terminal compartment / Borniers de raccordement	Screw-type terminals for controls and power supply. Internal earth grounding post	Borniers à vis pour la commande et la puissance. Borne de masse interne
	Fuse protection / Fusible de protection	Primary: 0,5A-500V Secondary: Two automatic resettable fuses	Primaire : 0,5A-500V Secondaire : Deux fusibles réarmables automatiquement
	Conduit entries / Entrées de câbles	3 x M20 + 2 x M16 (or 3 x 3/4" NPT + 2 x 1/2" NPT)	3 x M20 + 2 x M16 (ou 3 x 3/4" NPT + 2 x 1/2" NPT)
POSITION & TORQUE SENSORS / CAPTEURS DE COUPLE ET DE POSITION	Travel limit systems / Systèmes de fin de course	• Position: reading on the output shaft • Position sensor: Absolute encoder (Hall effect sensor)	• Position : prise de mouvement sur l'arbre de sortie. • Détection de position : encodeur absolu (capteur à effet hall)
	Torque limiting system / Système de limitation de couple	• Torque limitation available from AQ25 • Absolute encoder sensor (Hall effect sensor) • The torque limiting system is calibrated in factory. It remains adjustable via LOGIC (non intrusive setting) • Non intrusive setting: Adjustable torque from 40 to 100% of rated torque	• Le limiteur d'effort est disponible à partir du modèle AQ25 • Encodeur absolu (capteur à effet hall) • Le système limiteur d'effort est calibré en usine. Il reste réglable via LOGIC (réglage non intrusif) • Réglage non intrusif : couple réglable de 40 à 100% du couple nominal
	Position Transmitter (option) / Recopie de position (option)	In current: maximum acceptable load of 600 Ohms (24VDC), must be supplied (12 to 32VDC) 2-wire or 3-wire connection	En courant : charge maximale admissible de 600 Ohms (sous 24V CC), doit être alimenté (12 à 32V) 2 fils ou 3 fils de connexion
CONTROLS / CONTRÔLES	Remote Command / Contrôle Commande à distance	• Maintained or pulse command (minimum pulse duration: 100ms) • Command by dry contacts • Command by voltage from 10 to 250 VDC • Isolated by opto-couplers	• Commande maintenue ou à impulsion (durée minimale d'impulsion : 100ms) • Commande par contacts secs • Commande par tension externe, voltage allant de 10 à 250 CA/CC • Isolée par des opto-coupleurs
	Visual position indication / Indicateur de position	Mechanical position indicator	Indicateur de position mécanique
	Local command description / Description de la commande locale	• 2 buttons + 1 padlockable selector • A large LCD screen to display the position, the torque and alarms and to perform the settings • Green/Red: Configurable LED for CLOSED/ OPEN	• 2 boutons + 1 selecteur cadenassable • Un large écran LCD pour afficher la position, le couple instantané et les alarmes ainsi que pour effectuer les réglages • Vert/Rouge : LED configurable pour position FERME/OUVERT
	Power circuit / Circuit d'alimentation	Motor reversing starters	Alimentation / inversion moteur par relais contacteurs
	Auxiliary power supply / Alimentation électrique auxiliaire	With external 24VDC supply	Alimentation externe 24 V CC

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PRODUCT SPECIFICATIONS - AQ LOGIC / SPÉCIFICATIONS PRODUIT - AQ LOGIC

CONTROLS / CONTRÔLES	Signaling relay / Relais de signalisation	• 3 latching relays - Contact configuration: normally open or normally closed - Minimum current 10mA at 5V - Maximum current 5A at 250V or 5A at 30VDC (resistive load) Relay 1: Valve open Relay 2: Valve closed Relay 3: Configurable relay • Additional 4 relays board as an option	• 3 relais bistables - Configuration du contact : normalement ouvert ou normalement fermé. - Courant minimum 10 mA à 5 V - Courant maximum 5 A à 250 V CA ou 5 A à 30 V CC (charge résistive) Relais 1 : Vanne ouverte Relais 2 : Vanne fermée Relais 3 : Relais configurable • Carte additionnelle 4 relais en option
	Fault relay / Relais défaut	• SPDT non-latching relay, in fault position when not supplied. • Minimum current 10mA at 5V • Maximum current 5A at 250VAC or 5A at 30VDC (resistive load)	• Relais monostable SPDT, relais en position défaut lorsqu'il est non alimenté • Courant minimum 10 mA à 5 V • Courant maximum 5 A à 250 V CA ou 5 A à 30 V CC max. (charge résistive)
	Inching/Positioning & Modulating control (option) / Positionnement & Régulation (option)	LOGIC Positioner: Signal configurations (with integrated analogue output): • Standard input signal: 4-20 mA - output signal: 4-20mA • Input signal: 0-20 mA - output signal: 0-20 mA • Input signal: 0-10 V - output signal: 0-20 mA Analogue Input: - In current: impedance of 260 Ohms - In voltage: impedance of 10 kOhms Analogue Output: - In current: maximum acceptable load of 600 Ohms (24VDC), must be supplied (12 to 32VDC) 2-wire or 3-wire connection	Positionneur LOGIC : Configurations de signaux (avec sortie analogique intégrée) : • Signal de commande standard : 4-20 mA - signal de recopie : 4-20mA • Signal de commande : 0-20 mA - signal de recopie : 0-20 mA • Signal de commande : 0-10 V - signal de recopie : 0-20 mA Commande analogique : - en courant : impédance de 260 Ohms - en tension : impédance de 10 kOhms Recopie analogique : - Boucle de courant : Charge maximum acceptable 600 Ohms (sous 24V CC), doit être alimenté (12 à 32V) par une connexion 2 fils ou 3 fils
SETTINGS / RÉGLAGES	Settings / Réglages	Non-Intrusive settings All actuator settings and parameters are stored in a non-volatile EEPROM memory. Protection by password. Configurable via Local control; Bluetooth available as standard (to keep a high level of security, Bluetooth range is limited to 10m. With BC App, communication is encrypted and access is restricted with password.)	Non-Intrusifs Tous les réglages et paramètres du servomoteur sont stockés dans une mémoire EEPROM non volatile. Protection par mot de passe. Configurable par commande locale ou par Application BC en standard (afin de proposer un haut niveau de sécurité, la portée Bluetooth est limitée à 10m. Avec la BC App, la communication est cryptée et l'accès est restreint par mot de passe.)
	Local settings / Commandes locales	The LOGIC can be fully set via its local display and selectors. Does not require any specific setting tool. Optionnal padlockable protection against sandy winds & vandalism.	Le LOGIC peut être entièrement réglé via sa commande locale. N'exige aucun outil de réglage spécifique. Protection cadenassable contre les vents de sable et le vandalisme en option.
	Application for mobile device / Application pour smartphone	New BERNARD CONTROLS mobile application is available as standard, with its bluetooth secured communication interface, and allows the user to: • Assistance to commissioning on valve • Simply set every parameters of the actuator (non-intrusive setting) • Command the actuator (open/close/stop) as a local controls • Check at a glance an overview of the feedbacks information which are displayed on a large color screen of the mobile • Assistance to curative maintenance with a simple and efficient troubleshooting • Access to BERNARD CONTROLS contact information according to the area concerned • Access to the documentation relative to the selected and scanned actuator ...	La nouvelle application mobile BERNARD CONTROLS est disponible en standard avec son interface de communication sécurisée Bluetooth et permet à l'utilisateur de : • Faire une mise en service rapide et facile sur la vanne • Régler aisément tous les paramètres du servomoteur (réglage non intrusif) • Commander le servomoteur (ouverture / fermeture / arrêt) comme une commande locale • Vérifier rapidement les remontées d'informations sur un grand écran couleur d'un téléphone portable • Effectuer la maintenance curative avec une fonction de diagnostique et aide au dépannage simple et efficace. • Accès aux coordonnées de BERNARD CONTROLS en fonction de la zone concernée • Accès à la documentation relative au servomoteur sélectionné/scannée ...

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PRODUCT SPECIFICATIONS - AQ LOGIC / SPÉCIFICATIONS PRODUIT - AQ LOGIC

SETTINGS / RÉGLAGES	Application for mobile device / Application pour smartphone	... • Customize the actuator display • Log the Systems Alarms and Warnings • Duplicate one actuator configuration to another actuator • Check the actuator life operation • Select the suitable language among 14 available languages • Identify the actuator operated valve by its valve tag and location process • Track the last user connexions for traceability and safety reasons	... • Personaliser l'affichage du servomoteur • Enregistrer les alarmes système et alertes • Dupliquer la configuration d'un servomoteur vers un autre servomoteur • Vérifier la durée de vie du servomoteur • Sélectionner le langage adapté parmi 14 langages disponibles • Identifier la vanne du servomoteur commandé par son étiquette et le processus de localisation • Tracer les connexions des derniers utilisateurs pour des raisons de traçabilité et sécurité
FIELDBUS / BUS DE TERRAIN	Available Fieldbus protocols (option) / Protocoles disponibles Bus de terrain (option)	• PROFIBUS-DPV1 • MODBUS RTU	• PROFIBUS-DPV1 • MODBUS RTU
CONFORMITY TO EC DIRECTIVES / CONFORMITÉ AUX DIRECTIVES CE	Compliance with EC Directives / Conformité aux directives CE	AQ actuators comply with: • directive 2004/108/EC Electromagnetic compatibility • directive 2006/95/EC Low voltage • the following harmonised standards: EN 61000-6-4: Generic emissions standard for industrial environments; EN 61000-6-2: Generic immunity standard for industrial environments; EN 60034-1: Rotating electrical machines; EN 60529: Degrees of protection provided by enclosures (IP ratings code)	Les servomoteurs AQ sont conformes à : • la directive 2004/108/EC Compatibilité électromagnétique • la directive 2006/95/EC Basse tension • aux normes harmonisées suivantes : Norme générique émission - Environnement industriel : EN 61000-6-4 ; Norme générique immunité standard - Environnement industriel : EN 61000-6-2 ; Machines électriques tournantes : EN 60034-1 ; Degrés de protection fournis par les enveloppes (code IP) : EN 60529

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BERNARD CONTROLS

Invest in Confidence

AQ SWITCH

RANGE

Start Up Guide
Instructions de mise en service

SUG_17003 - Ind. A
Art : 5100466

TABLE OF LANGUAGES

TABLE OF CONTENTS

1 SAFETY

This device complies with current applicable safety standards.

Installation, maintenance and use of this unit require a skilled and trained staff.

Please carefully read this whole document before mounting and starting-up the actuator.

2 PACKAGING, STORAGE AND MAINTENANCE

Packaging

AQ actuators are delivered in a cardboard box of a size equivalent to the actuator and sit in a cardboard wedge.

Storage

Actuators should be stored under a shelter, in a clean and dry place and protected from wide temperature variations.

- Avoid placing the actuator directly on the floor.
- Check that plugs on cable entries are correctly tightened.
- Check that cover screws are correctly tightened to ensure weatherproof sealing of the cover.

AQ actuators include electrical components and lubricated gears. Even with a weatherproof enclosure, oxidation, seizing and other alterations may occur if actuators are not correctly stored.

Heating element should be connected to power supply especially if the storage place is wet (standard 230 VAC, except otherwise specified).

What to check after storage

1. Visually check the electrical equipment.
2. Manually operate micro-switches, buttons, selectors, etc., to ensure their proper mechanical functioning.
3. Manually operate the actuator.

What to check on installed non-commissioned actuators

If you expect a long period between actuator mounting and electrical wiring:

1. Visually check that cable entries and cover are tightly closed.
2. In case of outdoor installation, cover the unit with a plastic protective film.

Actuators equipped with electronic components

Long term storage of electronic components which are not in service increases the risk of malfunction. This is not advisable.

If a long term storage is absolutely necessary, we strongly recommend a revision of the electronic boards in our factory before actuator usage.

Maintenance

This actuator features lifetime lubrication. While the device is correctly mounted and sealed, no specific maintenance is required.

Test once a year the motor operation and make sure that the electrical compartment is free from condensation.
If it operates in a wet atmosphere, this actuator includes an anti-condensation heater to avoid condensation build-up.

3 ASSEMBLY

Actuator should be attached directly to the valve using proper bolts or via a proper interface.

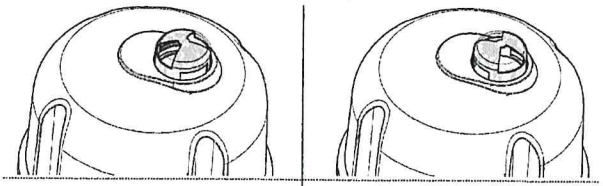
After assembly, the actuator can operate in any position.

However:

- do not lift the actuator by the handwheel to avoid damage on internal gearing
- cable glands must not be oriented upwards (loss of water tightness)

Changing closing direction indication

As a standard, AQ actuator is configured to close clockwise. If the actuator must close counter-clockwise, you can change orientation of the position indicator cap.

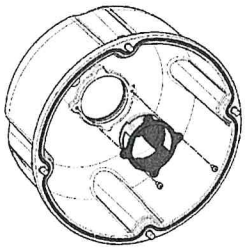


Standard indicator orientation
for clockwise closing

Reverse indicator orientation
for counter-clockwise closing

How to change cap orientation

1. Disassemble the cover then the cap.
2. Turn the cap 90°.
3. Reassemble the cap then the cover.



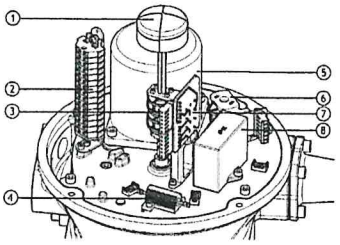
4 EMERGENCY HANDWHEEL OPERATION

AQ actuators feature a handwheel for emergency operation.

To avoid potentially harmful turning protruding parts during electrical operation, AQ handwheels feature a foldable handle: you can fold it during electrical operation and unfold it if you need to operate the actuator manually.

5 ELECTRICAL COMMISSIONNING

Connection and preliminary tests



8 - Capacitor
7 - Switches board
6 - Torque limiter
5 - Motor
4 - Heating resistance
3 - Cams
2 - Terminal block
1 - Position indicator

Actuator and its components are wired to internal terminal blocks.

To proceed to the wiring, remove the cover and pass the cables through the M20 cable entries or ¾" NPT cable entries (depending on order).

Please refer to the wiring diagram enclosed for terminal numbering.

Both thermal protector and torque limit switches must be integrated into your control system in order to prevent potential damage to the actuator or valve.

What to check after wiring

Once actuator wiring is completed, please check the following:

1. Make sure that power supply voltage matches information on the sticker on the side of the actuator.
2. Check that all connectors or cable glands are correctly tightened.
3. Manually drive the valve to a mid-travel position.
4. Electrically operate counter-clockwise rotation and check that the motor rotates in the right direction.
5. Manually press on the counter-clockwise travel limit switch then the motor should stop.
6. Repeat steps 4 and 5 for clockwise direction.

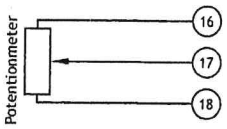
- If any fault is detected at this stage, please check again the whole wiring.

Position feedback potentiometer (OPTION)

The potentiometer used for actuator position feedback is driven by the travel cam block system.

For clockwise closing:

- 0% position indicates a closed valve
- 100% position indicates an open valve.

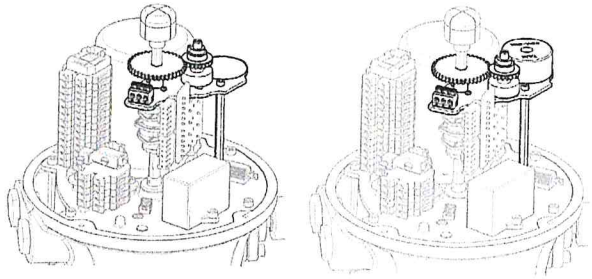


Resistance value is measured between 16 and 17 terminals.

How to set the potentiometer circuit board

You can set the zero of the potentiometer with the **0% position screw**. Use a flat blade screwdriver to turn this screw.

1. Drive the actuator to the **CLOSED** position.
2. Untighten the positioner pinion blocking screw.
3. Adjust the potentiometer by turning its shaft so that the resistance value exceeds 0 Ohm and regularly increases then turn backwards to reach the closest value to 0 Ohm. Tighten back the positioner pinion blocking screw.
4. Drive the actuator to the **OPEN** position and write down the resistance value corresponding to the 100% position.
5. Come back to the **CLOSED** position and check that the resistance shows a repeatable near zero value for the 0% position.



Position feedback potentiometer (Left) & TAM position transmitter (Right)

Signal inversion

To change the signal variation direction, invert potentiometer wires on the terminal block (e.g. for a connection on 16/17/18, invert 16 and 18).

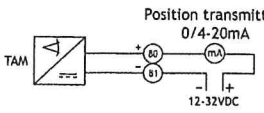
TAM position transmitter (OPTION)

The TAM transmitter delivers a 4 to 20 mA signal linearly proportional to the angular position of the valve.

Electrical connections

To connect TAM, refer to the wiring diagram supplied.

Filtered or stabilized power supply should be provided within the 12 to 32 VDC range. Maximum admissible resistance values are given in the following table:



DC supply (volts)	Max. admissible resistance (ohms)
12	150
24	750
32	1050

Signal direction inversion

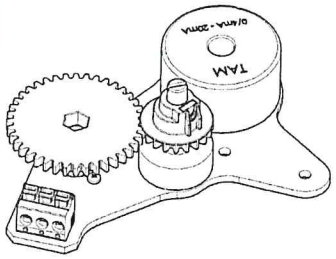
The TAM transmitter, when supplied with a clockwise closing actuator, provides a signal that rise from close position to open position.

If an opposite signal variation is required, simply move 2 jumpers on the board near the potentiometer:

- direct signal: jumpers on 1-3 and 2-4
- reversed signal: jumpers on 1-2 and 3-4

How to set TAM

1. Connect a milli-amp meter on terminal block.
2. Always start by adjusting the 4mA.
3. Drive actuator to the position corresponding to the 4 mA (**CLOSED** position).
4. Untighten the potentiometer pinion blocking screw. Adjust the potentiometer shaft so that the output current reaches a minimum value.



5. Turn backwards until the current value regularly increases then turn backwards again and stop as soon as the minimum value determined here above is reached and tighten back the potentiometer pinion blocking screw.

   The potentiometer is then positioned at the very beginning of its track.
6. Then, use the TAM adjustment screw marked as **0/4mA** to adjust the current to a value as close to the 4 mA as possible.
7. Drive actuator to the position corresponding to the 20 mA (open position).
8. Turn the screw marked **20mA** in order to read exactly 20 mA on the milli-amp meter.
9. Come back to the closed position and check that, for the 0% position, the signal current shows a close to 4 mA and repeatable value.

5.4 Heating element

Each actuator includes a heating resistor.

As soon as the actuator is installed in the field, it is recommended to power the resistor to prevent condensation.

- Immediately put the cover back in place after start-up while ensuring its seal is clean. Never leave actuator electrical components without their protection cover.

In case of water intrusion:

- Dry electrical components before putting back the cover.
- Check electrical insulation.

6 TRAVEL LIMIT SETTINGS

The actuator is factory-set for a 90° travel.

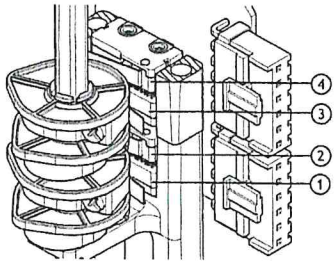
It features 2 devices to limit the travel:

- Cams trigger switches to switch off power at an end position or to signal a position
- Mechanical stops mechanically block rotation to protect the valve in case of over-travel. **They must not be used as travel limits.**

Single cam setting

The cam rotates with the output shaft and triggers a switch by pushing on its lever.

Cams orientation are factory pre-set, yet you can still re-adjust them during the commissioning if necessary.

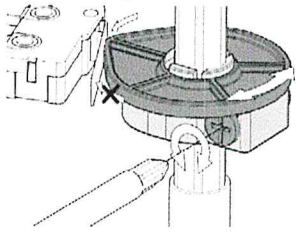


1	Clockwise travel limit	Pre-wired, cam pre-set
2	Counter-clockwise travel limit	Pre-wired, cam pre-set
3	Clockwise signaling	To wire, to set
4	Counter-clockwise signaling	To wire, to set

How to adjust a single cam

Take care that cams get to the lever according to its inclination direction, otherwise you could damage the switch.

At the desired position of the actuator output:



1) Turn the setting screw of the corresponding cam with a flat blade or a Phillips screwdriver.

cam disk is then turning.

2) Set the cam disk until you hear a click from the switch. It indicates the trigger of the switch.

If the actuator is supplied mounted on a valve, following settings should have been performed by the supplier.

Cams and mechanical stops setting

On AQ switch actuators, both cams and mechanical stops can be set.

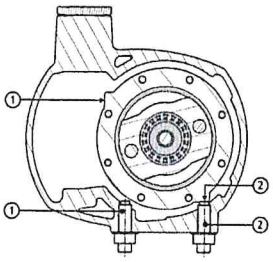
The actuator stops on open and closed position when the travel limit switch is tripped.

Travel limit settings

The mechanical stops (**1**: counter-clockwise - **2**: clockwise) avoid over-travel in case of handwheel operation.

They can be set on the actuator or on the gearbox if a gearbox is fitted on the actuator.

Fine adjustment of the stop screws position is possible within a limit of ± 2° maximum. These screws are located on the lower side of the actuator.



How to adjust cams and mechanical stops for both directions

One turn of the adjustment screw = 4° angle variation at the actuator output.

Clockwise mechanical stop setting

1. Untighten the nut corresponding to clockwise mechanical stop and turn the mechanical stop 2 turns back.
2. Drive the actuator to clockwise travel limit position.
3. Get the clockwise mechanical stop in contact with output sleeve then move it back of 1.5 turns.
4. Retighten nut to keep mechanical stop in position.

Clockwise travel limit switch cam setting

5. Set the cam corresponding to clockwise travel limit switch.

Clockwise signaling switch cam setting (if wired)

6. Drive slightly the output in the counter-clockwise direction using manual override.
7. Set the cam corresponding to clockwise signaling switch.

Counter-clockwise settings

8. Untighten the nut corresponding to counter-clockwise mechanical stop and turn the mechanical stop 2 turns back.
9. Drive the actuator to the counter-clockwise travel limit position.
10. Redo settings steps 3 to 7 for counter-clockwise direction.

Perform complete electrical valve opening and closing operations. It is mandatory that the motor stops on the travel limit switch and not on the mechanical stop (check available extra travel to the stop with handwheel).

7 TORQUE LIMITING DEVICE (AQ25 / 30 / 50 only)

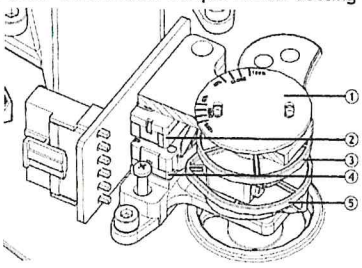
The actuator is protected by a torque limiting device in case of over-torque.

> If the actuator stops in a position which is not the one desired, please check if actuator did not reach mechanical stops or that valve has no stiff point.

Actuators are set and tested in factory according to torque stated on orders. If no torque is specified, the actuator is supplied with limiter set to the maximum output torque. In both of these cases, you can adjust torque limiter if necessary.

Torque limiter operation

Please check below torque limiter setting components.



5 - Clockwise direction cam
4 - Clockwise direction switch
3 - Counter-clockwise direction cam
2 - Counter-clockwise direction switch
1 - Torque scale disk

Torque limiter is triggered as (**3**) and (**5**) cams trigger their corresponding (**2**) and (**4**) switches when rotating.
Torque scale disk (**1**) allows to set torque limit for both directions.
It has torque graduations from 40 to 100% of the maximum torque deliverable by the actuator.

To adjust torque, set the tip of cam to match the torque percentage desired on the disk.

> Torque scale disk is factory-set and is a reference for cams setting. Do not modify its position or you will not be able to set the torque limiter accurately.

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MANAGING WATER USE.

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Water management and conservation is an ever-increasing concern for growers. The Growsmart® by Lindsay magnetic flow meter takes the guesswork out of water usage while saving time, water, energy and money.

FLOW METER's Benefits

Compared to propeller flow meters, the Growsmart magnetic flow meter does not have any moving parts such as propellers or bearings that may break, causing interruptions in measurement and resulting in extra costs. Plus, the magnetic flow meter will not be affected by debris.

- Superior IP68 enclosure seal
- No moving parts to replace
- No flow obstruction
- Range of sizes
- Minimal straight pipe run required
- Remote management capabilities with FieldNET® by Lindsay
- Optional battery pack featuring longer life than most competitive models

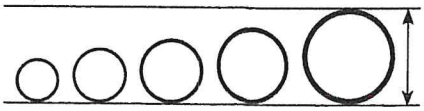
ICWT TESTED

International Center for Water Technology (ICWT) is an independent testing laboratory dedicated to advancing water management practices and irrigation technology.

FieldNET Ready
Remote control status, alerts and reporting

Unobstructed Flow
No moving parts to break down or catch debris

Pipe Sizes

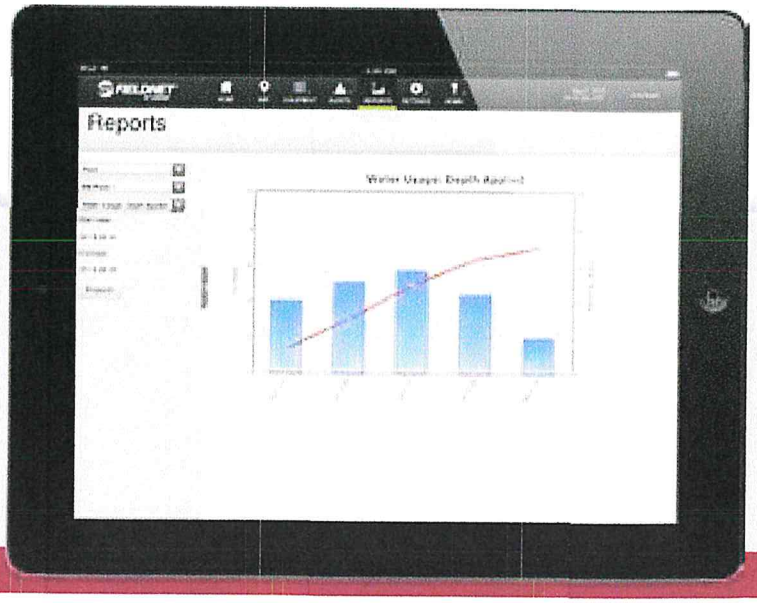


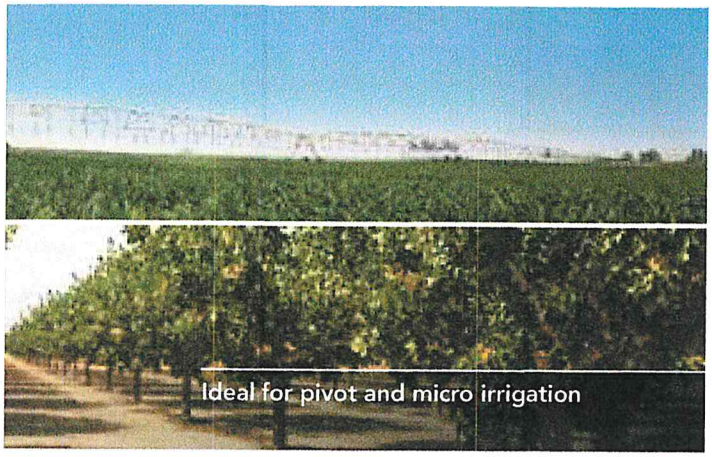
4" (101.6mm) 6" (152.4mm) 8" (203.2mm) 10" (254mm) 12" (304.8mm)

Enhance with FieldNET

FieldNET is the industry-leading wireless management tool that allows you to remotely control entire irrigation systems.

With FieldNET-ready capabilities, the Growsmart magnetic flow meter combines with FieldNET to give you real-time, convenient access for up-to-date status, alerts and reporting.





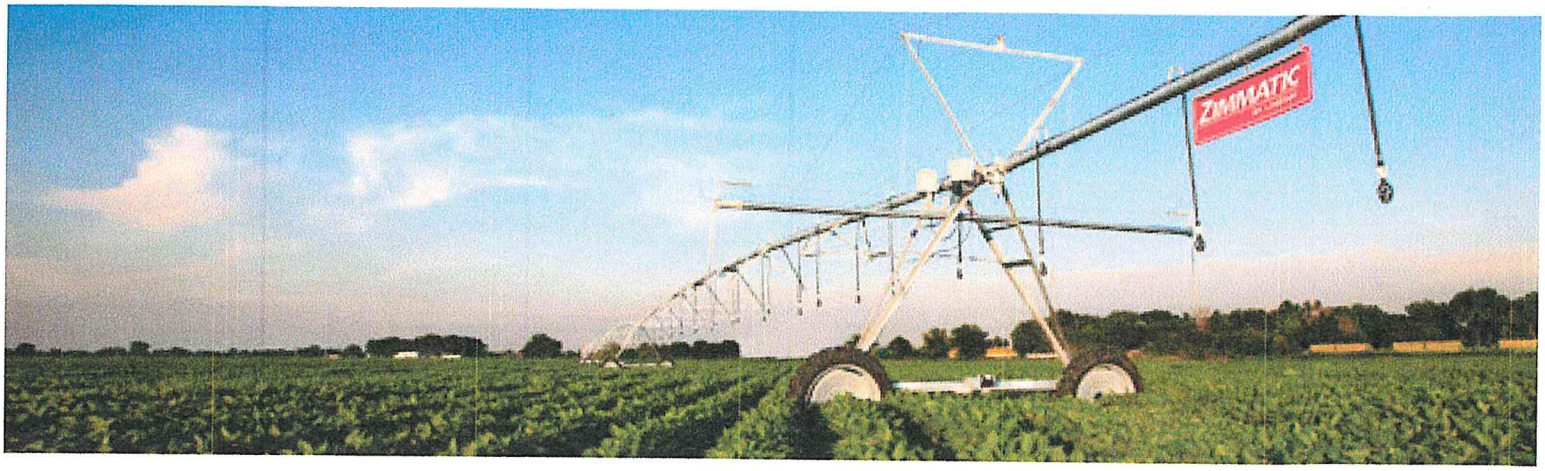
APPLICATIONS

- Irrigation
- Wells
- Lagoons
- Agriculture Automation

When water goes through a magnetic field it creates a small voltage pulse. By measuring that voltage, the magnetic flow meter calculates how much water is flowing through the pipe.

- Easy-to-use interface
- Convenient mobile app
- Insightful, color-coded status icons
- Text message alerts for high flow, low flow & battery life
- Reports and historical archiving

FLOW MEASUREMENT
Accuracy (Confirmed by ICWT) 10% – 100% of max flow: ±1% of reading Cutoff – 10% of max flow: ± 2% of reading
Measuring Frequency Battery power: 1/15 Hz External power: automatically proceeds with full-speed measurement, with frequency up to 5.5 Hz. Increased measuring frequency results in more accurate and real-time readings.
Range .3 ft/s – 39 ft/s (0.1m/S – 12m/S)
WARNINGS
Empty Pipe Supported
Coil Open Circuit Supported
BATTERY POWER
Battery Life 4 – 6 Years
Battery Level Testing Supported
Battery Replacement Supported
Measure During Battery Swap Not Supported
EXTERNAL POWER
Voltage Range 6.5 – 32Vdc
Auto Switch to External Power Supported
External Power Indicator Yes
USER INTERFACE
Buttons Can support 1 – 2 buttons (reed switch)
Display Contents Flow rate, total, battery voltage, low battery warning, empty pipe warning, flow velocity/direction
Display Digits Rate: 6 digits; Total: 9 digits
Rate Units Gallon/Minute, Liter/Minute, Liter/Second, Cubic Feet/Minute, Cubic Meter/Hour, Million Gallon/Day, Mega Liter/Day
Total Units Gallon, Gallon x 1000, Liter, Liter x 1000, Mega Liter, Cubic Meters, Cubic Meter x 1000, Cubic Feet, Cubic Feet x 1000, Acre Feet
Unit Settings Set according to customer requirement before shipment
Unit Switching Can be switched by user defined button
OUTPUT
Frequency (opt. iso., dry contact) With external power, max frequency 1000Hz
Pulse (opt. iso., dry contact)
Communications Supported, requires related hardware
WORKING CONDITIONS
Temperature Operating: 10.4F – 122F (-12°c – 50°c) Storage: -40F – 140F (- 40°c – 60°c)
Pressure 150 psi (10.3bar)
Conductivity of Medium >20uS/cm
INSTALLATION METHOD
Flanged ANSI
PROTECTION RATING
Tamper Proof IP68 Enclosure



The Lindsay Advantage

Zimmatic® by Lindsay offers proven systems and products that are built to be strong, long-lasting, durable and easy to use for growers who need highly efficient irrigation solutions. These systems can be enhanced with a family of integrated plug-and-play add-ons.

Growers around the world rely on Zimmatic's innovative technology support by a network of knowledgeable dealers to add value, reduce risk and take full advantage of every growing season.

To learn how the magnetic flow meter can make your operation more profitable, visit www.growsmart.com or contact your local Zimmatic® by Lindsay dealer.

To see the magnetic flow meter video, go to youtube.com/lindsayirrigation

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Lean, Clean and Green. Lindsay Corporation is committed to developing environmental awareness and implementing sustainable practices to reduce the use of and protect energy, water, and all other resources.

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ENG-1257 3000 0114

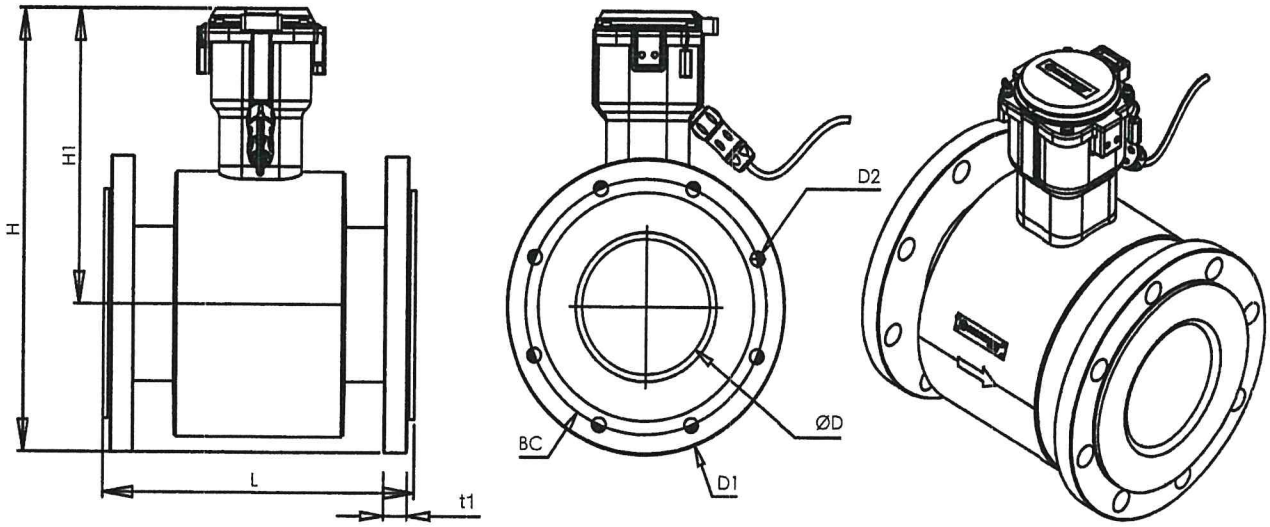
Flow Meter Dimensions

The following dimensions and weights are provided for pipeline design and installation.

Meter Weights

Meter Model	Lindsay P/N	Weight in lbs. (kg)
IM3000-04	1608505	44 (20)
IM3000-06	1605551	60 (27)
IM3000-08	1605548	97 (44)
IM3000-10	1605549	130 (59)
IM3000-12	1605550	185 (84)

Meter Dimensions



Dimensions are in Inch (mm).

Nom. Ø	H	H1	L	ØD	D1	t1	BC
4 (100)	14.30 (363)	9.80 (249)	10.24 (260)	3.15 (80)	9.00 (227)	0.94 (24)	7.50 (191)
6 (150)	16.00 (406)	10.50 (267)	12.28 (312)	5.12 (130)	11.00 (279)	1.00 (25)	9.50 (241)
8 (200)	18.00 (455)	11.20 (284)	14.25 (362)	6.46 (164)	13.50 (343)	1.13 (29)	11.75 (299)
10 (250)	20.30 (515)	12.30 (312)	18.19 (462)	8.58 (218)	16.00 (406)	1.19 (30)	14.25 (362)
12 (300)	22.70 (576)	13.20 (335)	20.16 (512)	10.31 (262)	19.00 (483)	1.25 (32)	17.00 (432)

Nom. Ø	D2	# of Holes
4 (100)	0.75 (19)	8
6 (150)	0.88 (22)	8
8 (200)	0.88 (22)	8
10 (250)	1.00 (25)	12
12 (300)	1.00 (25)	12

Radio Devices (for Connectivity between 8" Butterfly Valve & Golf Course Irrigation Pump Station)

SureCross® Serial Data Radio

An Industrial Serial Radio that combines long distance coverage with ease of use

SureCross Serial Data Radios are wireless industrial communication devices used to extend the range of serial communication networks. Designed to support communication protocols that use RS232 or RS485, the Banner Serial Data Radio is a cost effective way to close the gap for long distance serial communication needs.

2 Models Available

- **DX80SR9M-H** 900 MHz (1 Watt) with a 9.6 kilometer (6 mile) range
- **DX80SR2M-H** 2.4 GHz (65 mW) with a 3.2 kilometer (2 mile) range

Flexibility

- Each model can be selected to be a Master, Slave or a Repeater to support Point-to-Point, Point-to-Point with Repeaters, Star and Tree radio network topologies

Ease of Use

- No software required for deployment

Simple Cable Replacement

Applications

- Serial wire extension and replacement
- Remote I/O
- Message display signs
- SCADA (PLCs, Modbus RTU)

Easy to Deploy

1. Set DIP switches
2. Bind radios
3. Wire in serial connection

Just follow the *SureCross Wireless Quick Start Guide* (P/N 170872)

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more sensors, more solutions

Specifications

Radio

Radio Range	**900 MHz (1 Watt):** Up to 9.6 kilometers (6 miles) * **2.4 GHz (65 mW/100 mW EIRP):** Up to 3.2 kilometers (2 miles) *
900 MHz Compliance (1 Watt Radios)	ISM Band The Americas
2.4 GHz Compliance	ISM Band World Wide
Spread Spectrum Technology	FHSS (Frequency Hopping Spread Spectrum)
Radio Network Topologies	Point-to-Point, Star, Point-to-Point with Repeaters and Tree

* Line of sight with included 2 dB antenna. High-gain antennas available for increased range

General

Power	+10 to 30V dc
Housing	Polycarbonate
Conduit Connection	½ inch NPT
Antenna Connection	Reverse Polarity SMA
Wiring Access	Four position terminal
Hardware Interface	Two bi-color indicators LEDs One push button Eight position DIP switch RS485/RS232 jumper selectable

Communications

Serial	**RS232:** RX, TX **RS485:** 2 wire (Half Duplex) **Baud Rate:** 1,200 bps to 115.200 bps (Adjustable)

Environmental

Rating	IEC IP67; NEMA 6
Conditions	**Operating Temperature:** −40 to +85° C **Operating Humidity:** 95% max. relative (non-condensing) **Radiated Immunity:** 10V/m, 80-2700 MHz
Shock and Vibration	**Shock:** 30 g **Vibration:** 10 to 60 Hz

Radio Network Topologies

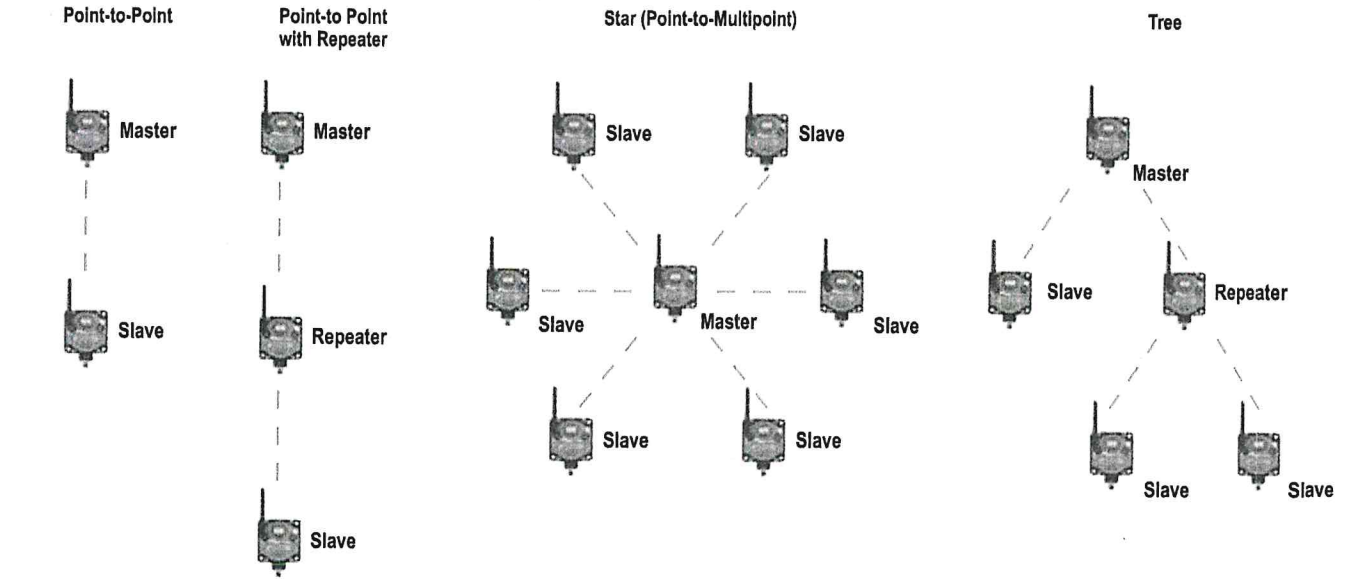

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Exhibit 6.2

Exhibit 6.2

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AND CONSERVATION
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FIELD REPORT

TO: Rich Sarrazin, Water Commissioner, Rock Creek (43A)
FROM: Lyra Reynolds, Hyrologist/Water Resource Specialist, DNRC Bozeman
CC: Kerri Strasheim, Regional Manager, DNRC Bozeman
SUBJECT: 2024 Flow Measurements of Rock Creek
DATE: November 1, 2024

SUMMARY

Rich Sarrazin, Water Commissioner, requested flow measurements on Rock Creek to help distribute water. Rock Creek is a distribution project and is a tributary of the Shields River, located east of Clyde Park, Montana. Rock Creek is located in Basin 43A.

Measurements were collected in Rock Creek below the diversion dam at the Upper Criswell Ditch on July 17, July 26, August 5, August 16, and September 4, 2024. The measurements were collected by Lyra Reynolds, Hydrologist – Bozeman Regional Office, Kendrew Ellis, Water Resources Specialist – Bozeman Regional Office, and Raeya Gordon, Hydrologist – Water Sciences Bureau. These measurements were taken right before and after the Rock Lake water was turned on. Measurements were also collected in the Upper Criswell Ditch on August 5, August 16, and September 4, 2024.

Measurements were taken at the following sites:

1. Rock Creek below diversion dam at Upper Criswell Ditch. At this site, discharge was measured in Rock Creek below the diversion dam that diverts water into the Upper Criswell Ditch. This site is located in the SESESE Section 7, T3N, R9E, Park County.
2. Upper Criswell Ditch. Water diverted into the Upper Criswell Ditch was measured. This was compared this measurement to the 4-foot Parshall Flume installed about 330 yards down-ditch from the measurement location. This site is location #019 on the distribution maps and is located in the T2N, R11E, Park County. This ditch is used a secondary diversion for Rock Lake water, carried by Rock Creek.

For a summary of the measurement results, see Table 1 on the next page. Measurement methodology is explained at the end of this report.

Exhibit 4

RESULTS/DISCUSSION

Table 1. Measurement results

Date	Location	Measurement Device	Flow Measurement	Staff Gage Reading	Rating Table Flow Rate	Uncertainty	Staff Member
(-)	(-)	(-)	(CFS) (miner's inches)	(ft)	(CFS) (miner's inches)	(%)	(-)
7/17/2024	Rock Creek	FlowTracker	50.83 2033.2	-	-	4	LR
7/26/2024	Rock Creek	FlowTracker	33.58 1343.2	-	-	4	LR/KE
8/5/2024	Rock Creek	FlowTracker 2	32.65 1306	-	-	6	RG
	Upper Criswell Ditch	FlowTracker 2	12.49 499.6	-	-	3	
	Upper Criswell Ditch	FlowTracker 2	13.45 538	-	-	2	
	Upper Criswell Ditch Flume	Parshall Flume	-	0.71	9.32 372.8	-	
8/16/2024	Rock Creek	FlowTracker 2	27.38 1095.2	-	-	5	RG
	Upper Criswell Ditch	FlowTracker 2	8.69 347.6	-	-	3	
	Upper Criswell Ditch Flume	Parshall Flume	-	0.54	6.05 242	-	
9/4/2024	Rock Creek	FlowTracker	21.17 846.8	-	-	4	LR
	Upper Criswell Ditch	FlowTracker	5.36 214.4	-	-	2	
	Upper Criswell Ditch Flume	Parshall Flume	-	0.35	3.05 122	-	

Rock Creek below Diversion Dam at Upper Criswell Ditch

The Upper Criswell Ditch headgate is located adjacent to the diversion dam, as seen in Figure 1. Mr. Sarrazin stated boards are placed in the diversion dam to control the flow in Rock Creek and into the Upper Criswell Ditch headgate. Staff gages exist on the side of the diversion dam structure, but these were not measured nor inspected by DNRC staff during the site visits.

The flow rate in Rock Creek was measured approximately 140 feet downstream from the wood diversion dam that diverts water into the Upper Criswell Ditch Headgate. The exact location of the measurements varied each visit but remained within the same area on the creek, as seen in Figure 2.

Measurements taken on July 17, 2024, were taken prior to Rock Lake water being turned on. Water measured in Rock Creek is assumed to be natural flow water, without any storage water contributing to the discharge. Measurements taken following this date were taken following Rock Lake water being turned on. The measured flow rate in Rock Creek on each date is shown in Table 1.

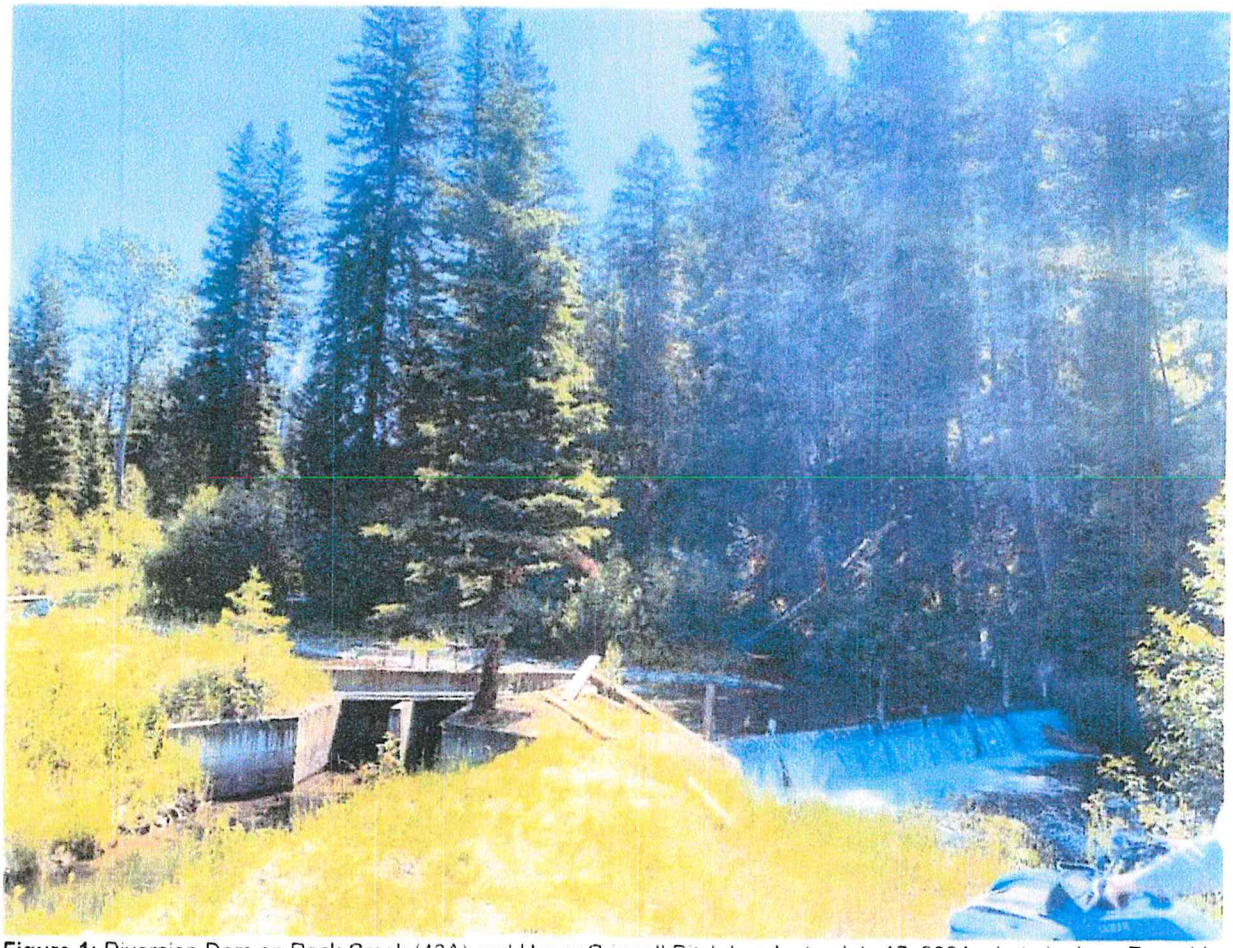
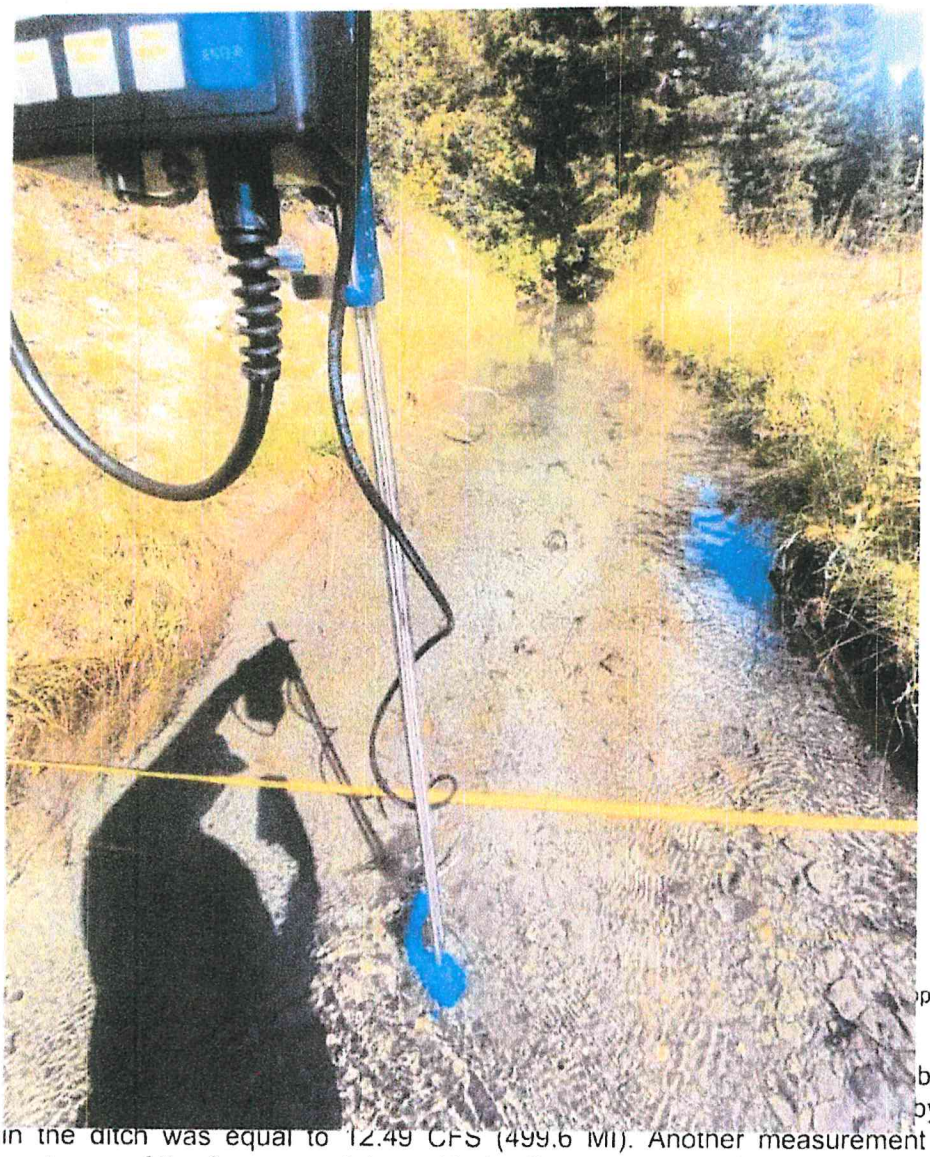


Figure 1: Diversion Dam on Rock Creek (43A) and Upper Criswell Ditch headgate. July 17, 2024, photo by Lyra Reynolds

Figure 2: Looking upstream at Rock Creek from the access road on the Crazy Mountain Ranch property. Light blue line on image depicts approximate cross-section for measurements. This reach is characterized by high velocities and turbulent flow. July 26, 2024, photo by Lyra Reynolds.

Upper Criswell Ditch below Headgate

Measurements were taken in the Upper Criswell Ditch below the headgate, approximately 300 feet down-ditch of the headgate. A 4-foot Parshall flume is located approximately 330 feet down-ditch from the headgate. All measurements in the Upper Criswell Ditch were taken above the flume.



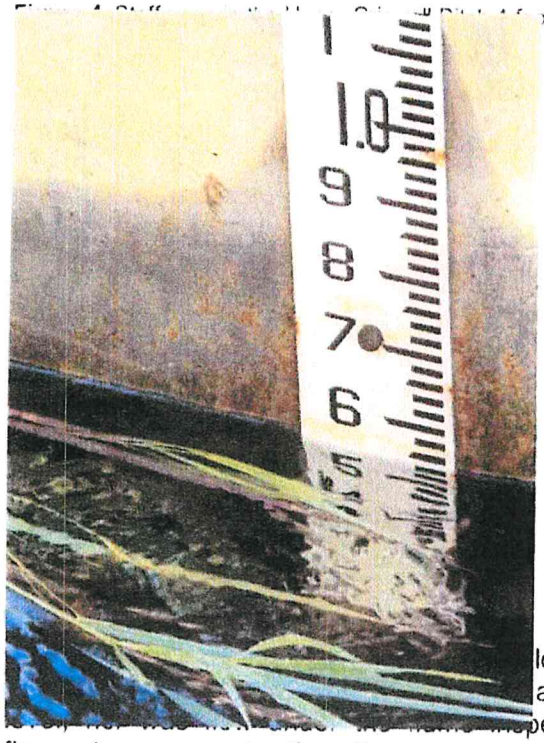
pproximately 30 feet up-ditch of Parshall

bout 9.32 CFS (372.8 MI) being
by Raeya Gordon, the discharge in the ditch was equal to 12.49 CFS (499.6 MI). Another measurement in a slightly different location upstream of the flume was taken with the flowmeter to confirm the flow exceeds the measured flow in the flume. The flow in the ditch was measured as 13.45 CFS (538 MI) at the second location.

On August 16, 2024, the staff gage read 0.54 feet for the flume, equal to about 6.05 CFS (242 MI) being diverted in the Upper Criswell Ditch. When measured using a flow meter by Raeya Gordon, the discharge in the ditch was equal to 8.69 CFS (347.6 MI).

On September 4, 2024, the staff gage read 0.35 feet for the flume, equal to about 3.05 CFS (122 MI) being diverted in the Upper Criswell Ditch. When measured using a flow meter by Lyra Reynolds, the discharge in the ditch was equal to 5.36 CFS (214.4 MI).

t Parshall Flume on August 16, 2024. August 16, 2024, photo taken by



ld visit. Water did not appear to be leaking or flowing around the appear to be submerged. The flume was not measured with a pected. However, the discharge measurements taken by the flowmeter are greater than the measurements based on the staff gage in the flume. This suggests the actual flow passing through the flume would be underestimated by a user.

The flume's measurement was compared to measurements from the flowmeter. The percent error in the flume's measurement was computed as follows:

Table 2. Percent error of flume measurements

Date	Experimental Value (CFS)	Accepted Value (CFS)	% Error
8/5/2024	9.32	12.49	-25.38
8/16/2024	6.05	8.69	-30.38
9/4/2024	3.05	5.36	-43.10

The accepted value is that of the properly functioning flow meter, as seen in Table 1 for each field visit. The error for each field visit is seen in Table 2. The percent error for each date the flume and flowmeter measured the ditch is negative, showing the flume underestimates the actual flow passing through. This flume appears to not measure water accurately.

CONCLUSIONS

Rock Creek below Diversion Dam at Upper Criswell Ditch

Rock Creek carries both natural flow and stored water throughout the year. The wooden diversion dam along Rock Creek has staff gages, but they would not provide an accurate method for estimating flow. Water leaks along the diversion dam and flows through gaps between the boards. This structure is not effective for water measurement purposes, given these considerations.

Upper Criswell Ditch

Water measured using a flowmeter at this location consistently exceeded the flow based on the staff gage in the 4-foot Parshall flume. The flume should be inspected to ensure it is level, not submerged, and no water is leaking around or under the structure. Defects or damage to the flume may result in underestimation of the actual flow passing through the flume.

Please let me know if you have any questions or concerns.

Sincerely,

Lyra Reynolds
Hydrologist/Water Resources Specialist
406-556-4500
Lyra.reynolds@mt.gov

METHODS

Flow Measurement

We used the standard U.S. Geological Survey method to measure time-averaged mean velocities at a depth of 60 percent below the water surface using a SonTek FlowTracker 1 acoustic Doppler velocimeter and SonTek FlowTracker 2 acoustic Doppler velocimeter. Flow was calculated using the midsection method, in which the mean velocity is multiplied by the cross-sectional flow area for the measurement location, and the total flow rate was then calculated by summing the products of the individual velocities and areas (Turnipseed and Sauer, 2010).

Flumes

We observed a Parshall flume. This flume is commonly used to measure flow in Montana and can be very accurate when properly installed and maintained. According to the Bureau of Reclamation Water Measurement Manual, these flumes "can reliably measure free-flow discharge to within 3 to 5 percent" – plus any operator error in reading the staff gage height – "as long as standard dimensions are attained during construction, the flume is correctly set, and the flume is operated and maintained according to the recommended practices."

Uncertainty

For the discharge measurement, uncertainty was quantified using the interpolated variance estimator (IVE) method and qualitatively assessed uncertainty using a hydrographer rating, following the procedure recommended by the U.S. Geological Survey (Mason, 2017). See Cohn et al. (2013) for a good discussion of the IVE method and Sauer and Meyer (1992) for a good discussion of the hydrographer qualitative method. The IVE is automatically computed by the FlowTracker's statistical software and is labeled as the "Statistical" method in program readouts (SonTek/YSI Inc., 2009). The flume measurements were not assigned a percent uncertainty.

Distance

Unless otherwise noted, all distance measurements referenced in this report were obtained by collecting latitude and longitude values at the site using a FlowTracker 2 or iPhone 11 Pro and then measuring the distance with GIS software.

REVIEW

This document has been reviewed by the Department on MONTH DAY, YEAR.

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Exhibit 6.3

Exhibit 6.3

Flume Readings & Flow Rates - Upper Criswell Ditch

Upper flume located in SESESE Sec 7, T2N R9E, near headgate. Lower flume located in the NENENW Sec 24, T2N R10E, at upgradient edge of POU.

Date	Upper Flume Reading	Upper Flume Flow Rate (cfs)	Corrected Upper Flume Flow Rate (cfs)	Lower Flume Reading	Lower Flume Flow Rate (cfs)	Calculated Ditch Loss (cfs)	Calculated Ditch Loss (%)	Corrected Ditch Loss (cfs)	Corrected Ditch Loss (%)	Comments
5/27/2025	0.39	3.621	5.40	0.42	4.07	-0.449	-12.40%	1.33	24.64%	
6/3/2025	0.45	4.538	6.77	0.49	5.191	-0.653	-14.39%	1.58	23.30%	
6/11/2025	0.50	5.359	7.99	0.54	6.051	-0.692	-12.91%	1.94	24.29%	
6/13/2025	0.50	5.359	7.99	0.53	5.875	-0.516	-9.63%	2.12	26.49%	
6/15/2025	0.48	5.025	7.49	0.53	5.875	-0.85	-16.92%	1.62	21.61%	
6/18/2025	0.46	4.698	7.01	0.50	5.359	-0.661	-14.07%	1.65	23.52%	
6/23/2025	0.38	3.476	5.18	0.47	4.861	-1.385	-39.84%	0.32	6.23%	
6/25/2025	0.35	3.053	4.55	0.44	4.38	-1.327	-43.47%	0.17	3.81%	
6/27/2025	0.37	3.332	4.97	0.42	4.07	-0.738	-22.15%	0.90	18.10%	
6/30/2025	0.35	3.053	4.55	0.40	3.769	-0.716	-23.45%	0.78	17.23%	
7/2/2025	0.36	3.191	4.76	0.44	4.38	-1.189	-37.26%	0.38	7.97%	
7/7/2025	0.30	2.393	3.57	0.41	3.918	-1.525	-63.73%	-0.35	-9.78%	
7/9/2025	0.00	0	0.00	0.00	0	0	#DIV/0!	0.00		Ditch shut off by commissioner, and also haying.
7/12/2025	0.00	0	0.00	0.00	0	0	#DIV/0!	0.00		Ditch shut off by commissioner, and also haying.
7/14/2025	0.00	0	0.00	0.00	0	0	#DIV/0!	0.00		Ditch shut off by commissioner, and also haying.
7/16/2025	0.00	0	0.00	0.00	0	0	#DIV/0!	0.00		Ditch shut off by commissioner, and also haying.
7/19/2025	0.00	0	0.00	0.00	0	0	#DIV/0!	0.00		Ditch shut off by commissioner, and also haying.
7/21/2025	0.60	7.146	10.66	0.6	7.146	0	0.00%	3.51	32.95%	
7/23/2025	0.58	6.773	10.10	0.58	6.773	0	0.00%	3.33	32.95%	
7/26/2025	0.58	6.773	10.10	0.58	6.773	0	0.00%	3.33	32.95%	
7/28/2025	0.60	7.146	10.66	0.59	6.959	0.187	2.62%	3.70	34.70%	
7/30/2025	0.59	6.959	10.38	0.6	7.146	-0.187	-2.69%	3.23	31.15%	
8/2/2025	0.59	6.959	10.38	0.6	7.146	-0.187	-2.69%	3.23	31.15%	
8/4/2025	0.58	6.773	10.10	0.59	6.959	-0.186	-2.75%	3.14	31.11%	
8/6/2025	0.58	6.773	10.10	0.58	6.773	0	0.00%	3.33	32.95%	
8/8/2025	0.59	6.959	10.38	0.55	6.229	0.73	10.49%	4.15	39.98%	
8/11/2025	0.59	6.959	10.38	0.58	6.773	0.186	2.67%	3.61	34.74%	
8/13/2025	0.56	6.409	9.56	0.55	6.229	0.18	2.81%	3.33	34.83%	
8/14/2025	0.56	6.409	9.56	0.55	6.229	0.18	2.81%	3.33	34.83%	
8/15/2025	0.56	6.409	9.56	0.55	6.229	0.18	2.81%	3.33	34.83%	
8/16/2025	0.56	6.409	9.56	0.55	6.229	0.18	2.81%	3.33	34.83%	
8/17/2025	0.00	0	0.00	0	0					Shut off early morning on Aug 17th.
9/4/2025	0.00	0	0.00	0	0					
9/11/2025	0.53	5.875	8.76	0.57	6.59	-0.715	-12.17%	2.17	24.79%	
9/12/2025	0.53	5.875	8.76	0.56	6.409	-0.534	-9.09%	2.35	26.86%	
9/13/2025	0.51	5.529	8.25	0.55	6.229	-0.7	-12.66%	2.02	24.46%	
9/14/2025	0.52	5.701	8.50	0.55	6.229	-0.528	-9.26%	2.27	26.74%	
9/15/2025	0.52	5.701	8.50	0.55	6.229	-0.528	-9.26%	2.27	26.74%	
9/16/2025	0.48	5.025	7.49	0.52	5.701	-0.676	-13.45%	1.79	23.93%	
9/17/2025	0.44	4.38	6.53	0.48	5.025	-0.645	-14.73%	1.51	23.08%	
9/19/2025	0.43	4.224	6.30	0.46	4.698	-0.474	-11.22%	1.60	25.43%	
9/20/2025	0.45	4.538	6.77	0.48	5.025	-0.487	-10.73%	1.74	25.75%	
9/21/2025	0.61	7.334	10.94	0.62	7.525	-0.191	-2.60%	3.41	31.20%	
9/22/2025	0.47	4.861	7.25	0.47	4.861	0	0.00%	2.39	32.95%	
9/23/2025	0.46	4.698	7.01	0.51	5.529	-0.831	-17.69%	1.48	21.09%	
9/24/2025	0.45	4.538	6.77	0.49	5.191	-0.653	-14.39%	1.58	23.30%	
9/25/2025	0.45	4.538	6.77	0.48	5.025	-0.487	-10.73%	1.74	25.75%	
9/26/2025	0.45	4.538	6.77	0.5	5.359	-0.821	-18.09%	1.41	20.82%	
9/27/2025	0.46	4.698	7.01	0.48	5.025	-0.327	-6.96%	1.98	28.28%	
9/28/2025	0.46	4.698	7.01	0.52	5.701	-1.003	-21.35%	1.31	18.64%	
9/29/2025	0.46	4.698	7.01	0.54	6.051	-1.353	-28.80%	0.96	13.64%	
9/30/2025	0.46	4.698	7.01	0.52	5.701	-1.003	-21.35%	1.31	18.64%	Lake shut off on September 29, 2025, last diversion & flume reading on September 30, 2025.

10.94	*Maximum Corrected Diverted Flow Rate*
39.98%	*Maximum Corrected Ditch Loss*
24.97%	*Average Corrected Ditch Loss*

Exhibit 10.b

Exhibit 10.b

2024 SPILLWAY ASSESSMENT REPORT

CRAZY MOUNTAIN (RAINBOW LAKE) DAM

PARK COUNTY, MONTANA

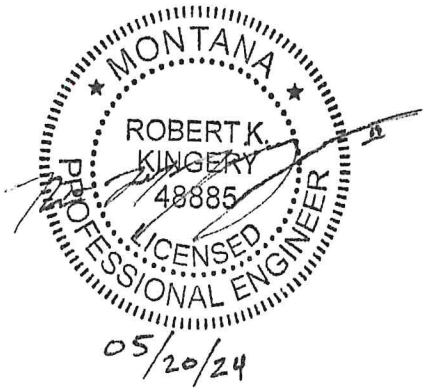
NID #MT03724

Prepared for:

CMR RANCH OWNER LLC
52 Hammond Creek Road
Clyde Park, MT 59018

Prepared by:

Hydrometrics, Inc.
3020 Bozeman Avenue
Helena, MT 59601



May 20, 2024

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2024 SPILLWAY ASSESSMENT REPORT
CRAZY MOUNTAIN (RAINBOW LAKE) DAM
PARK COUNTY, MONTANA

NID #MT03724

1.0 INTRODUCTION AND BACKGROUND

This report summarizes the findings of a special evaluation of the Crazy Mountain (Rainbow Lake) Dam spillway. This report describes the condition of the Crazy Mountain (Rainbow Lake) spillway and provides information regarding existing spillway capacity, alternatives for increasing spillway capacity, and documentation of the freeboard condition of the dam. As part of this assessment, the estimated stage-storage curve of the reservoir was also revised.

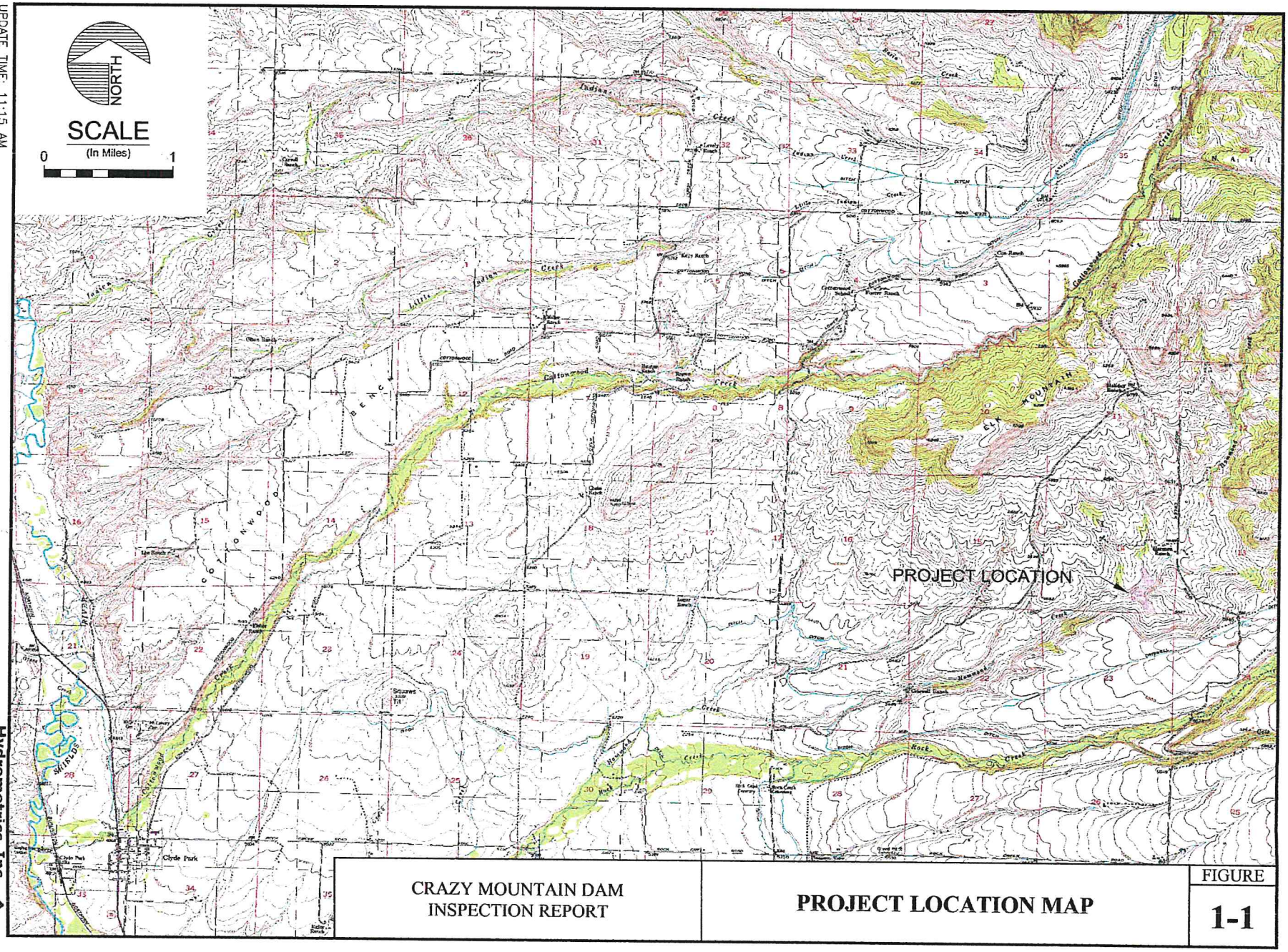
1.1 LOCATION

As shown on Figure 1-1, the dam is located in Park County, approximately 10 miles northeast of the town of Clyde Park, Montana. It is located in the southeast ¼ of Section 14, Township 2 North, and Range 10 East. The dam is located at an approximate latitude of 45.917 N and an approximate longitude of 110.443 W. Inflow to the reservoir is from Hammond Creek, a tributary of Rock Creek, which is a tributary of the Shields River.

1.2 DESIGN AND CONSTRUCTION

The Crazy Mountain Dam was constructed in 1968. It is primarily operated as a recreational reservoir by CMR Ranch Owner LLC (CMR) and is used for fish and wildlife.

The dam was constructed to be 40 feet high from the downstream toe of the dam to the low point on the crest of the dam. The Dam crest varies between 18 and 20 feet wide.



CRAZY MOUNTAIN DAM
INSPECTION REPORT

PROJECT LOCATION MAP

FIGURE
1-1

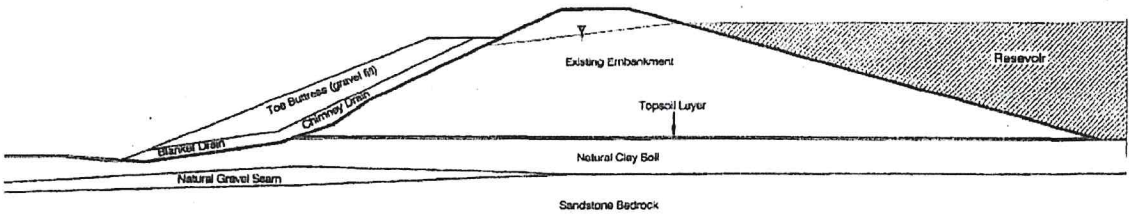
UPDATE TIME: 11:15 AM
LTABORSKY\HEL\20081107\I:\LAND PROJECTS\807201\DWG\807201HH001.DWG

Hydrometrics, Inc.
Consulting Scientists and Engineers

In 1999, the ranch property changed ownership, and, as part of the due diligence process of the land sale, the dam was inspected by Maxim and was found to have safety deficiencies requiring repair. In 2001, the Dam Safety Program approved a construction permit for rehabilitation of the dam. In order to obtain a construction permit, a Design Report for Rehabilitation was prepared by Maxim (Maxim, 2001). Construction was completed in 2002 and as-built drawings were submitted to DRNC by Maxim (Maxim, 2002). Major construction components completed in 2002 were: (1) a toe buttress and seepage drainage system to mitigate seepage exiting the embankment downstream slope; (2) extension of the outlet pipe downstream with a new downstream control gate valve and concrete valve vault; (3) locking the old valve in the open position and abandoning the old valve vault by filling it with concrete; (4) placing new riprap on the upstream slope; and (5) widening and lining the emergency spillway with riprap for erosion protection.

Figure 1-2 from the 2001 Design Report (Maxim, 2001) shows a cross-section of the existing dam.

FIGURE 1-2. APPROXIMATE DAM CROSS-SECTION FROM MAXIM (MAXIM, 2001)



1.3 RESERVOIR MANAGEMENT AND OPERATIONS

The reservoir level in Rainbow Lake is controlled by the crest of the emergency spillway and by a gate valve on the downstream side of the dam. The dam's low-level outlet is the only outlet for regulating the reservoir level below the spillway.

Normal operation of the dam consists of keeping the outlet valve closed and using the emergency spillway to control the reservoir level. Under this condition, inflow is typically equal to outflow through the emergency spillway with little variation in reservoir level.

1.4 HAZARD CLASSIFICATION

1.4.1 Hazard Classification and Regulation

The dam is classified by the Montana Dam Safety Program of the Montana Department of Natural Resources and Conservation (DNRC) as "high hazard," per the requirements of the Montana Dam Safety Act. A "high hazard" designation indicates that there is likelihood of downstream loss of life in the event of a dam failure.

The DNRC Water Resources Division, Water Operations Bureau – Dam Safety Section is the regulatory and permitting agency. The current operating permit was issued on April 2, 2024, and requires the next 5-year inspection to be performed by May 30, 2028 (Appendix A). The CMR performs annual owner inspections. A copy of these inspections is included in Appendix B.

2.0 2023 INSPECTION RECOMMENDATIONS & SURVEY

2.1 2023 DAM SAFETY INSPECTION RECOMMENDATIONS

As part of the periodic 5-year safety inspection for the dam, which was performed in 2023, a topographic survey of the dam crest and spillway was recommended by the inspecting engineer. It was also recommended that this survey be used to determine whether the freeboard for the dam was acceptable given the existing spillway size. This recommendation was made after the freeboard assessment in the inspection identified that there was very little freeboard below the dam crest during the Inflow Design Flood (IDF).

The recommendations from the 2023 inspection report were as follows:

> Recommendation #2 and #3 – A topographic survey of the dam and the spillway should be conducted within the next year. This survey should pay special attention to the elevation of the spillway relative to the low point in the dam crest and the elevation of the ground surrounding the spillway. The spillway stage-discharge curve, maximum reservoir water surface (MRWS) and the adequacy of the freeboard should then be reassessed by an engineer and confirmed following the completion of this survey. If the freeboard and/or spillway capacity is not large enough, enlargement of the spillway and/or increasing the elevation of the low point of the dam should be considered.

2.2 2023/2024 STAHLY SURVEY

In November 2023 and in February 2024, Stahly Engineering and Associates, Inc. (Stahly) performed a topographic survey of the dam crest, the spillway, and the surrounding area. The survey was separated into two separate site visits. A copy of the survey is attached to this report as Appendix C.

As a result of the survey, it was discovered that the difference between the low point of the dam crest (elevation 5643.07)[1] and the spillway invert (elevation 5639.00) was 0.7 feet higher than previously thought. As a result, there is 4.1 feet of freeboard for the dam above the spillway invert. A copy of the survey is attached to this report as Appendix C.

[1] Note that the survey references a "Lowest Elevation" of 5642.79 feet, however, based on a detailed review of the survey and the survey points gathered, there is a slightly higher and continuous dam crest upstream of this point. This can be observed by the 5643 foot contour on the survey immediately to the right (east) of the callout.

2.3 DATUM ADJUSTMENT

The 2023/2024 Stahly survey found and re-surveyed three survey control points that had been installed prior to the 2002 reconstruction of the dam. It is believed that the 2002 as-built drawings were prepared using a local coordinate system, as the drawings do not reference a specific datum. The control points were re-surveyed on the North American Vertical Datum of 1988 (NAVD 88). A comparison of the two surveys was prepared and it was identified that there was an average 4.41-foot difference between the elevations presented in the 2002 as-built drawings and NAVD 88. Table 2-1 summarizes this survey adjustment.

For clarity, all elevations in this report are presented on NAVD 88 unless otherwise specifically described.

TABLE 2-1. DATUM ADJUSTMENT

	Name	Northing	Easting	Vertical
2002 As-Builts	CMBM-3	4711.29	4803.69	5631.72
2023 Survey	BM 7/8 RB CMBM – 3	608924.44	1728328.75	5636.17
Difference		**604213.15**	**1723525.06**	**4.45**

	Name	Northing	Easting	Vertical
2002 As-Builts	CMBM-2	4496.56	5204.17	5657.26
2023 Survey	BM 7/8 RB CMBM – 2	608764.78	1728754.14	5661.65
Difference		**604268.22**	**1723549.97**	**4.39**

	Name	Northing	Easting	Vertical
2002 As-Builts	CMBM-1	5742.51	5001.20	5664.27
2023 Survey	BM 7/8 RB CMBM – 1	609972.58	1728387.46	5668.65
Difference		**604230.07**	**1723386.26**	**4.38**

Average Difference	**604237.15**	**1723487.10**	**4.41**
Standard Deviation	**23.03**	**72.02**	**0.03**

3.0 HYDROLOGIC ADEQUACY

3.1 LOSS OF LIFE ANALYSIS AND INFLOW DESIGN FLOOD (IDF)

DNRC's high hazard classification (performed in 2000) identified a downstream potential loss of life of 0.5 due to failure of the dam. The inflow design flood (IDF) for the dam was established by DNRC (2001) as the 500-year discharge from the Hammond Creek drainage above the dam into Rainbow Lake and, subsequently, out of the Rainbow Lake Spillway.

3.2 SUMMARY OF UPDATED SURVEY ELEVATIONS FOR DAM CREST AND SPILLWAY

The low point in the dam crest was discovered during the 2023/2024 survey to be at an elevation of 5643.07[2] feet. The low point in the dam crest was 0.26 feet higher than previously thought.

The spillway invert was discovered during the 2023/2024 survey to be at an elevation of 5639.00 feet[3]. The spillway invert was 0.41 feet lower than previously thought.

When both of these adjustments are considered, the total difference in freeboard between the spillway invert and the low point in the dam crest was +0.67 feet from that presented in the 2023 inspection report, a total of 4.07 feet.

3.3 INLET GRATE ELEVATION

The elevation of the inlet grate for the reservoir was reassessed given several new pieces of information. The 2002 outlet pipe inspection references a depth to the existing inlet grate of 24 feet, according to diver's equipment. It is likely, therefore, that the inlet grate is approximately 26 feet below the spillway, assuming the diver was 2 feet above the inlet grate. This would put the elevation of the grate at 5613 feet. This elevation matches relatively closely to an elevation back-calculated from the 2002 as-built pipe drawings, assuming a 260-foot pipe length at 2.5% with a drop inlet. It also closely matches an approximate elevation estimated from extrapolating the the natural topography above the spillway elevation. Since all three of these sources identified the grate to likely be at an approximate elevation of 5613 feet, the stage-storage relationship for the reservoir was modified to reflect the new inlet elevation of 5613 feet. To confirm this elevation and the elevation (stage)-storage relationship of the reservoir below the elevation of the spillway invert, a bathymetric survey would be required.

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[2] 5638.66' on 2002 local datum.
[3] 5634.59' on 2002 local datum.

3.4 RESERVOIR STAGE – STORAGE

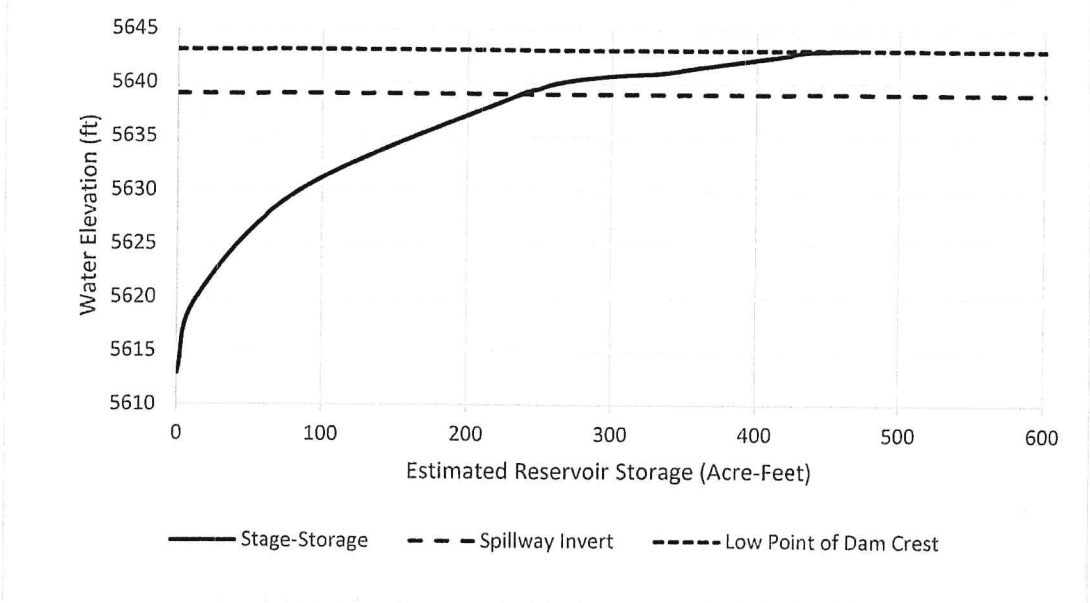
As part of the hydrologic assessment performed in 2018, an approximate stage-storage curve for the reservoir was established. The approximate stage-storage curve for the reservoir was adjusted as part of this assessment, as a result of new information becoming available. The updated stage-storage curve is shown in Figure 3-1.

The reservoir elevation (Stage)-storage relationship was determined using several pieces of information and approaches. This information was combined in order to create a single estimated curve. Mulitple sources of information were needed since there has not been a bathymetric survey performed on the reservoir. For storage volume estimates below the elevation of the spillway, which is nearly always submerged, aerial imagery and topographic maps were assessed to determine water surface areas. The storage of the reservoir between the spillway elevation of 5639.0 feet and 5640.0 feet was estimated using Google Earth Imagery and the associated lake perimeter. LiDAR was not used in this zone since the precise elevation of the reservoir during the LiDAR flight was not known, while the surface area of the lake can be very closely measured using Google Earth, since the Google Earth photo shows the spillway only partially flowing. At elevations greater than 5640.0 feet, an elevation – area, and subsequently, an elevation-storage relationship was developed using LiDAR data calculated in AutoCAD Civil 3D.

Previous work estimated a reservoir volume of 417.1 acre-feet during normal operations with the water level at the spillway invert. As discussed previously, this storage volume estimate was revised to reflect new information regarding the depth of the reservoir and recent LiDAR information[4]. At the invert of the spillway (elevation 5639[5]), the reservoir storage is currently estimated to be approximately 237 acre-feet. At the top of the sill wall at the upstream end of the spillway (estimated elevation 5640.8), the reservoir storage is estimated to be approximately 308 acre-feet. At the low point of the dam crest (elevation 5643.1) the reservoir storage is estimated to be 470 acre-feet. This elevation-storage relationship is shown in Figure 3-1.

[4] See Section 3.3.
[5] See Section 4.1.3.

FIGURE 3-1. RESERVOIR STAGE-STORAGE CURVE



3.5 INFLOW DESIGN FLOOD

The 2001 design report (Maxim, 2001) estimated the 500-year peak discharge to be 311 cubic feet per second (cfs) using U.S. Geological Survey (USGS) regression equations (USGS, 1992). However, the latest check of the peak discharge using StreamStats®, a web application hydrologic and geographical information system (GIS) software (USGS, 2023), estimates the updated average 500-year peak flow for the drainage upstream of the dam to be 389 cfs.

According to the rating curve presented in the 2001 Maxim Design report, a 500-year flood of 389 cfs would overtop the dam. However, the 2001 Maxim design did not consider the attenuation that would occur when the flood is routed through the reservoir. This peak spillway discharge was reassessed in 2018 to determine whether the dam would actually overtop during the peak of a 500-year discharge event if peak flood attenuation in the reservoir was accounted for. That 2018 assessment was updated as part of this spillway assessment due to new information becoming available.

That new information included LiDAR, an updated topographic survey and a new estimate of the inlet grate. The LiDAR was used to better calculate the volume of storage available for the reservoir above normal/full pool (spillway elevation of 5639.0 feet). Additionally, with the updated topographic survey, the dam crest elevation and the elevation of the spillway (and thus the reservoir) were able to be more confidently measured. Further, new

documentation regarding the depth of the inlet became available, so the storage volume of the reservoir below the spillway was re-evaluated.

Using this new information, a routed IDF analysis was conducted to evaluate the attenuation in the peak 500-year discharge that would occur in the reservoir if it were at full pool prior to runoff event. Similar hydrologic characteristics were assumed in the 2023 model run as that in the 2018 model run. The inflow into the reservoir was the same for both the 2018 and 2023 model runs. After the flood was routed through the reservoir, the resulting peak was then reassessed and compared to the spillway discharge table. The results of this assessment determined that the peak of a 500-year flood discharge event routed through the reservoir would result in a peak outflow through the spillway of 366 cfs.

3.6 FLOOD ROUTING ANALYSIS METHODS

In order to perform the flood routing analysis, a hydrologic model was developed. This hydrologic model estimated runoff from a 500-year return period, 24-hour duration rain event. The basin parameters used in the model were as follows:

- Drainage area of 5.1 square miles to the Crazy Mountain Dam, as measured by StreamStats. A copy of the StreamStats report is in Appendix D.
- Average basin runoff loss coefficient using the USDA-Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service, or SCS) Curve Number (CN) method. The average CN used for the basin was 54.33. The CN was derived by:
    - Determining soil types within the basin from the Web Soil Survey (USDA-NRCS, 2017). The soils map, soil types, hydrologic soil groups and report from the Web Soil Survey are in Appendix D.
    - Using hydrologic soil-cover complex values taken from the USDA-NRCS National Engineering Handbook (USDA-NCRS, 2004). Values for CN were for forest-range regions of the Western United States. A spreadsheet used for calculating an average CN value is shown in Appendix D.
    - Initial abstraction of rainfall (the amount of rain immediately infiltrated into the soil at the start of the rainstorm) was calculated using the USDA-NRCS equation $Ia = 0.2S$, where Ia is initial abstraction (inches) and S is the storage value (inches) for the average soil conditions in the basin. Storage is calculated by the equation $S = 1000/CN - 10$, where CN is the average curve number for the basin. For this basin, Ia was 1.68 inches. The calculations are also shown in Appendix D.

- The basin unit hydrograph was determined using the Clark Unit Hydrograph Method. For Montana, Clark Unit Hydrograph parameters are determined using methods from the USGS (USGS, 1992). A unit hydrograph is a direct runoff hydrograph resulting from one unit (1 inch) of constant intensity uniform rainfall occurring over the entire watershed. Using superposition and proportionality, a unit hydrograph allows the determination of direct runoff for any rainfall amount. Clark parameters for the Hammond Creek basin are time of concentration (the time it takes for water to flow from the most remote point in a basin to the basin outlet) of 0.86 hours, and the basin-storage coefficient (R) (a coefficient that defines the peak of the unit hydrograph) of 4.81. A spreadsheet printout of Clark's parameters is shown in Appendix D.

The 500-year, 24-hour rainfall event used in the model was derived using USGS methods:

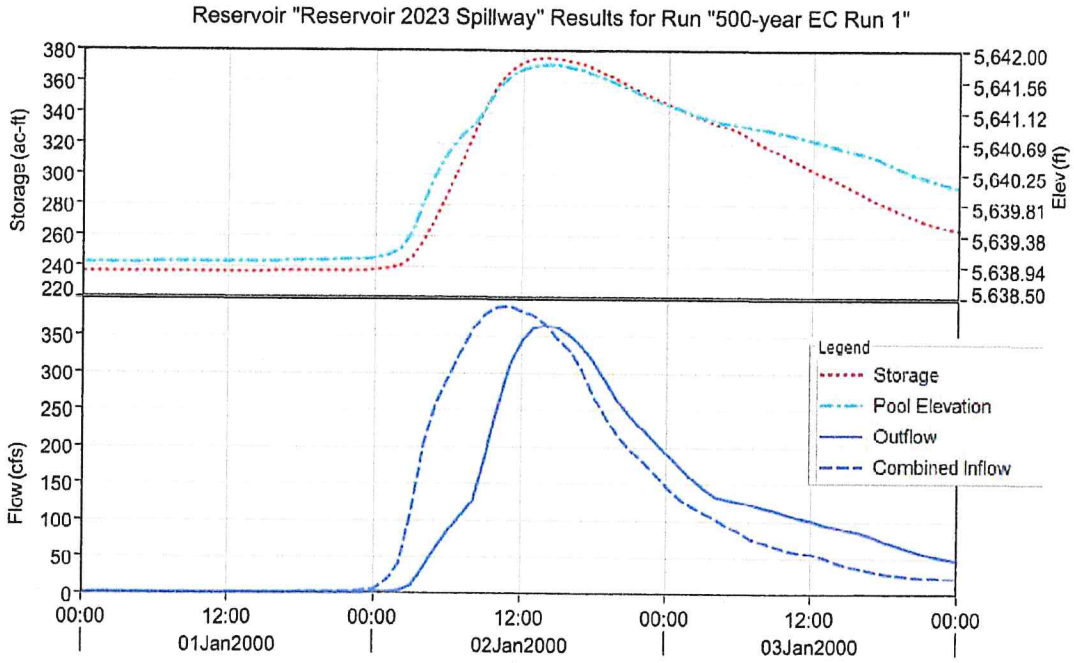
- The 500-year, 24-hour rainfall depth was determined using USGS procedures (USGS, 1997). The procedures are derived from statistical information based on measured historical rainfall data in Montana. The rainfall depth is based on the basin's location, region, and regression equations based on mean storm depths and storm durations. For the Rainbow Lake basin, the 500-year, 24-hour depth was 5.21 inches. A spreadsheet printout with the rainfall depth computations is included in Appendix D.
    - It should be noted that new hydrologic information is anticipated to be available for this region in either late 2024 or 2025 as part of the National Oceanic and Atmospheric Administration's Atlas 14 updates.
- The rainfall hyetograph using the 500-year, 24-hour storm depth was also derived using USGS methods (USGS, 1998). The hyetograph parameters were based on statistical storm characteristics given the region in Montana and historical storm data. The USGS procedures for a 24-hour storm duration result in a 72-hour total storm duration hyetograph that include periods of precipitation before and after the 24-hour independent storm duration. This is slightly conservative, but it reflects actual data that indicates that longer storm durations occur around the core storms used in the USGS analysis. The total precipitation amount for a 72-hour hyetograph was 6.45 inches, with the peak incremental amount occurring at the 27th hour of the total storm. A spreadsheet printout of the storm hyetograph computations is located in Appendix D.

3.7 FLOOD ROUTING ANALYSIS RESULTS

Basin parameters and rainfall information were input in a HEC-HMS model (U.S. Army Corps of Engineers, Hydrologic Engineering Center Hydrologic Modeling System, 2023), a rainfall-runoff software. The resulting peak flow into the reservoir from the model was 284 cfs. While this analysis may be valid, it was determined to change the CN in the model until the peak inflow into the reservoir was approximately the same as the average peak 500-year discharge as determined by StreamStats (389 cfs) in order to be consistent with the method of peak flow determination conducted by Maxim in 2001. This was accomplished by adjusting the CN to 67.0.

The output from the HEC-HMS model is shown in Figure 3-2. The resulting peak inflow into the reservoir was modeled at 390 cfs. The routed peak outflow through the reservoir spillway was 366 cfs.

FIGURE 3-2. HEC-HMS OUTPUT



The maximum reservoir water surface elevation during the IDF (500-year flood event) is 5641.8 feet.

4.0 SPILLWAY CONDITION AND CAPACITY

4.1 DESCRIPTION OF SPILLWAY

4.1.1 Concrete Lower Portion of Spillway

During the 2002 rehabilitation project, the spillway was enlarged and lined with riprap to safely pass the IDF, which is required for spillways on a dam with a high hazard rating. The spillway crest has a structurally sound trapezoidal concrete apron that is 12 feet wide and is designed for vehicle travel across the spillway. Water flows through a 16-foot-wide center opening on the upstream side of the apron structure. Prior to 2018, the spillway was screened to block debris and prevent fish passage. That screen was removed in 2018 after the safety inspection to increase the spillway capacity. A 20-inch-high concrete sill-style wingwall is on the upstream side of the sloped sections of the apron. The sill-style wingwalls have several minor cracks, which should be monitored during each 5-year inspection. See Photo 4-1 below.

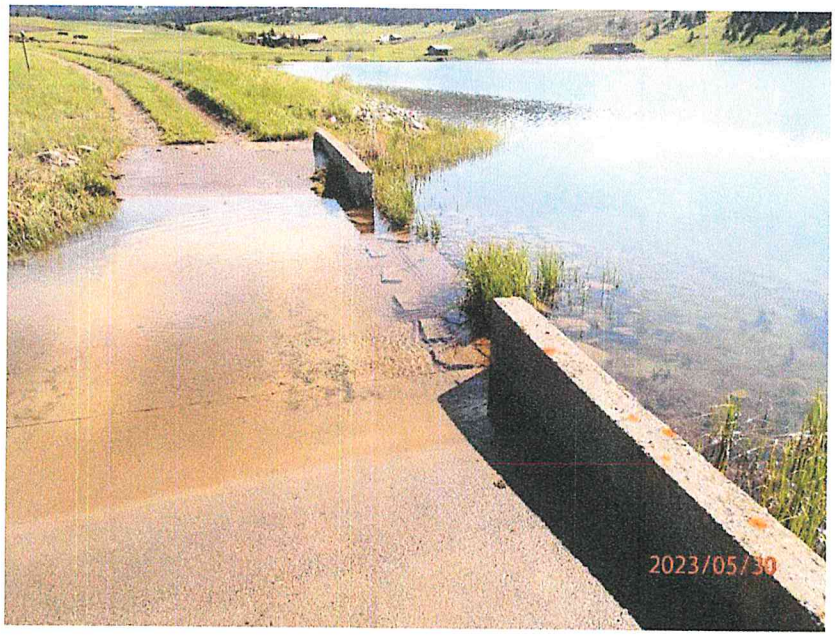


PHOTO 4-1. CONCRETE LOWER PORTION OF SPILLWAY

It was discovered during the 2023 inspection that the staff gauge on the upstream side of the spillway does not reference the invert of the spillway. The difference in water level measurements between the staff gauge reading and the spillway invert is 0.47 feet and is shown in Photo 4-2 below.

PHOTO 4-2. DIFFERENCE IN SPILLWAY MEASUREMENTS

The top outside edge of the concrete spillway is, according to the 2023/2024 survey, at an elevation of 5640.4 feet.

4.1.2 Earthen Upper Portion of Spillway

At elevations above the height of the spillway wingwalls there is some riprap protection along the shoreline, but the spillway is mostly earthen. The spillway is not connected to the dam, and it is extremely unlikely that progressive erosion of the earthen portion of the emergency spillway (above the concrete wingwalls) would threaten the integrity of the dam's right (north) abutment. Photo 4-3 shows this upper portion of the spillway from the downstream side looking upstream.

PHOTO 4-3. EARTHEN UPPER PORTION OF SPILLWAY

4.1.3 Elevation of Spillway

In past inspections, reservoir water levels have never been recorded lower than a staff gauge reading of 0.47 feet. Supporting information prepared for past inspections references a spillway invert elevation of 5635.0 feet, on the 2002 local datum. However, the 2023/2024 survey identified that the elevation of the spillway invert was actually 5639.00 feet (NAVD88), which is the equivalent of 5634.59 feet on the 2002 local datum.[6] Consequently, the spillway invert was 0.41 feet lower than previously thought.

4.1.4 Downstream Spillway Outlet Channel

Downstream of the concrete sill and apron, the spillway outlet channel is lined by riprap, and there is a riprap stilling basin at the downstream end of the spillway channel. Both the spillway outlet channel and the stilling basin were designed and constructed in 2002.

Downstream of the spillway crest is the spillway outlet channel, which travels around the dam's right (north) abutment. See Photo 4-4 below. This outlet channel is steep (approximately 6%) and is lined with moderately sized riprap (D_{50} ~ 6 inches). The alignment

[6] The difference in datums is discussed in section 2.3. The differences in the spillway elevations are also discussed in Section 3.2.

of the outlet channel does not threaten the integrity of the dam's right (north) abutment or toe, and the outlet channel is located well below the elevation of the dam crest.

PHOTO 4-4. SPILLWAY OUTLET CHANNEL

4.2 HISTORIC SPILLWAY CAPACITY CALCULATIONS

As part of the 2018 inspection, the spillway capacity was assessed with both the fish screen in place and the fish screen removed. It was previously determined that with the fish screen in place, the dam would be unable to pass the design flood.

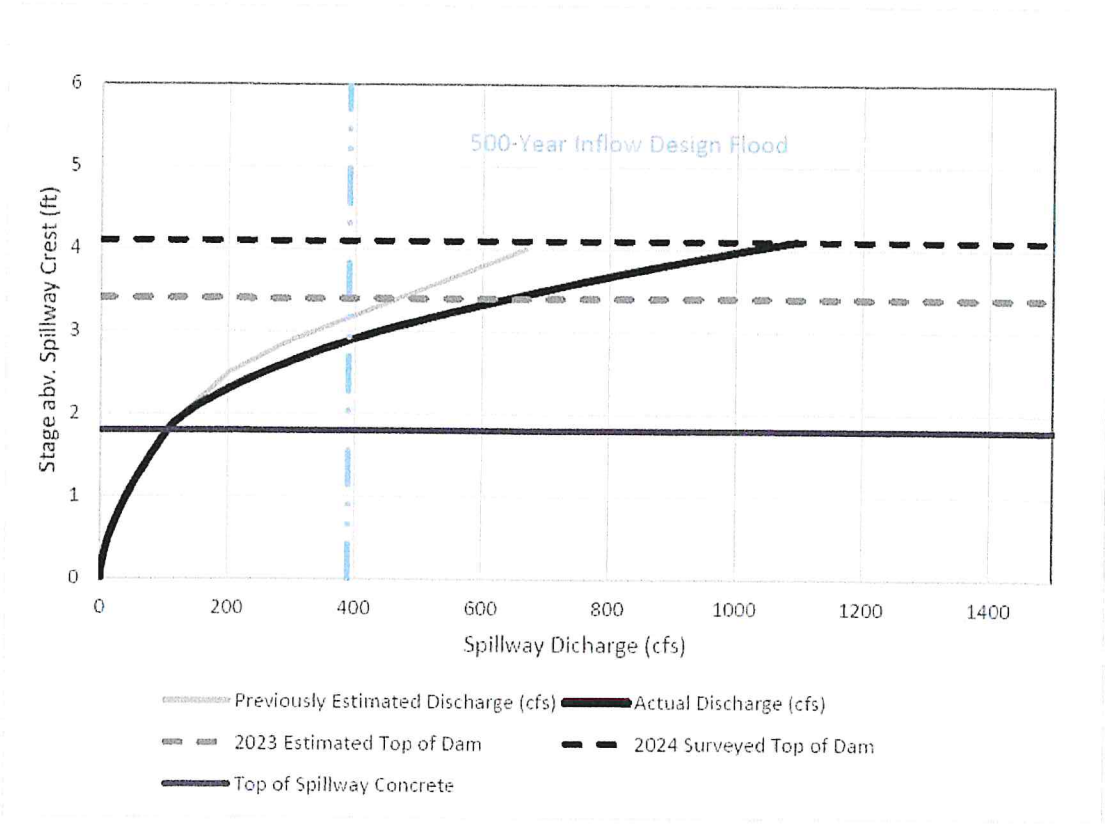
Alternatively, It was determined that by removing the fish screen, the spillway would be able to pass the design flood. This analysis was performed by adding the additional capacity that would be gained by removing the fish screen to the discharge rating curve included in the 2001 Maxim Design, which previously assumed that the fish screen was fully clogged.

4.3 CALCULATED EXISTING SPILLWAY CAPACITY

The 2023/2024 topographic survey identified that, relative to the low point in the dam crest, the spillway was approximately 0.67 feet lower than previously thought. Additionally, topographic information for the area surrounding the concrete portion of the spillway was better able to be incorporated into the spillway calculations. Figure 4-1 shows a comparison of the previous (in gray) and actual (in black) estimated spillway capacity for the current calculations.

The spillway stage-discharge curve is shown in Figure 4-1 and in Table 4-1. During the IDF, the elevation of the water in the reservoir is 5641.8 feet when the spillway is discharging at 366 cfs. This is equivalent to 2.8 feet of head on the spillway. When the reservoir's water surface is at an elevation of 5641.8 feet, it is approximately 1.3 feet below the low point of the dam crest. This meets Montana Dam Safety criteria, since the dam would not overtop during the IDF.

FIGURE 4-1. ESTIMATED SPILLWAY STAGE-DISCHARGE (2024 SURVEY)



The top of the spillway concrete wingwalls is at an elevation of 5640.8 feet. The spillway can pass approximately 106 cfs with the water at the top of the wingwalls. This is equivalent to approximately the 10-year flood.

TABLE 4-1. EXISTING ESTIMATED SPILLWAY STAGE-DISCHARGE

Stage (feet)	Elevation (feet)	Previously Estimated Discharge (cfs)	Actual Discharge (cfs)	Notes
0	5639.0	0	0	Spillway Invert
0.1	5639.1		0.6	
0.2	5639.2		3	
0.3	5639.3		6	
0.4	5639.4		9	
0.5	5639.5	14.9	13	
0.6	5639.6		18	
0.7	5639.7		23	
0.8	5639.8		29	
0.9	5639.9		35	
1	5640.0	42.1	41	
1.1	5640.1		48	
1.2	5640.2		55	
1.3	5640.3		63	
1.4	5640.4		71	Top of Concrete on Road
1.5	5640.5	77.3	79	
1.6	5640.6		88	
1.7	5640.7		96.6	
1.8	5640.8	101.6	106	Top of Concrete Wingwall
1.9	5640.9		117	
2	5641.0		134	
2.1	5641.1		153	
2.2	5641.2		176	
2.3	5641.3		200	
2.4	5641.4		227	
2.5	5641.5	201.6	256	
2.6	5641.6		287	
2.7	5641.7		320	
2.8	5641.8		356	
2.9	5641.9	301.6	395	
3	5642.0	336.6	437	
3.1	5642.1		485	
3.2	5642.2	401.6	534	
3.3	5642.3		586	
3.4	5642.4	466.6	641	
3.5	5642.5		698	
3.6	5642.6		756	
3.7	5642.7		818	
3.8	5642.8		884	
3.9	5642.9		952	
4	5643.0	667.6	1022	
4.1	5643.1		1095	Low Point on Dam Crest

4.4 FLOOD PROBABILITY

4.4.1 Methods

The event recurrence intervals for each alternative were evaluated. For relatively common flood events (0.2% AEP, 500-year, and smaller), StreamStats was used to calculate the probability that a flood of a given size would occur in any given year. The StreamStats probability data was also utilized to develop an event recurrence interval trendline on a graph with logarithmic axes. The recurrence interval for less common flood events (larger than 500-year) were estimated through extrapolating this trendline. This runoff-recurrence interval relationship is shown in Figure 4-2.

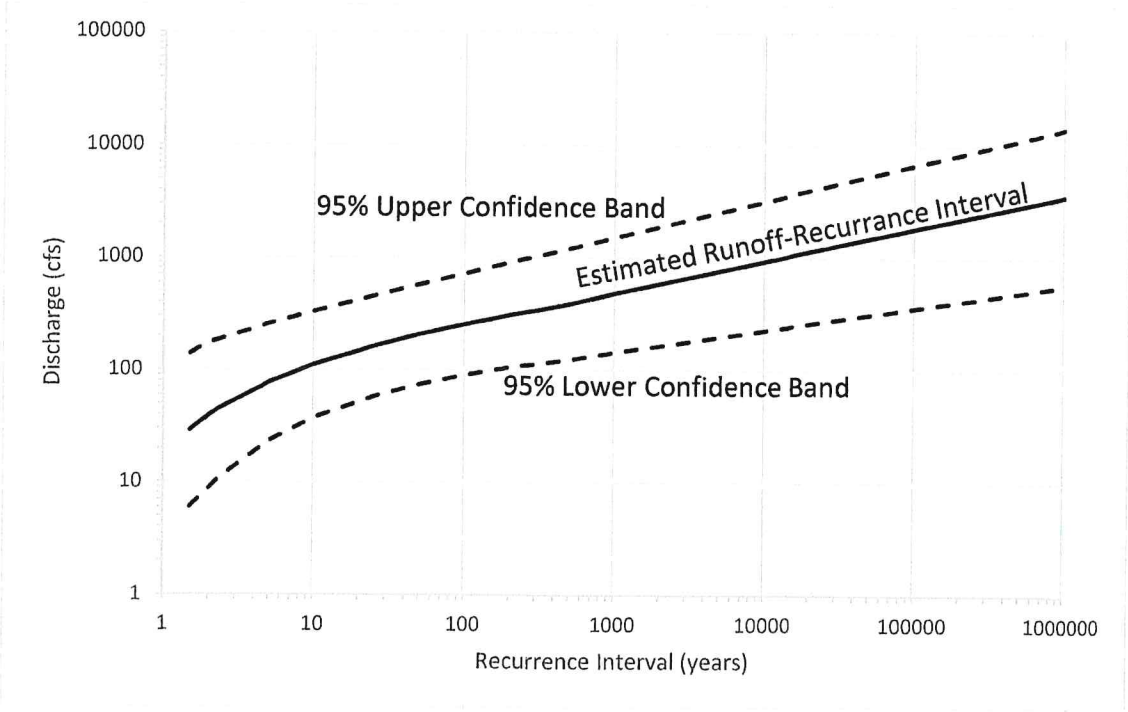
To check the reasonableness of the extrapolated trendline, StreamStats data was input into a PeakFQ model (USGS, 2023), a flood frequency analysis software. The resulting fitted frequency curve and confidence limits were found to be comparable to the developed trendline.

4.4.2 Probable Maximum Flood

The StreamStats Report gives a probable maximum flood (PMF) value of 18,900 cfs. This was not checked as part of this assessment.

The PMF is greater than the flow rates and recurrence intervals identified through extrapolating the StreamStats data. Therefore, the extrapolated recurrence interval values do not exceed the PMF and are considered to be reasonable.

FIGURE 4-2. RUNOFF-RECURRENCE INTERVAL RELATIONSHIP



5.0 FREEBOARD CONSIDERATIONS

5.1 GENERAL

During the 2023 inspection, there were some minor areas of wave induced erosion observed along the upstream face of the dam crest, as well as some small areas where additional riprap should be placed to protect against wind generated wave erosion. Generally, the dam crest appeared to be in good condition and there was no obvious sign of wind generated wave action on the dam crest itself.

5.2 SPILLWAY ELEVATION

As discussed in Section 4.0, the spillway elevation is 5639.0 feet (Stahly, 2024). In past inspection reports, and in the Maxim 2002 as-built survey, however, the spillway elevation is referenced to be at an elevation of 5635.0 feet[7]. The low point of the dam based on the 2024 survey was found to be at an elevation of 5643.07 feet. The upstream face of the dam is at a slope of approximately 2.5:1 (H:V).

5.3 2001 MAXIM DESIGN

It should be noted that the spillway assessment described in Section 6.0 assumes that there is no wind on the reservoir at the time of the design flood. A wind generated wave runup assessment was performed by Maxim in 2001 as part of their design. This assessment determined that wind generated waves would be 0.79 feet high during a sustained 40 mph wind event. While runup was not separately calculated, a maximum water height of 1.17 feet is listed to be caused by wind driven waves.

A review of the Maxim calculations indicates that if there is a northeasterly wind (blowing towards the southwest), it would force the majority of wind generated wave runup towards the left (south) side of the dam crest, which is also where the low point of the dam is currently located. The fetch is also longest in this direction and is estimated by Maxim at 1000 feet. While there are longer distances from shore to dam than this, using a 1000-feet value is appropriately conservative when considering that wave generation is caused by an "effective" fetch with waves being generated as a result of wind coming from multiple directions. The "effective" fetch of Rainbow Lake is less than 1000 feet, so the Maxim calculations are conservative in this regard.

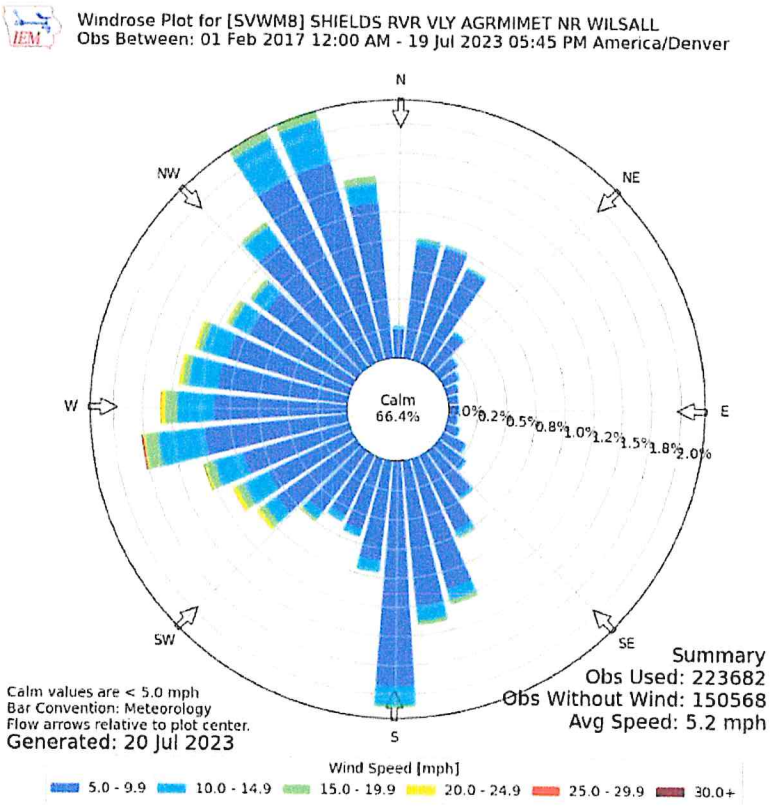
[7] Note that this elevation is on the 2002 local datum.

5.4 WIND DIRECTION AND STRENGTH

Wind rose data was gathered from the nearby Shields River Valley Station near Wilsall, Montana. Wind strength and direction data was obtained from the Iowa Environmental Mesonet website at Iowa State University (Iowa State University, 2023).

The Shields River Valley station has a period of record from 2017 to present. The Shields River Valley station is approximately 11 miles northwest of the reservoir. The wind compass rose from the Shields River Valley Station is shown in Figure 5-1 below.

FIGURE 5-1. SHIELDS RIVER VALLEY WIND COMPASS ROSE



Based on this information, it is conservative to assume that a 15-mph wind could occur at the same time that the reservoir is experiencing an IDF and that a 40-mph wind could occur when the reservoir is at normal pool.

5.5 STATE OF MONTANA DAM SAFETY REQUIREMENT

It is improbable that both a design flood event and strong wind (greater than 15 mph) will occur at the same time. Generally, it is accepted that there should be adequate freeboard provided so that the dam does not overtop during a normal pool and high-wind scenario (e.g., 40 mph), or an IDF and moderate wind scenario (e.g., 15 mph).

5.6 WIND GENERATED WAVE CHARACTERISTICS AT NORMAL POOL

There is 4.1 feet of freeboard between the spillway invert and the low point of the dam crest. Calculations of the wind generated waves, runup, and setup were performed using the equations and nomographs presented in Section 13 of Golze, 1977 (Golze, 1977) and the United States Bureau of Reclamation Design Standards No. 13 – Chapter 6 (USBR, 2012).

In the event of a 40-mph wind with the reservoir at normal pool, the significant wave height would be approximately 0.6 feet (0.3 feet above mean water), wave runup would be approximately 0.6 feet, and wave setup would be approximately 0.05 feet. Setup and runup would total 0.7 feet. The dam will therefore not overtop due to wave actions during normal pool with 40 mph winds. Note that this is similar to the design point used by Maxim in their 2001 assessment, except in that the runup calculation is slightly higher and the significant wave height is slightly lower.

5.7 WIND GENERATED WAVE CHARACTERISTICS DURING INFLOW DESIGN FLOOD

The maximum water surface elevation during the IDF is 5641.8 feet. There is 1.3 feet of freeboard between the IDF water surface elevation and the low point of the dam crest. Calculations of the wind generated waves, runup, and setup were performed using the equations and nomographs presented in Section 13 of Golze, 1977.

In the event of a 15-mph wind with the reservoir at its peak during the IDF, the significant wave height would be approximately 0.2 feet (0.1 feet above mean water), wave runup would be approximately 0.24 feet, and wave setup would be approximately 0.01 feet. Runup and setup would total 0.25 feet. With runup and setup, the maximum elevation of the water on the dam would be 5642.1 feet, 1.0 feet below the low point in the dam crest.

5.8 USBR DESIGN OF SMALL DAMS RECOMMENDATION

The dam does not meet the suggested minimum freeboard requirement of the Maximum Reservoir Water Surface (MRWS) + 3 feet. This recommendation, however, is based in part on the United States Bureau of Reclamation (USBR) *Design of Small Dams* manual (USBR,

1987). In developing the table that the MRWS + 3 feet was created on, it assumes a fetch of 1 mile, 50 mph winds and wave runup of 1.5 x the wave height. For dams with a very small surface area and fetch, in a relatively low-wind area, such as the Crazy Mountain (Rainbow Lake) Dam, this recommendation may result in a freeboard calculation that is greater than is needed to protect the dam.

The *USBR Design of Small Dams* recommends that for dams with fetches less than 1 mile, that either 4 feet of freeboard be provided on top of the normal water surface (in this case, the spillway invert), or that 3 feet be added to the maximum water surface. This recommendation was developed as a recommendation for new dams, and while providing this amount of freeboard would provide protection against wind induced wave overtopping, it may be excessive for Crazy Mountain (Rainbow Lake) Dam. It should be noted that Crazy Mountain (Rainbow Lake) Dam meets part of this recommendation in that 4.1 feet of freeboard is provided on top of the normal water surface.

6.0 SPILLWAY MODIFICATION ALTERNATIVES

This assessment considered the benefits and potential hydraulic implications of performing several modifications to the dam spillway. Spillway information was input in Hydraulic Toolbox (FHWA, 2023), a hydraulic analysis software, to check spillway discharge capacities. These capacities were compared with the flood probability analysis for each alternative. This analysis along with the benefits and impacts of these alternatives are provided below.

6.1.1 Alternative 0 – Do Nothing – Leave Spillway As Is

The existing spillway is in good condition. It also has adequate capacity to pass the IDF. The spillway is able to pass approximately 106 cfs with water at the top of the existing concrete wingwalls (Elevation 5640.8 feet). This is equivalent to a flood with a 10-year recurrence interval (10% chance of occurring in any given year). If a larger flood were to occur, then the earthen embankment would become part of the spillway, and there would likely be some erosion. It is extremely unlikely that progressive erosion of the earthen portion of the emergency spillway (above the concrete wingwalls) would threaten the integrity of the dam's right (north) abutment.

Furthermore, in larger floods and runoff events, the spillway has an adequate capacity given its current dam safety hazard classification. According to the calculations presented above, the dam spillway is able to pass approximately 1095 cfs prior to overtopping the dam. This discharge rate is equivalent to approximately the ~10,000-year flood. This magnitude of flood has a 0.01% chance of occurring at least once in the next year. Similarly, this level of flood has a 0.5% chance of occurring at least once during the next 50 years and a 1.0% chance of occurring at least once during the next 100 years.

Given this information, the spillway capacity and condition meet current Montana Dam Safety Regulations and no modification of the spillway is required.

The approximate stage-discharge and stage-recurrence interval relationships for the spillway configuration under Alternative 0 are shown in Figure 6-4 and Figure 6-5, respectively.

6.1.2 Alternative 1 – Remove Only Right (North) Wingwall

Removing the right wingwall would allow for the staff gauge to remain visible and would provide a modest increase in the discharge capacity of the spillway, particularly during more frequent events. The spillway in this alternative is able to pass approximately 146 cfs with

water at the top of the spillway concrete (Elevation 5640.8 feet). This is equivalent to a flood with a ~20-year recurrence interval (5% chance of occurring in any given year).

If a larger flood were to occur, then, for the same reasoning as discussed in Alternative 0, it is unlikely that progressive erosion of the earthen portion of the emergency spillway would threaten the integrity of the dam's right (north) abutment. In this scenario, the dam spillway is able to pass approximately 1134 cfs prior to overtopping the dam. This discharge rate is equivalent to approximately the ~20,000-year flood. This magnitude of flood has a 0.005% chance of occurring at least once in the next year. Similarly, this level of flood has a 0.25% chance of occurring at least once during the next 50 years and a 0.50% chance of occurring at least once in the next 100 years.

The approximate stage-discharge and stage-recurrence interval relationships for the spillway configuration under Alternative 1 are shown in Figure 6-4 and Figure 6-5, respectively.

6.1.3 Alternative 2 – Remove Both Wingwalls

Removing both wingwalls would provide a significant increase in the discharge capacity of the spillway, particularly during more frequent flood events. Further, the cost associated with such a project would be minimal. The spillway in this alternative is able to pass approximately 204 cfs with water at the top of the spillway concrete (Elevation 5640.8 feet). This is equivalent to a flood with a ~50-year recurrence interval (2% chance of occurring in any given year).

If a larger flood were to occur, then, for the same reasoning as discussed in Alternative 0, it is unlikely that progressive erosion of the earthen portion of the emergency spillway would threaten the integrity of the dam's right (north) abutment. In this scenario, the dam spillway is able pass approximately 1236 cfs prior to overtopping the dam. This discharge rate is equivalent to approximately the ~30,000-year flood. This magnitude of flood has a 0.0033% chance of occurring at least once in the next year. Similarly, this level of flood has a 0.17% chance of occurring at least once during the next 50 years and a 0.33% chance of occurring at least once in the next 100 years. The approximate stage-discharge and stage-recurrence interval relationships for the spillway configuration under Alternative 2 are shown in Figure 6-4 and Figure 6-5, respectively.

6.1.4 Alternative 3 – Remove Right (North) Wingwall, Increase the Capacity of the Overbank Portion of the Spillway, and Level the Dam Crest

Alternative 3 would, similar to Alternative 1, remove only the north wingwall. Alternative 3 would also widen the spillway on its south side above the elevation of the concrete and level the dam crest at an elevation of 5644.50 feet. Excavated material from widening the spillway could be placed as fill in the low point of the dam crest. This alternative would provide a large increase in the discharge capacity of the spillway during extreme events while also allowing the existing staff gauge to remain in place. The elevation and stationing for this alternative is shown in Figure 6-1.

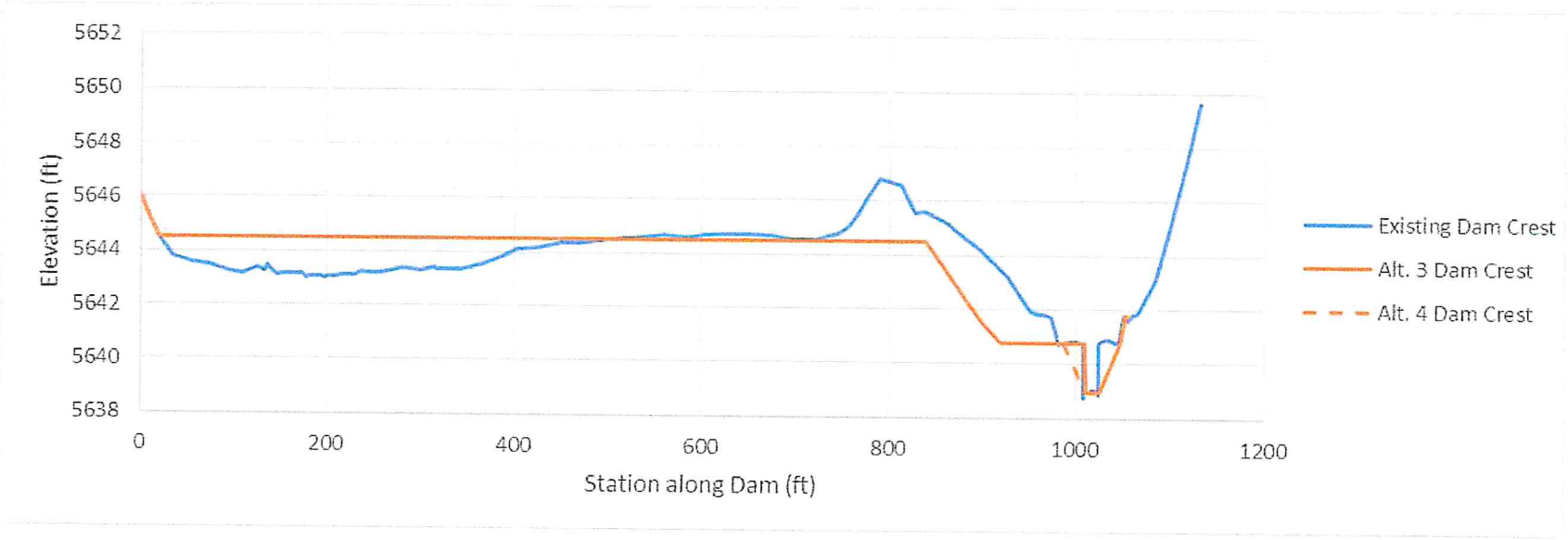
This alternative would also increase the dam crest elevation by approximately 1.40 feet, increasing the dam's freeboard. The dam height would increase from an existing low point elevation of 5643.07 feet to an elevation of 5644.50 feet, 5.5 feet above the invert of the spillway. The preliminary grading plan and profile views for this alternative are shown in Figures 6-2 and 6-3.

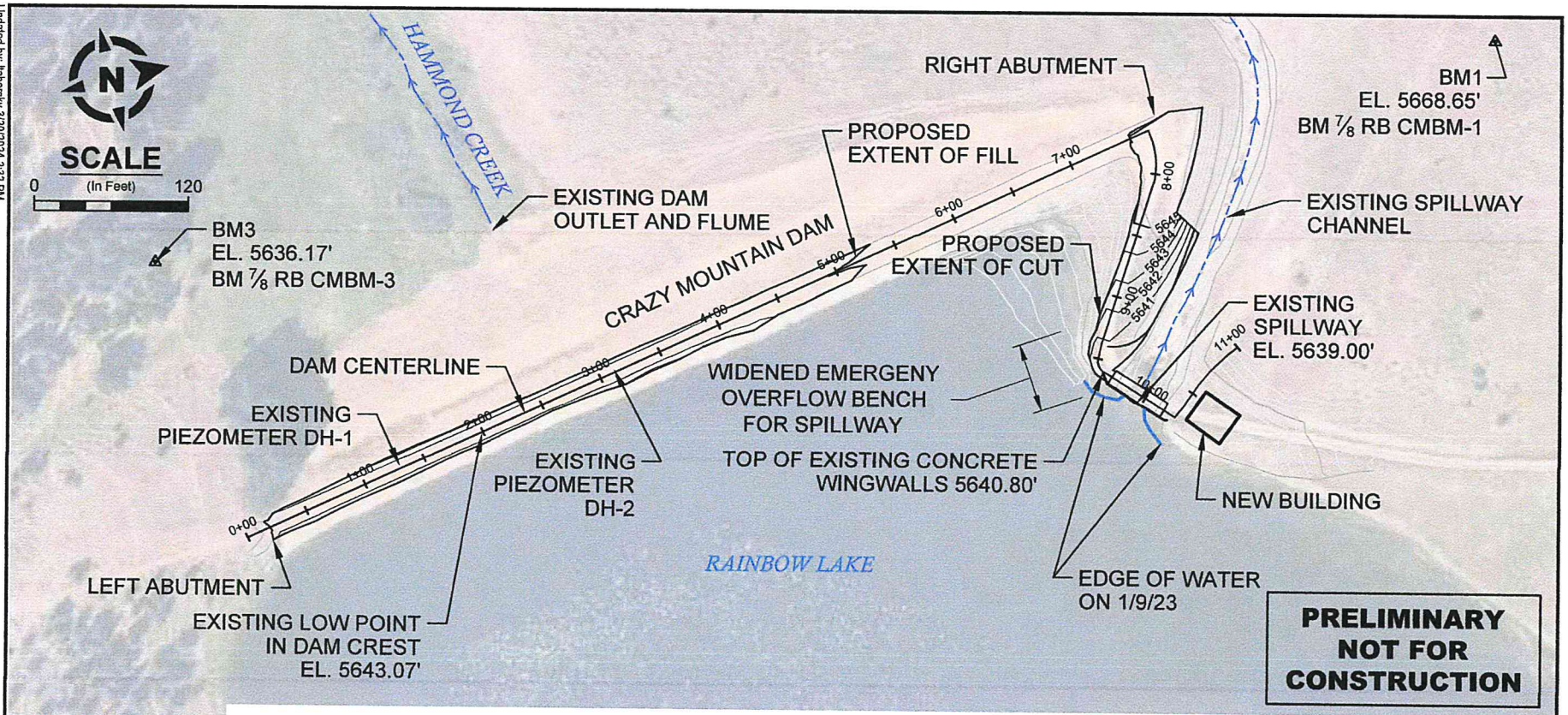
It is estimated that approximately 260 cubic yards of material would be needed to increase the elevation of approximately 500 feet of embankment on the left side of the dam. Any additional material needed after the left spillway overbank excavation would be sourced from the right (north) dam abutment. The piezometers would also need to be extended vertically or protected by placing a new casing and lid over the existing piezometer.

For a smaller, more frequent flood, the spillway in this alternative is able to pass approximately 146 cfs with water at the top of the spillway concrete (Elevation 5640.8 feet). This is equivalent to a flood with a ~20-year recurrence interval (5% chance of occurring in any given year). If a larger flood were to occur, then, for the same reasoning as discussed in Alternative 0, it is unlikely that progressive erosion of the earthen portion of the emergency spillway would threaten the integrity of the dam's right (north) abutment. In this scenario, the dam spillway is able pass approximately 2772 cfs prior to overtopping the dam. This discharge rate is equivalent to approximately the ~400,000-year flood. This magnitude of flood has a 0.003% chance of occurring at least once in the next year. Similarly, this level of flood has a 0.012% chance of occurring at least once during the next 50 years and a 0.025% chance of occurring at least once in the next 100 years. The approximate stage-discharge and stage-recurrence interval relationships for the spillway configuration under Alternative 3 are shown in Figure 6-4 and Figure 6-5, respectively.

This work would likely require a construction permit from the DNRC to be performed.

FIGURE 6-1. MODIFIED DAM CREST PROFILE





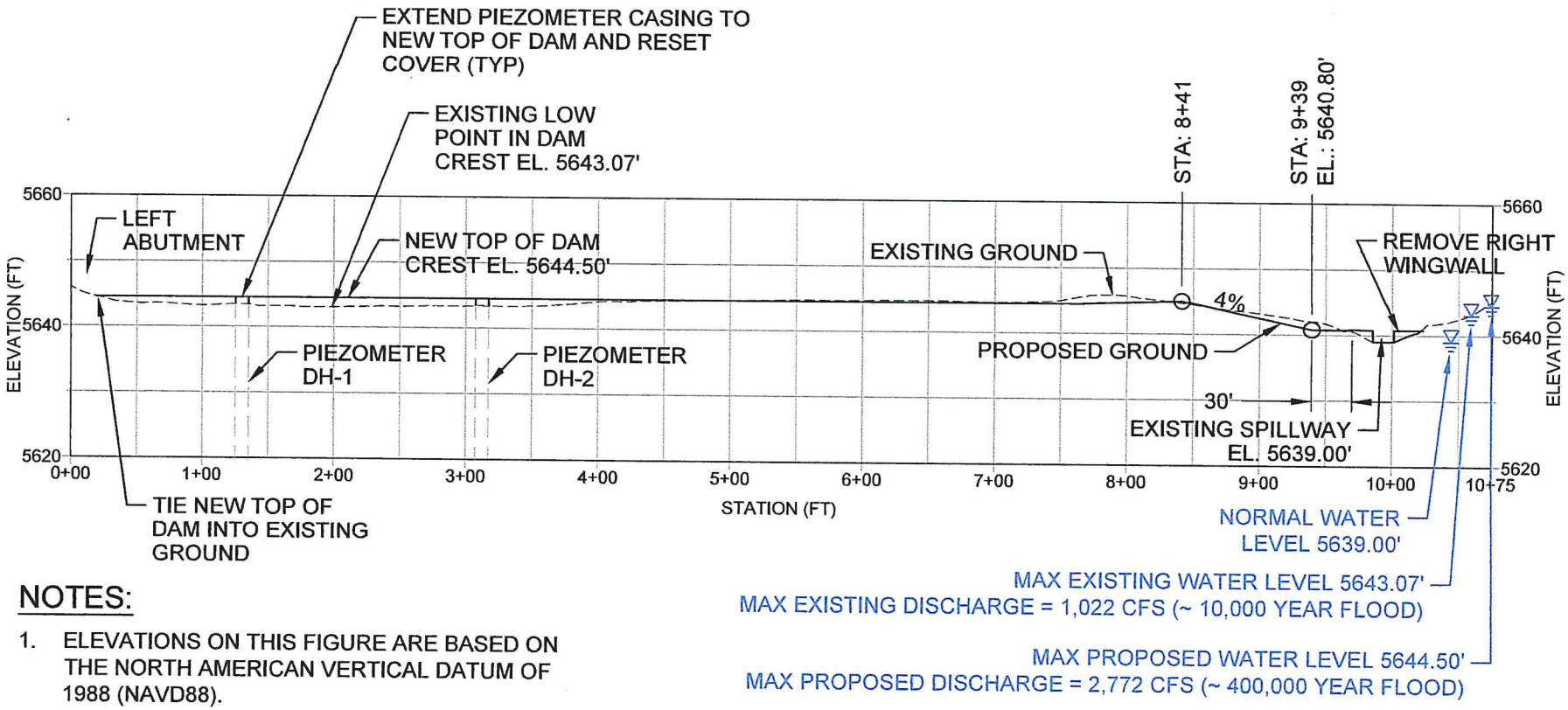
NOTES:

1. ELEVATIONS ON THIS FIGURE ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. EXISTING CONTOURS ARE BASED ON 2023 AND 2024 TOPOGRAPHIC SURVEYS PREPARED BY STAHLY ENGINEERING AND ASSOCIATES, INC.
3. ESTIMATED VOLUME OF EARTHWORK FOR PROJECT IS 270 CY CUT AND 260 CY FILL.
4. AERIAL IMAGE FROM BING IMAGERY.

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	609972.58'	1728387.46'	5668.65'	BM 7/8 RB CMBM-1
2	608764.78'	1728754.14'	5661.65'	BM 7/8 RB CMBM-2
3	608924.44'	1728328.75'	5636.17'	BM 7/8 RB CMBM-3

RAINBOW LAKE (CRAZY MOUNTAIN DAM) SPILLWAY ASSESSMENT	ALTERNATIVE 3 PRELIMINARY GRADING PLAN	FIGURE 6-2



NOTES:

1. ELEVATIONS ON THIS FIGURE ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. EXISTING GROUND BASED ON 2023 AND 2024 *TOPOGRAPHIC SURVEYS* PREPARED BY STAHLY ENGINEERING AND ASSOCIATES, INC.

PROFILE

SCALE: 1"=120' (VE 1:5)
DAM CENTERLINE

PRELIMINARY NOT FOR CONSTRUCTION

RAINBOW LAKE (CRAZY MOUNTAIN DAM) SPILLWAY ASSESSMENT	ALTERNATIVE 3 PRELIMINARY GRADING PROFILE	FIGURE 6-3

Hydrometrics, Inc.

6.1.5 Alternative 4 – Remove Both Wingwalls, Increase the Capacity of the Overbank Portion of the Spillway, and Level the Dam Crest

Alternative 4 is a combination of Alternative 2 and Alternative 3 and would provide the largest amount of protection to the dam from overtopping for a relatively low capital cost. Under Alternative 4, both wingwalls would be removed and the spillway would be widened on its south side at an elevation above the spillway concrete. Similar to Alternative 3, Alternative 4 would also increase the dam crest elevation by approximately 1.50 feet, which would increase the dam's freeboard. This existing and proposed dam crest is shown in Figure 6-1.

For a smaller flood the spillway in this alternative is able to pass approximately 204 cfs with water at the top of the spillway concrete (Elevation 5640.8 feet). This is equivalent to a flood with a ~50-year recurrence interval (2% chance of occurring in any given year). If a larger flood were to occur, then, for the same reasoning as discussed in Alternative 0, it is unlikely that progressive erosion of the earthen portion of the emergency spillway would threaten the integrity of the dam's right (north) abutment. In this scenario, the dam spillway is able to pass approximately 2962 cfs prior to overtopping the dam. This discharge rate is equivalent to approximately the ~500,000-year flood. This magnitude of flood has a 0.0002% chance of occurring at least once in the next year. Similarly, this level of flood has a 0.010% chance of occurring at least once during the next 50 years and a 0.020% chance of occurring at least once in the next 100 years. The approximate stage-discharge and stage-recurrence interval relationships for the spillway configuration under Alternative 4 are shown in Figure 6-4 and Figure 6-5, respectively.

This work would likely require a construction permit from the DNRC to be performed.

FIGURE 6-4. ESTIMATED SPILLWAY STAGE-DISCHARGE (2024 SURVEY)

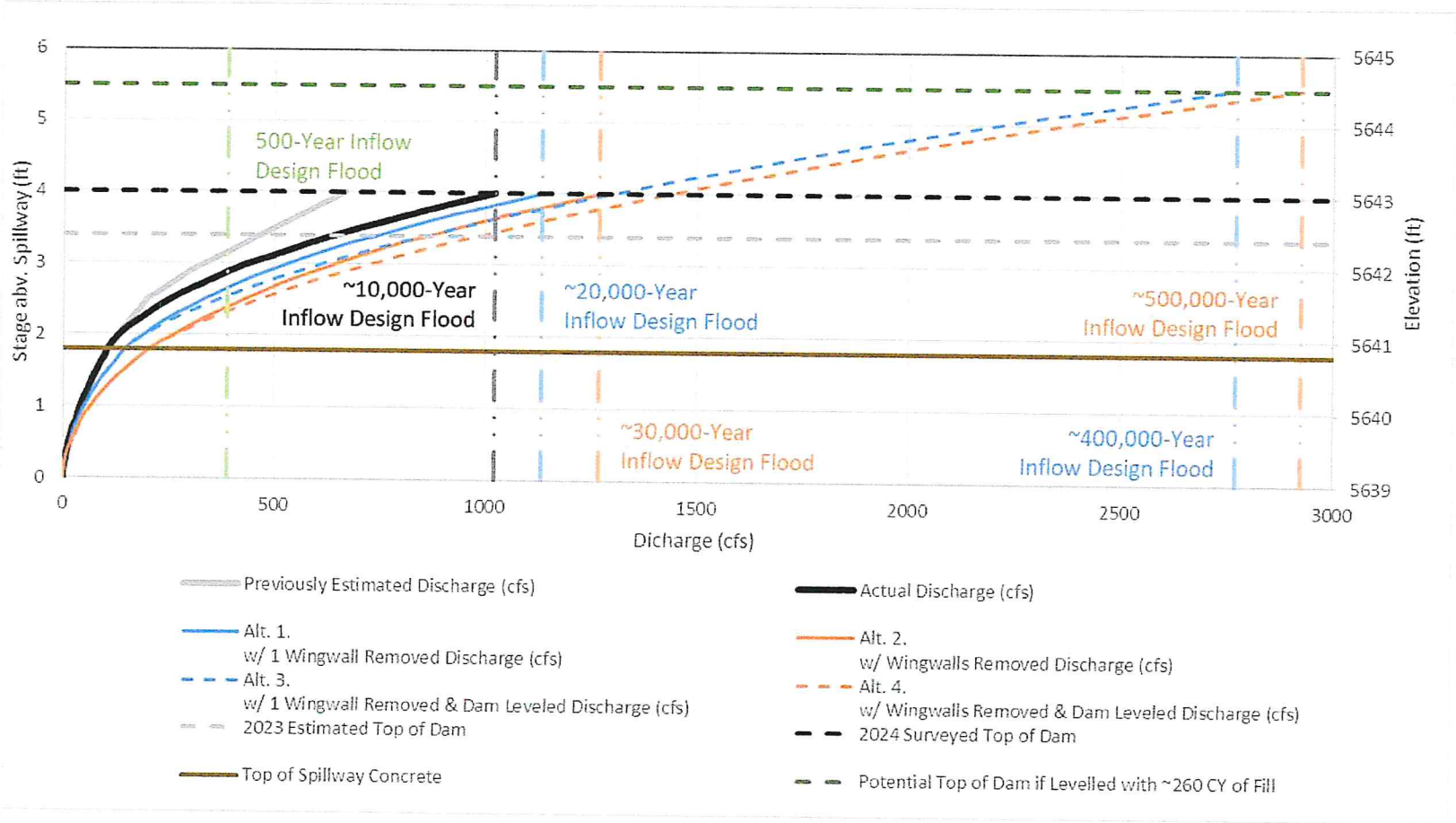
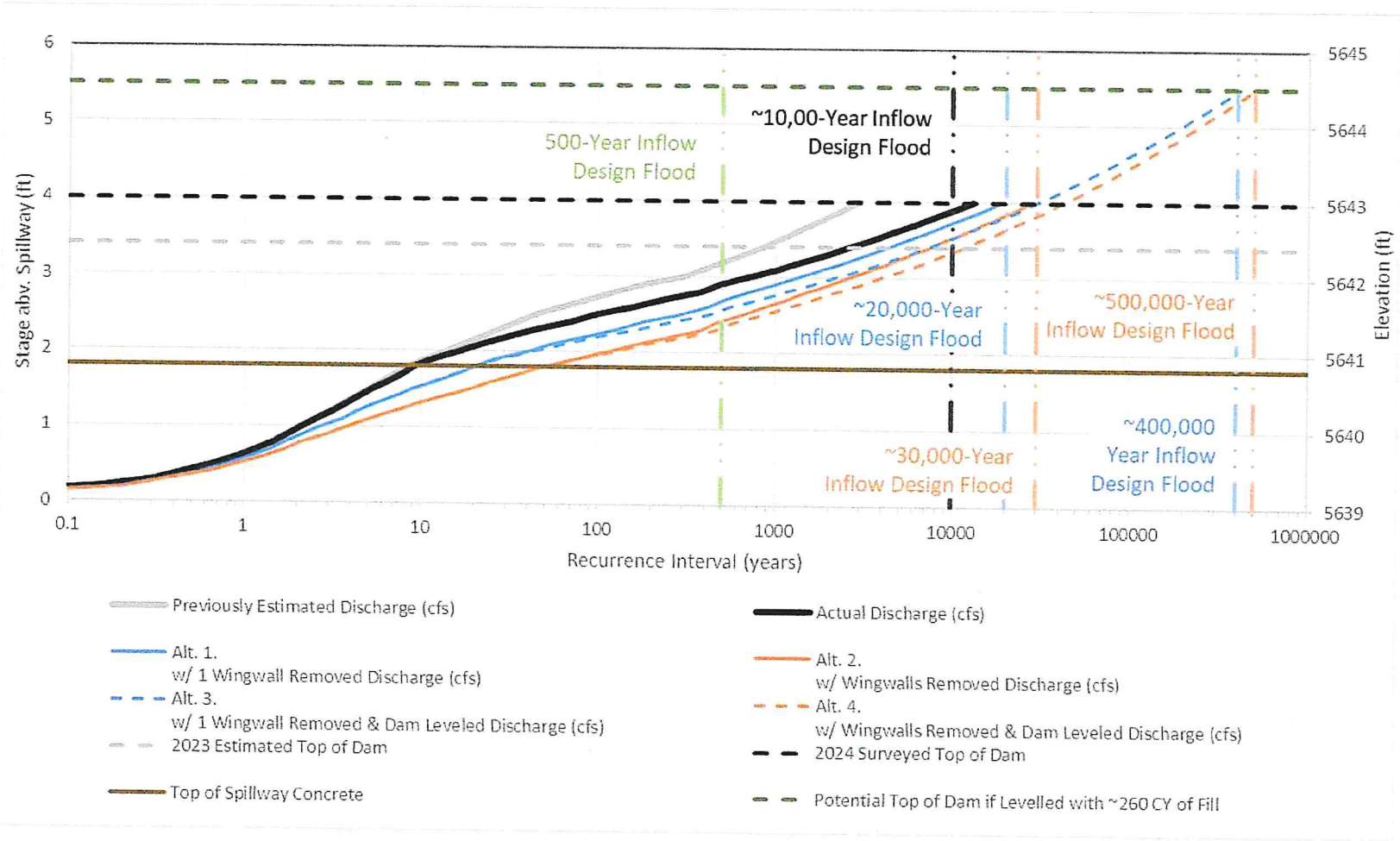


FIGURE 6-5. ESTIMATED RECURRENCE INTERVAL OF DAM CREST OVERTOPPING



7.0 SUMMARY

The existing spillway has more capacity than previously calculated. The increase is largely the result of better survey information and errors present in the 2002 as-built drawings. With the spillway's existing configuration, the dam meets current Montana Dam Safety requirements since the spillway is able to pass the Inflow Design Flood without overtopping and with approximately 1.3 feet of freeboard. There is no regulatory need to increase the spillway size at this time.

The hydrology of the Inflow Design Flood was also reassessed and the peak 500-year flood was determined to be 366 cfs using updated topographic data and a revised flood routing assessment.

The estimated water storage volume in the reservoir was updated as a result of new information becoming available. The storage volume of the reservoir at the elevation of the spillway invert is estimated to be 237 acre-feet at the spillway invert and 470 acre-feet at the low point in the dam crest.

Additional development downstream, updates to the regional hydrology, or a desire by CMR to reduce the risk of dam overtopping failure may precipitate the need to increase the spillway capacity. In the event that one of these situations arises, the CMR should consider constructing one of the four (4) alternatives presented in Section 6.0. Alternatives 1 and 2, which would involve saw cutting the existing wingwalls, could be performed for very little cost. Alternatives 1 and 2 both provide modest increases in the spillway's capacity to discharge water and modest reductions in risk. Alternatives 3 and 4 would provide a significant increase in the ability for the spillway to discharge water and significant reductions in risk.

Should the CMR choose to move forward with any of these alternatives, we recommend that the CMR discuss the dam design and these alternatives with the Montana Dam Safety Program and with their Engineer. Further design and construction permitting would be needed if CMR chooses to proceed with the construction of either Alternative 3 or Alternative 4, which would include leveling the top of the dam crest and increasing the capacity of the overflow portion of the spillway.

8.0 REFERENCES

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APPENDIX A

OPERATING PERMIT

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
Water Resource Division
1424 9th Ave, Helena, MT 59620-1601 Phone: (406) 444-6601 Fax: (406) 444-0533

GREG GIANFORTE, GOVERNOR
1539 ELEVENTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE: (406) 444-2074
FAX: (406) 444-2684

PO BOX 201601
HELENA, MONTANA 59620-1601

April 2, 2024

Jon Delaurier, Director of Facilities
The Club at Crazy Mountain Ranch
52 Hammond Creek Road
Clyde Park, MT 59018
jpdelaurier@crazymountainranch.com

SENT VIA USPS MAIL & EMAIL

RE: Operation Permit Application Approval for **Crazy Mountain Dam**

Dear Mr. Delaurier,

Your application for Operation Permit renewal of the **Crazy Mountain Dam** has been approved. The next formal engineer's visual inspection of the dam must be completed by **May 30, 2028**, which is five years from your engineer's last formal visual inspection. Within 90 days of this visual inspection, we must receive a report that (a) discusses findings of the visual inspection and (b) provides an evaluation of the dam per Dam Safety Administrative Rules.

PERMIT CONDITIONS
This operation permit includes the following condition.

Condition 1: Complete a camera inspection of the outlet conduit
Due Date: December 31, 2024
Dam Safety Administrative Rules require an outlet inspection once every five years. We understand the challenges to inspecting a conduit with a downstream valve. However, the outlet pipe for Crazy Mountain Ranch Dam has not been fully inspected in over 20 years. Please contact us to discuss alternatives if you encounter a situation that makes meeting this deadline difficult. We do not expect dam owners to drain their reservoir to meet this requirement.

PERMIT REQUIREMENTS
This operation permit includes the following requirements.

Requirement 1: Perform a topographic survey of the dam and spillway and have your licensed engineer use the results to confirm the spillway capacity and re-assess freeboard
Due Date: December 31, 2024
Thank you for already completing the topographic survey. Have your licensed engineer use the results to analyze the capacity, route the inflow design flood, and re-assess the dam's available freeboard. In Recommendation #3, your engineer recommended this analysis and the proposed deadline.

Requirement 2: Complete a new inundation analysis
Due Date: As part of your next operation permit renewal application
As recommended in Recommendation #14 by your licensed engineer, complete an updated inundation analysis.

Requirement 3: Annual Operation and Maintenance Inspection
Dam owners are responsible to conduct an annual maintenance-focused inspection of the dam. As always, I am available to attend these inspections with you.

Requirement 4: Annual Emergency Action Plan update
Dam owners are responsible to annually review the dam Emergency Action Plan for accuracy and update as needed.

Please provide us documentation of your annual inspection and Emergency Action Plan update. Your engineer made many good recommendations to improve the safety and operations of the dam; please continue to follow the other recommendations made by your engineer.

Sincerely,

Brent Zundel, PE, CFM
DNRC Regional Engineering Services Section Supervisor
406-556-4580
BZundel@mt.gov

CC via email: John Connors, PE, Water Operations Bureau Chief
Michele Lemieux, PE, Dam Safety Program Manager
Karl Kingery, PE, CFM, Hydrometrics
Greg Coleman, Park County Director of Disaster and Emergency Services

Attachment – Operation Permit Certificate

Supplement – Important Operation Permit Definitions

Important Operation Permit Definitions

Approved Operation Permit – DNRC's assurance to the public that the dam poses a reasonable and acceptable level of risk to life and property downstream.

Operation Permit *Condition*

- Significant actions are needed to minimize risk to life and property downstream.
- Failure to comply with a Condition impedes DNRC's ability to offer reasonable assurance that the dam poses an acceptable risk to the public. As a result, the Operation Permit may be revoked. Revocation of the permit could involve a reservoir level restriction, notification of local officials and downstream public, increased emergency planning, intervention planning, a civil penalty, and/or breach of the dam.

Operation Permit *Requirement*

- Action needed to maintain a dam in acceptable operating condition with proper emergency notification procedures.
- Requirements includes minor repairs, increase in monitoring, annual inspections, annual Emergency Action Plan updates and studies to evaluate concerns at the dam.
- Failure to comply with a Requirement could result in elevation to a Permit Condition.

Operation Permit *Recommendation*

- General maintenance, monitoring, communication, and other activities important for continued safe operation of dam.
- Failure to comply with a Recommendation could result in elevation to a Permit Requirement.

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DAM OPERATION PERMIT CERTIFICATE

DAM & OWNER

DAM NAME: Crazy Mountain Dam

OWNER NAME: The Club at Crazy Mountain Ranch

ANNUAL RESPONSIBILITIES (ARM 36.14 404,.405, 406, 407)

- Operation & Maintenance Inspection by Dam Owner or Representative
- Annual Update of Dam Emergency Action Plan
- Maintenance
- Inspection Following a Storm or Earthquake
- Documentation of Operation, Maintenance, and Inspections
- Monitoring of Instrumentation

OPERATION PERMIT CONDITIONS (ARM 36.14.407, MCA 85-15-212)

Condition 1: Complete a camera inspection of the outlet conduit
Due Date: December 31, 2024

RENEWAL (ARM 36.14.407, MCA 85-15-213)

NEXT FIVE-YEAR VISUAL INSPECTION DUE: 30 May 2028

APPROVAL (ARM 36.14.407, MCA 85-15-212)

This Certifies That Crazy Mountain Dam Has a Valid Operation Permit.

APPROVED BY:

DATE: 2 April 2024

TITLE: Regional Engineering Services Section Supervisor

APPENDIX B

OWNER INSPECTION REPORTS

(2019 – 2022)

Philip Morris USA

81937

Work Order 81937

Crazy Mountain Ranch
Printed 3/10/2021 - 8:27 AM (Duplicate Copy)

Maintenance Details

Requested By: JP on 9/1/2019 1:07:00 AM
Problem: Scheduled-PM (SCHED-PM)
Procedure: ANNUAL DAM INSPECTION (ANNUALDAMINSPECT)
Last PM: 10/16/2018

Target: 10/7/2019 (3) hrs
Priority/Type: 4-Medium (14-days) PM / Plan. Only / PREVENTATIVE
Shop: ENG-PM

CRAZY MOUNTAIN RANCH
TOWN
LAKE/DAM

Contact: JP
Phone:

Reason: ANNUAL DAM INSPECTION

☐ Warranty ☐ Shutdown ☐ Lockout ☑ Attach ☐ Charge

Tasks

#	Description	Rating	Meas.	Initials	Failed	N/A	Complete
TOOLS REQUIRED							
20	Static Water Level Measurer- Located in the Hangar			JD	☐	☐	☑
30	400 ML Bucket- Located in the Hangar			JD	☐	☐	☑
40	Stopwatch or Cell Phone			JD	☐	☐	☑
50	Flat Head Screwdriver			JD	☐	☐	☑
60	Spade Shovel			JD	☐	☐	☑
70	Flagging Stakes			JD	☐	☐	☑
80	Digital Camera			JD	☐	☐	☑
85	Calculator			JD	☐	☐	☑
RESERVOIR INSPECTION							
100	Record Reservoir depth using the staff gauge. Gauge is located at the emergency spillway on the South side.		0.6000	JD	☐	☐	☑
110	Measure the Piezometer readings. Turn the meter on all the way. Open the cover and remove the caps. Feed down the tube until it beeps. Measure off of the North side of the PVC pipes.			JD	☐	☐	☑
120	**PIEZOMETER DH2 NORTH [PIEZOMETER DH2 NORTH]** North reading		8.1700	JD	☐	☐	☑
130	**PIEZOMETER DH1 SOUTH [PIEZOMETER-DH1-SOUTH]** South Reading		7.1100	JD	☐	☐	☑
140	Turn off the meter, roll it up and put it away. Also, replace the caps and lids.			JD	☐	☐	☑
TOE DRAIN FLOW MEASUREMENT LEFT							
160	Remove 1st metal grate, at primary spillway, to access the drain. Open the drain until the flow stabilizes.			JD	☐	☐	☑
170	**SPILLWAY TOE DRAIN [SPILLWAY-TOE-DRAIN]** Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the final column.		9.7000	JD	☐	☐	☑
180	Please note any discoloration in the water that was captured. **Comments: No discoloration when collected. Very discolored upon opening the Toe Drain cover.**			JD	☐	☐	☑
185	Replace the metal grate			JD	☐	☐	☑
TOE DRAIN FLOW MEASUREMENT RIGHT							
200	Drain is stubbed out in the cattails.			JD	☐	☐	☑
210	**TOE DRAIN [TOE-DRAIN]** Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the final column.		1.1300	JD	☐	☐	☑
220	Please note any discoloration in the water that was captured. **Comments: No discoloration**			JD	☐	☐	☑

Labor

Labor	Account	Assigned	Work Date	Start	End	Reg Hrs	OT Hrs	Other Hrs
Delaurier, Jon		10/7/2019 / 3						

Documents

ID	Document Name	Type	Location
1573	2018 Permit_Approval_Certificate.pdf	Informational Document	View
1574	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View
1575	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View

Labor Report

Completed: _____ Failure: _____

Report:

Philip Morris USA

86671

Work Order 86671

Crazy Mountain Ranch
Sent 3/9/2021 - 3:34 PM (Duplicate Copy)

Maintenance Details

Requested By: JP on 9/1/2020 1:09:00 AM
Problem: Scheduled-PM (SCHED-PM)
Procedure: ANNUAL DAM INSPECTION (ANNUALDAMINSPECT)
Last PM: 10/7/2019
Target: 11/6/2020 (3) hrs
Priority/Type: 4-Medium (14-days) PM / Plan. Only / PREVENTATIVE
Shop: ENG-PM

CRAZY MOUNTAIN RANCH
TOWN
LAKE/DAM

Contact: JP
Phone:

Reason: JP- ANNUAL DAM INSPECTION

☐ Warranty ☐ Shutdown ☐ Lockout ☑ Attach ☐ Charge

Tasks

#	Description	Rating	Meas.	Initials	Failed	N/A	Complete
	TOOLS REQUIRED						
20	Static Water Level Measurer- Located in the Hangar			JD	☐	☐	☑
30	400 ML Bucket- Located in the Hangar			JD	☐	☐	☑
40	Stopwatch or Cell Phone			JD	☐	☐	☑
50	Flat Head Screwdriver			JD	☐	☐	☑
60	Spade Shovel			JD	☐	☐	☑
70	Flagging Stakes			JD	☐	☐	☑
80	Digital Camera			JD	☐	☐	☑
85	Calculator			JD	☐	☐	☑
	RESERVOIR INSPECTION						
100	Record Reservoir depth using the staff gauge. Gauge is located at the emergency spillway on the South side.		0.5000	JD	☐	☐	☑
110	Measure the Piezometer readings. Turn the meter on all the way. Open the cover and remove the caps. Feed down the tube until it beeps. Measure off of the North side of the PVC pipes.			JD	☐	☐	☑
120	**PIEZOMETER DH2 NORTH [PIEZOMETER DH2 NORTH]** Asset		8.3000	JD	☐	☐	☑
130	**PIEZOMETER DH1 SOUTH [PIEZOMETER-DH1-SOUTH]** Asset		7.1250	JD	☐	☐	☑
140	Turn off the meter, roll it up and put it away. Also, replace the caps and lids.			JD	☐	☐	☑
	TOE DRAIN FLOW MEASUREMENT LEFT						
160	Remove 1st metal grate, at primary spillway, to access the drain. Open the drain until the flow stabilizes.			JD	☐	☐	☑
170	**SPILLWAY TOE DRAIN [SPILLWAY-TOE-DRAIN]** Divide the ML captured in the bucket by the number of seconds. Then multiply by .016		4.6700	JD	☐	☐	☑

	This will give you the GPM of flow, please record this in the final column.						
	Please note any discoloration in the water that was captured.						
180	**Comments: Water was very dirty when I first completely opened the toe drain cap. Once the flow stabilized the water was clear.**			JD	☐	☐	☑
185	Replace the metal grate			JD	☐	☐	☑
	TOE DRAIN FLOW MEASUREMENT RIGHT						
200	Drain is stubbed out in the cattails.			JD	☐	☐	☑
	TOE DRAIN [TOE-DRAIN] Divide the ML captured in the bucket by the number of seconds. Then multiply by .016						
210	This will give you the GPM of flow, please record this in the final column.		1.0200	JD	☐	☐	☑
	Please note any discoloration in the water that was captured.						
220	**Comments: There was no discoloration**			JD	☐	☐	☑
	EXERCISE PRIMARY SPILLWAY VALVE						
240	The code for the lid is 4009			JD	☐	☐	☑
250	Remove the lock and lid			JD	☐	☐	☑
260	Open the valve completely for 5 minutes			JD	☐	☐	☑
270	Close the valve completely, close, and lock the lid.			JD	☐	☐	☑
	DAM INSPECTION						
	You will walk the dam 4 times down and back						
290	Take pictures of any abnormalities			JD	☐	☐	☑
	1ST Pass- UP FACE OF THE DAM (RIP RAP)						
	-Look for Major holes, slumping, and brush growth						
300	**Comments: Appears to be vole holes and animal tracks**			JD	☐	☐	☑
	2ND Pass- DOWN STREAM FACE OF DAM						
	-Look for major slumping or major holes						
	-Look for gopher or beaver holes						
	-Look for Wetness						
	Comments: Exposed section of fabric Animal tracks Vole holes and animal tracks Still wet on the South end Toe and Face where we marked last year. The area has						
310	**not grown in size**			JD	☐	☐	☑
320	3RD Pass- TOP OF TOE			JD	☐	☐	☑
	-Look for major slumping or major holes						
	-Look for gopher or beaver holes						

	-Look for Wetness **Comments: Animal tracks** 4TH Pass- DOWN STREAM FACE -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness							
330	**Comments: Vole holes and animal tracks/trails**			JD	☐	☐	☑	
	EMERGENCY SPILLWAY Walk the emergency spillway in its entirety Look for sluffing, bank slides, or any obstructions							
350	**Comments: Cattails and vegetation still remain an issue throughout the spillway. The rip rap at the 90 is all still in place.**			JD	☐	☐	☑	
					☐	☐	☐	

Labor

Labor	Account	Assigned	Work Date	Start	End	Reg Hrs	OT Hrs	Other Hrs
Delaurier, Jon		11/5/2020 / 3						

Documents

ID	Document Name	Type	Location
1573	2018 Permit_Approval_Certificate.pdf	Informational Document	View
1574	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View
1575	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View

Labor Report

Completed: _____ Failure: _____

Report:

Philip Morris USA

91485

Work Order 91485

Crazy Mountain Ranch
Printed 10/28/2022 - 4:24 PM (Duplicate Copy)

Maintenance Details

Requested By: JP on 9/1/2021 1:09:00 AM
Problem: Scheduled-PM (SCHED-PM)
Procedure: ANNUAL DAM INSPECTION (ANNUALDAMINSPECT)
Last PM: 11/5/2020
Target: 10/29/2021 (3) hrs
Priority/Type: 4-Medium (14-days) PM / Plan. Only / PREVENTATIVE
Shop: ENG-PM

CRAZY MOUNTAIN RANCH
TOWN
LAKE/DAM

Contact: JP
Phone:

Reason: JP- ANNUAL DAM INSPECTION

☐ Warranty ☐ Shutdown ☐ Lockout ☑ Attach ☐ Charge

Tasks

#	Description	Rating	Meas.	Initials	Failed	N/A	Complete
TOOLS REQUIRED							
20	Static Water Level Measurer- Located in the Hangar			JD	☐	☐	☑
30	400 ML Bucket- Located in the Hangar			JD	☐	☐	☑
40	Stopwatch or Cell Phone			JD	☐	☐	☑
50	Flat Head Screwdriver			JD	☐	☐	☑
60	Spade Shovel			JD	☐	☐	☑
70	Flagging Stakes			JD	☐	☐	☑
80	Digital Camera			JD	☐	☐	☑
85	Calculator			JD	☐	☐	☑
RESERVOIR INSPECTION							
100	Record Reservoir depth using the staff gauge. Gauge is located at the emergency spillway on the South side.		0.5400	JD	☐	☐	☑
110	Measure the Piezometer readings. Turn the meter on all the way. Open the cover and remove the caps. Feed down the tube until it beeps. Measure off of the North side of the PVC pipes.			JD	☐	☐	☑
120	**PIEZOMETER DH2 NORTH [PIEZOMETER DH2 NORTH]** North reading		8.3.	JD	☐	☐	☑
130	**PIEZOMETER DH1 SOUTH [PIEZOMETER-DH1-SOUTH]** South Reading		7.5000	JD	☐	☐	☑
140	Turn off the meter, roll it up and put it away. Also, replace the caps and lids.			JD	☐	☐	☑
TOE DRAIN FLOW MEASUREMENT LEFT							
160	Remove 1st metal grate, at primary spillway, to access the drain. Open the drain until the flow stabilizes.			JD	☐	☐	☑
170	**SPILLWAY TOE DRAIN [SPILLWAY-TOE-DRAIN]** Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the final column.		8.7500	JD	☐	☐	☑
180	Please note any discoloration in the water that was captured. **Comments: The water was dirty with chunks when the**			JD	☐	☐	☑

	cap was first opened. I waited for the flow to be consistent and the water was clear.						
185	Replace the metal grate			JD	☐	☐	☑
	TOE DRAIN FLOW MEASUREMENT RIGHT						
200	Drain is stubbed out in the cattails.			JD	☐	☐	☑
	TOE DRAIN [TOE-DRAIN] Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the						
210	final column.		0.8000	JD	☐	☐	☑
	Please note any discoloration in the water that was captured.						
220	**Comments: The water was clear.**			JD	☐	☐	☑
	EXERCISE PRIMARY SPILLWAY VALVE						
240	The code for the lid is 4009			JD	☐	☐	☑
250	Remove the lock and lid			JD	☐	☐	☑
260	Open the valve completely for 5 minutes			JD	☐	☐	☑
270	Close the valve completely, close, and lock the lid.			JD	☐	☐	☑
	DAM INSPECTION						
	You will walk the dam 4 times down and back						
290	Take pictures of any abnormalities			JD	☐	☐	☑
	1ST Pass- UP FACE OF THE DAM (RIP RAP) -Look for Major holes, slumping, and brush growth						
300	**Comments: There are signs of animal tracks and voles.**			JD	☐	☐	☑
	2ND Pass- DOWN STREAM FACE OF DAM -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness **Comments: There are signs of animal tracks and voles. There is an exposed piece of fabric The standing water**						
310	**is still the same size on the South end.**			JD	☐	☐	☑
	3RD Pass- TOP OF TOE -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness						
320	**Comments: There are signs of animal tracks and voles.**			JD	☐	☐	☑
	4TH Pass- DOWN STREAM FACE -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness						
330	**Comments: There are signs of animal tracks and voles.**			JD	☐	☐	☑
	EMERGENCY SPILLWAY						
	Walk the emergency spillway in its entirety Look for sluffing, bank slides, or any obstructions						
350	**Comments: There are cattails and shrubs growing randomly through the spillway.**			JD	☐	☐	☑

Labor

Labor	Account	Assigned	Work Date	Start	End	Reg Hrs	OT Hrs	Other Hrs
Delaurier, Jon		10/29/2021 / 3						

Documents

ID	Document Name	Type	Location
1573	2018 Permit_Approval_Certificate.pdf	Informational Document	View
1574	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View
1575	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View

Labor Report

Completed: _____ **Failure:** _____

Report:

Philip Morris USA

96043

Work Order 96043

Crazy Mountain Ranch
Printed 10/28/2022 - 4:18 PM (Duplicate Copy)

Maintenance Details

Requested By: JP on 9/2/2022 2:33:00 AM
Problem: Scheduled-PM (SCHED-PM)
Procedure: ANNUAL DAM INSPECTION (ANNUALDAMINSPECT)
Last PM: 10/29/2021
Target: 10/6/2022 (3) hrs
Priority/Type: 4-Medium (14-days) PM / Plan. Only / PREVENTATIVE
Shop: ENG-PM

CRAZY MOUNTAIN RANCH
TOWN
LAKE/DAM

Contact: JP
Phone:

Reason: JP- ANNUAL DAM INSPECTION

☐ Warranty ☐ Shutdown ☐ Lockout ☑ Attach ☐ Charge

Tasks

#	Description	Rating	Meas.	Initials	Failed	N/A	Complete
	TOOLS REQUIRED						
20	Static Water Level Measurer- Located in the Hangar			JD	☐	☐	☑
30	4000 ML Bucket- Located in the Hangar			JD	☐	☐	☑
40	Stopwatch or Cell Phone			JD	☐	☐	☑
50	Flat Head Screwdriver			JD	☐	☐	☑
60	Spade Shovel			JD	☐	☐	☑
70	Flagging Stakes			JD	☐	☐	☑
80	Digital Camera			JD	☐	☐	☑
85	Calculator			JD	☐	☐	☑
	RESERVOIR INSPECTION						
100	Record Reservoir depth using the staff gauge. Gauge is located at the emergency spillway on the South side.		0.6000	JD	☐	☐	☑
110	Measure the Piezometer readings. Turn the meter on all the way. Open the cover and remove the caps. Feed down the tube until it beeps. Measure off of the North side of the PVC pipes.			JD	☐	☐	☑
120	**PIEZOMETER DH2 NORTH [PIEZOMETER DH2 NORTH]** North reading		8.4500	JD	☐	☐	☑
130	**PIEZOMETER DH1 SOUTH [PIEZOMETER-DH1-SOUTH]** South Reading		6.9000	JD	☐	☐	☑
140	Turn off the meter, roll it up and put it away. Also, replace the caps and lids.			JD	☐	☐	☑
	TOE DRAIN FLOW MEASUREMENT LEFT						
160	Remove 1st metal grate, at primary spillway, to access the drain. Open the drain until the flow stabilizes.			JD	☐	☐	☑
170	**SPILLWAY TOE DRAIN [SPILLWAY-TOE-DRAIN]** Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the final column. **Comments: Flow was clear. I opened the cover and waited for the flow to stabilize. I propped the cover open when I was done.**		3.7400	JD	☐	☐	☑
180	Please note any discoloration in the water that was			JD	☐	☐	☑

	captured.						
185	Replace the metal grate			JD	☐	☐	☑
TOE DRAIN FLOW MEASUREMENT RIGHT							
200	Drain is stubbed out in the cattails.			JD	☐	☐	☑
	TOE DRAIN [TOE-DRAIN] Using the 4000 ML bucket, fill the bucket between 2000 and 4000 ML and record the amount of time it takes in seconds. Divide the ML captured in the bucket by the number of seconds. Then multiply by .016 This will give you the GPM of flow, please record this in the final column.						
210	**Comments: I had to dig out the overgrowth from the discharge of the toe drain.**		1.1500	JD	☐	☐	☑
220	Please note any discoloration in the water that was captured.			JD	☐	☐	☑
EXERCISE PRIMARY SPILLWAY VALVE							
240	The code for the lid is 4009			JD	☐	☐	☑
250	Remove the lock and lid			JD	☐	☐	☑
260	Open the valve completely for 5 minutes			JD	☐	☐	☑
270	Close the valve completely, close, and lock the lid.			JD	☐	☐	☑
DAM INSPECTION							
	You will walk the dam 4 times down and back						
290	Take pictures of any abnormalities			JD	☐	☐	☑
	1ST Pass- UP FACE OF THE DAM (RIP RAP) -Look for Major holes, slumping, and brush growth						
300	**Comments: Minimal signs of animal tracks this year.**			JD	☐	☐	☑
	2ND Pass- DOWN STREAM FACE OF DAM -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness						
310	**Comments: Minimal signs of animals this year. The standing water is still in the same location. The area, on the South end, has not increased in size and the water was not observer to be flowing, only standing.**			JD	☐	☐	☑
	3RD Pass- TOP OF TOE -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness						
320	**Comments: Minimal signs of animals this year.**			JD	☐	☐	☑
	4TH Pass- DOWN STREAM FACE -Look for major slumping or major holes -Look for gopher or beaver holes -Look for Wetness						
330	**Comments: There is signs of a game trail on the very bottom of the Dam.**			JD	☐	☐	☑
EMERGENCY SPILLWAY							
350	Walk the emergency spillway in its entirety Look for sluffing, bank slides, or any obstructions			JD	☐	☐	☑

Comments: There are cattails growing at the mouth of the spillway and randomly throughout. There is some vegetation that will need to be removed.

Labor

Labor	Account	Assigned	Work Date	Start	End	Reg Hrs	OT Hrs	Other Hrs
Delaurier, Jon		10/6/2022 / 3						

Documents

ID	Document Name	Type	Location
1573	2018 Permit_Approval_Certificate.pdf	Informational Document	View
1574	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View
1575	r18 Crazy Mtn Dam Inspection Rpt.pdf	Informational Document	View

Labor Report

Completed: _____ **Failure:** _____

Report:

APPENDIX C

2023/2024 STAHLY SURVEY

– VICINITY MAP –
NO SCALE

LEGEND	
BENCHMARK	△
ELECTRIC METER	ⓔ
TRANSFORMER BOX	E
EDGE OF WATER	———
TOP OF BANK	— — — —
EDGE OF RIP RAP	———

CONTOUR INTERVALS = 1' MINOR, 5' MAJOR

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	609972.58'	1728387.46'	5668.65'	BM 7/8 RB CMBM–1
2	608764.78'	1728754.14'	5661.65'	BM 7/8 RB CMBM–2
3	608924.44'	1728328.75'	5636.17'	BM 7/8 RB CMBM–3

MATCHLINE: PAGE 1
MATCHLINE: PAGE 2

MATCHLINE: PAGE 1
MATCHLINE: PAGE 2

BASIS OF BEARING:
US STATE PLANE NAD83
MONTANA 2500
FROM OPUS DERIVED CONTROL AT:
NORTH LATITUDE: 45°–54'–43.07904"
WEST LONGITUDE: 110°–25'–58.59786"
ELLIPSOID HT: 5852.621 sft.

VERTICAL DATUM: NAVD88 (GEOID18)
MERIDIAN CONVERGENCE ANGLE=(–)00°–40'–57"

SURVEY NOTES:
1. DATE OF SURVEY: 1/9/2023, 12/07/2023 and 1/31/2024
2. PURPOSE OF SURVEY: TOPOGRAPHIC SURVEY ALONG THE DAM AND SPILLWAY OF RESERVOIR AT CRAZY MOUNTAIN RANCH.
3. UTILITY NOTE: A MONTANA ONE–CALL UTILITY LOCATE WAS NOT CALLED IN FOR THIS SURVEY.
4. WINTER CONDITIONS EXISTED DURING THE DAY OF SURVEY, SNOW AND ICE WAS OBSERVED ALONG THE EDGE OF WATER AND IS CONSIDERED APPROXIMATE.

STAHLY ENGINEERING & ASSOCIATES
PROFESSIONAL ENGINEERS & SURVEYORS
www.seaeng.com
BILLINGS Phone (406)671-4055
851 BREGER DR. STE 1 BOZEMAN, MT 59715 Phone (406)522-8526
CODY Phone (307)509-5541
HELENA Phone (406)442-8534

DAM & SPILLWAY - EXISTING CONDITIONS

COUNTY: PARK
PRINCIPAL MERIDIAN, MONTANA

1/4	SEC	T	R	1/4	Sec.	T	R
X	14	2N	10E				

FIELD: NB
DRAWN: NB
CHECKED: BK
DATE: 2/12/2024

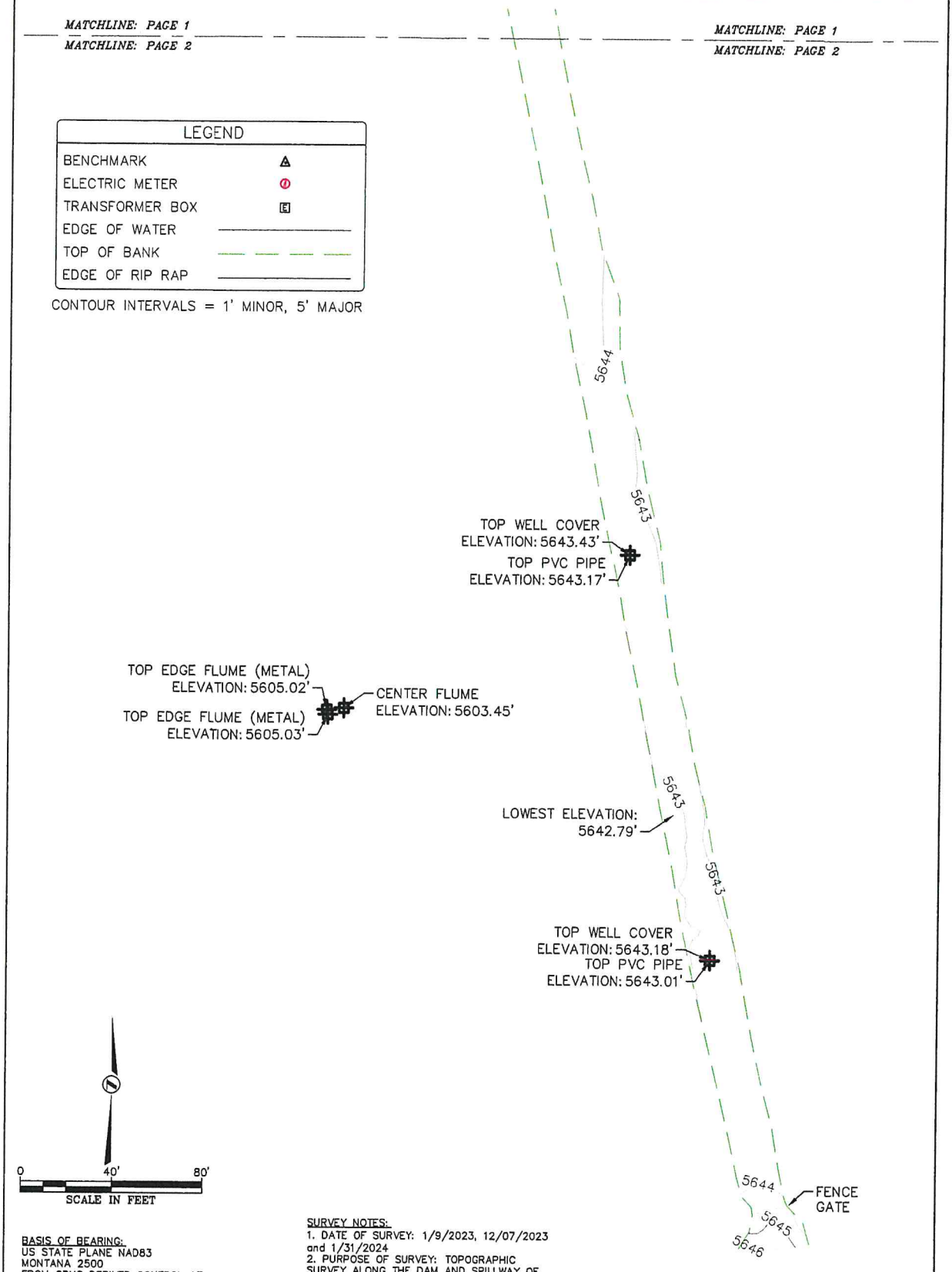
SHEET
1 OF 2

MATCHLINE: PAGE 1
MATCHLINE: PAGE 2

MATCHLINE: PAGE 1
MATCHLINE: PAGE 2

LEGEND	
BENCHMARK	▲
ELECTRIC METER	Ø
TRANSFORMER BOX	E
EDGE OF WATER	———
TOP OF BANK	— — — —
EDGE OF RIP RAP	———

CONTOUR INTERVALS = 1' MINOR, 5' MAJOR



BASIS OF BEARING:
US STATE PLANE NAD83
MONTANA 2500
FROM OPUS DERIVED CONTROL AT:
NORTH LATITUDE: 45°-54'-43.07904"
WEST LONGITUDE: 110°-25'-58.59786"
ELLIPSOID HT: 5852.621 sft.

VERTICAL DATUM: NAVD88 (GEOID18)
MERIDIAN CONVERGENCE ANGLE=(-)00°-40'-57"

SURVEY NOTES:
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CODY Phone (307)500-5541
HELENA Phone (406)443-5594

DAM AND SPILLWAY - EXISTING CONDITIONS

COUNTY: PARK
PRINCIPAL MERIDIAN, MONTANA

1/4	SEC	T	R	1/4	Sec.	T	R
X	14	2N	10E				

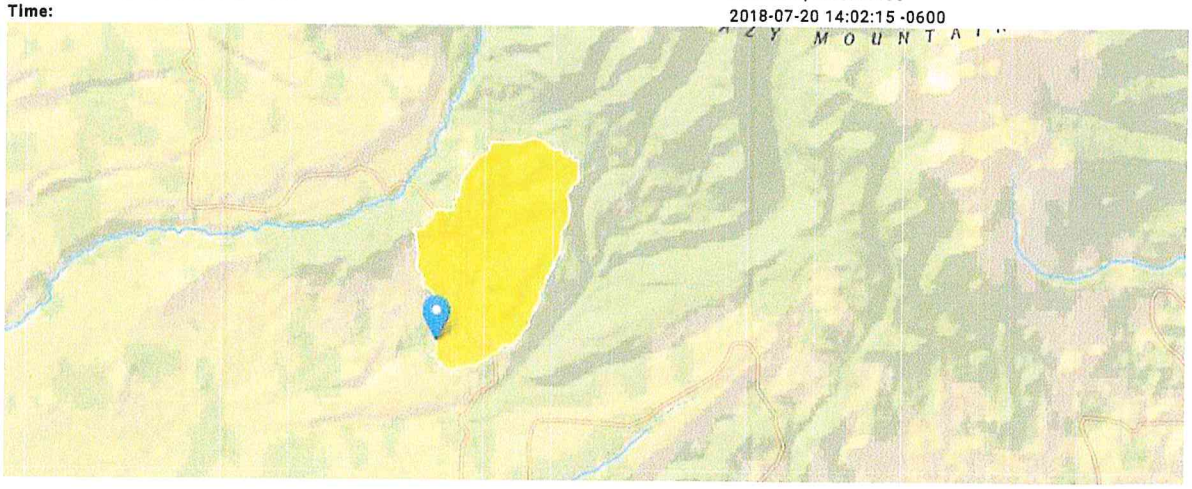
FIELD: NB
DRAWN: NB
CHECKED: BK
DATE: 2/12/2024

APPENDIX D

HYDROLOGIC ANALYSIS

Crazy Mountain Dam

Region ID: MT
Workspace ID: MT20180702020015961700O
Clicked Point (Latitude, Longitude): 45.91697, -110.44436
Time: 2018-07-20 14:02:15 -0600



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	5.1	square miles
EL6000	Percent of area above 6000 ft	63.3	percent
FOREST	Percentage of area covered by forest	37.7	percent
PRECIP	Mean Annual Precipitation	22.15	inches

Peak-Flow Statistics Parameters [UpYellow CentMount Region BasinC 2015 5019F]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	5.1	square miles	0.39	2040
EL6000	Percent above 6000 ft	63.3	percent	0	100

Peak-Flow Statistics Flow Report [UpYellow CentMount Region BasinC 2015 5019F]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

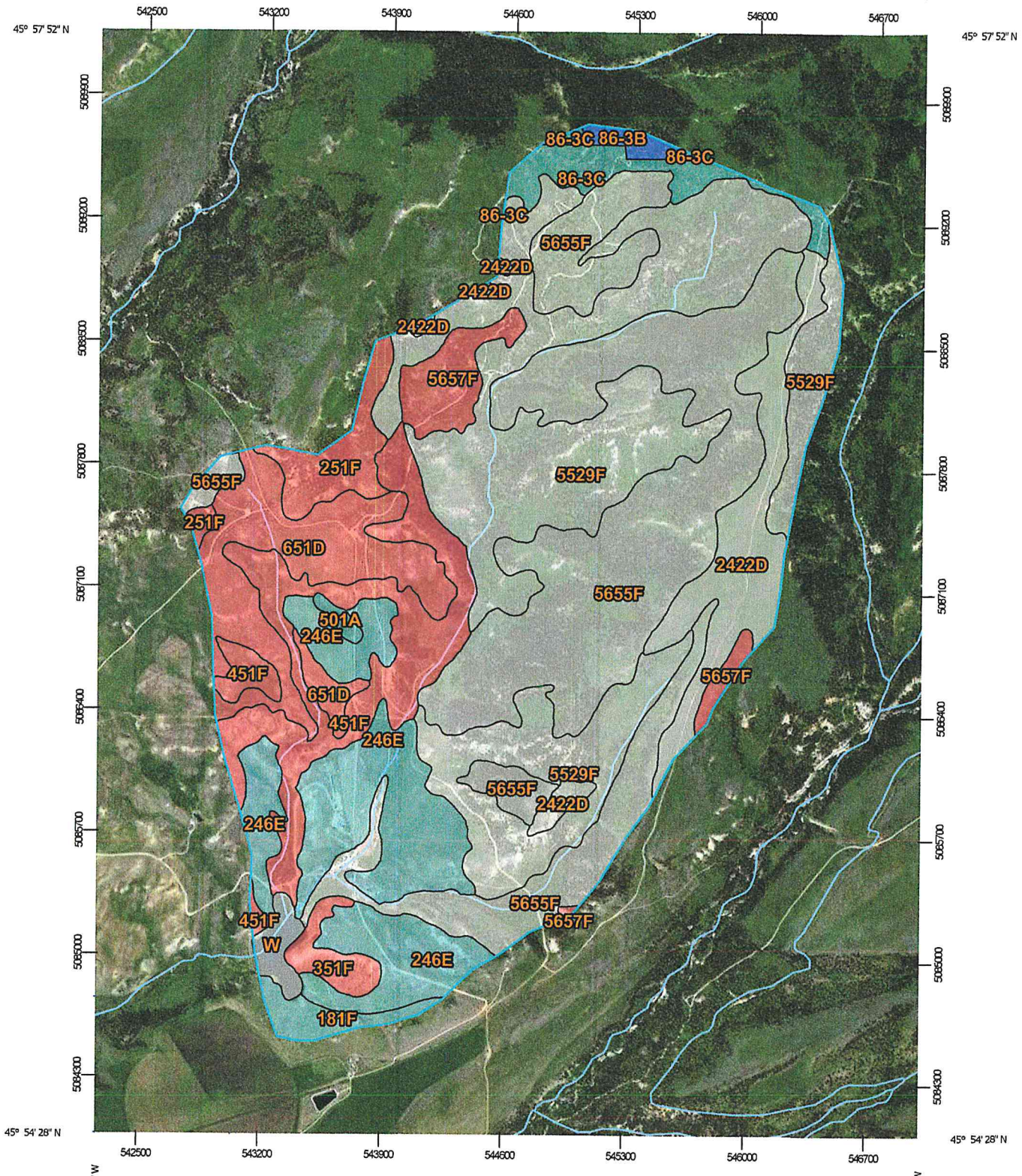
Statistic	Value	Unit	PII	PIu	SEp
1.5 Year Peak Flood	29	ft^3/s	6.01	140	119
2 Year Peak Flood	39.2	ft^3/s	8.76	175	111
2 33 Year Peak Flood	44.9	ft^3/s	10.8	187	103
5 Year Peak Flood	77	ft^3/s	23.1	256	82.4
10 Year Peak Flood	111	ft^3/s	37.2	329	73
25 Year Peak Flood	163	ft^3/s	57.8	459	68.4
50 Year Peak Flood	208	ft^3/s	74.7	579	67.7
100 Year Peak Flood	256	ft^3/s	90.4	726	69
200 Year Peak Flood	310	ft^3/s	106	907	71.6
500 Year Peak Flood	389	ft^3/s	125	1210	77

Peak-Flow Statistics Citations

Sando, Roy, Sando, S.K., McCarthy, P.M., and Dutton, D.M.,2016, Methods for estimating peak-flow frequencies at ungaged sites in Montana based on data through water year 2011: U.S. Geological Survey Scientific Investigations Report 2015–5019–F, 30 p. (http://dx.doi.org/10.3133/sir20155019F)

Application Version: 4.2.1

Hydrologic Soil Group—Gallatin National Forest Area, Montana, and Park County Area, Montana
(Crazy Mtn Dam Soil Survey)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gallatin National Forest Area, Montana
Survey Area Data: Version 7, Sep 21, 2017

Soil Survey Area: Park County Area, Montana
Survey Area Data: Version 9, Oct 3, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 3, 2009—Sep 1, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
86-3B	Typic Cryoboralfs-Mollic Cryoboralfs complex, structurally controlled slopes, warm	B	16.3	0.5%
86-3C	Argic Cryoborolls-Typic Cryoborolls association, structurally controlled slopes	C	4.5	0.1%
Subtotals for Soil Survey Area			**20.8**	**0.7%**
Totals for Area of Interest			**3,023.7**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
86-3C	Argic Cryoborolls-Typic Cryoborolls association, structurally controlled slopes	C	67.3	2.2%
181F	Billman-Wilsall complex, cool, 15 to 45 percent slopes	C	33.9	1.1%
246E	Bacbuster-Cabba silty clay loams, cool, 8 to 25 percent slopes	C	355.5	11.8%
251F	Cabba-Bacbuster complex, cool, 25 to 60 percent slopes	D	73.1	2.4%
351F	Cabba-Vershal-Rock outcrop complex, 15 to 60 percent slopes	D	33.7	1.1%
451F	Cabba-Rock outcrop complex, 15 to 45 percent slopes	D	261.6	8.7%
501A	Soapcreek-Clunton complex, 0 to 4 percent slopes, occasionally flooded	C	7.6	0.2%
651D	Cabba-Bacbuster-Tolbert complex, cool, 2 to 15 percent slopes	D	224.8	7.4%
2422D	Daileybasin-Libeg complex, 4 to 25 percent slopes		189.1	6.3%
5529F	Arrowpeak-Fifer-Dalys complex, 4 to 35 percent slopes		808.0	26.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5655F	Maurice-Dalys, bouldery-Zade, complex, 15 to 60 percent slopes		848.1	28.0%
5657F	Cabba-Vershal, extremely stony-Doney complex, 15 to 60 percent slopes	D	75.8	2.5%
W	Water		24.5	0.8%
Subtotals for Soil Survey Area			**3,002.9**	**99.3%**
Totals for Area of Interest			**3,023.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

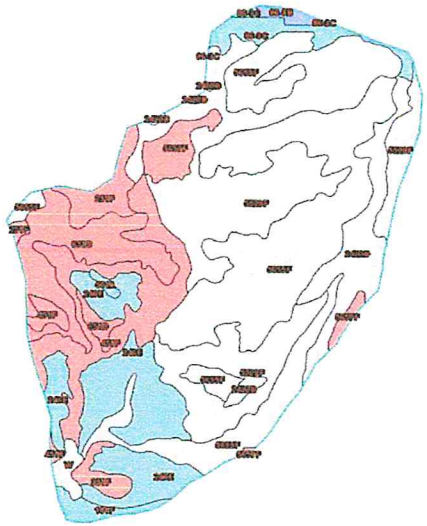
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



0 3,000 ft

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI	A	B	C	D	IMPERVIOUS	
86-3B	Typic Cryoboralfs-Mollic Cryoboralfs complex, structurally controlled slopes, warm	B	16.3	0.50%			0.50%			
86-3C	Argic Cryoborolls-Typic Cryoborolls association, structurally controlled slopes	C	4.5	0.10%				0.10%		
86-3C	Argic Cryoborolls-Typic Cryoborolls association, structurally controlled slopes	C	67.3	2.20%				2.20%		
181F	Billman-Wilsall complex, cool, 15 to 45 percent slopes	C	33.9	1.10%				1.10%		
246E	Bacbuster-Cabba silty clay loams, cool, 8 to 25 percent slopes	C	355.5	11.80%				11.80%		
251F	Cabba-Bacbuster complex, cool, 25 to 60 percent slopes	D	73.1	2.40%					2.40%	
351F	Cabba-Vershal-Rock outcrop complex, 15 to 60 percent slopes	D	33.7	1.10%					1.10%	
451F	Cabba-Rock outcrop complex, 15 to 45 percent slopes	D	261.6	8.70%					8.70%	
501A	Soapcreek-Clunton complex, 0 to 4 percent slopes, occasionally flooded	C	7.6	0.20%				0.20%		
651D	Cabba-Bacbuster-Tolbert complex, cool, 2 to 15 percent slopes	D	224.8	7.40%					7.40%	
2422D	Daileybasin-Libeg complex, 4 to 25 percent slopes		189.1	6.30%			6.30%			Hydrologic group not assigned in WSS. Class of B used because of high sat hydr conductivity
5529F	Arrowpeak-Fifer-Dalys complex, 4 to 35 percent slopes		808	26.70%			26.70%			Hydrologic group not assigned in WSS. Class of B used because of high sat hydr conductivity
5655F	Maurice-Dalys, bouldery-Zade, complex, 15 to 60 percent slopes		848.1	28.00%			28.00%			Hydrologic group not assigned in WSS. Class of B used because of high sat hydr conductivity
5657F	Cabba-Vershal, extremely stony-Doney complex, 15 to 60 percent slopes	D	75.8	2.50%				2.50%		
W	Water		24.5	0.80%						0.80%
Totals for Area of Interest			3023.8	99.8		0	0.615	0.179	0.196	0.008

0.998

Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush*	48	57	63
Sage-grass—sage with an understory of grass*	51	63	70
Average CN Values	49.5	60	66.5

54.33316633 WEIGHTED AVERAGE CN

*For this drainage, the CN was calculated as the average of two forest conditions provided, fair cover conditions.

Initial abstraction = Ia = 0.2S = 0.2*6 1.680993 inches

$S = 1000/CN - 10 = 1000/58.89 \cdot$ 8.404965 inches

precipitation for 500 year 24 hour storm Source WRI 97-4004

Input storm duration (in hrs) to be used $t_{(2\text{-}6\text{-}24)}$ 24

Grid Point - Create a grid o□er entire basin. Select a corner of each square (same corner for e□ery square)□that lies within the basin. Designate each corner as a **Grid Point**. Determine the Lat and Long of each point□along with the a□erage precipitation (**MAP**).

Grid Point[1]	Region	Lat	Long	MAP	$P_{max}2$ table 11	$P_{max}6$ table 11	$P_{max}24$ table 11	Dimensionless Depth Equation	Depth (in)
1	2	□□□□	1□426	22.1□	□.□□	□.□□	1.□□	□4	.21

□□g at site storm depth	.21
□rea ad□stment factor	1.□□ Figure 1□
Basin average depth	5.21

NOTE: If more rows are needed; insert new rows before the last row is used, copy formulas from cells F#, G#, H#, J#, and fill in new rows; delete any unused rows

Table 11. Regression equations for estimation of mean storm depth for indicated duration in Montana

[Regression equation: *Pmax*t, storm depth in inches, with t indicating duration in hours; *LAT*, site latitude, in decimal degrees minus 40; *LONG*, site longitude, in decimal degrees minus 100; and *MAP*, mean annual precipitation, in inches, as determined from State maps prepared from digital data from Oregon State University Climate Center (pl. 2)]

Region		Equation	Standard error, inches	Coefficient of determination, R^2
1	*Pmax*2 =	0.44 + (0.0027 × *MAP*)	0.05	0.10
	*Pmax*6 =	0.60 + (0.0067× *MAP*)	0.07	0.31
	*Pmax*24 =	1.0 + (0.078 × *LAT*) - (0.059 × *LONG*) + (0.025 × *MAP*)	0.16	0.80
2	*Pmax*2 =	0.69 + (0.034 × *LAT*) - (0.029 × *LONG*)	0.09	0.16
	*Pmax*6 =	0.75 + (0.087 × *LAT*) - (0.041 × *LONG*)	0.12	0.30
	*Pmax*24 =	1.4 + (0.18 × *LAT*) - (0.13 × *LONG*) + (0.019 × *MAP*)	0.27	0.52
3	*Pmax*2 =	0.70 + (0.031 × *LAT*) - (0.040 × *LONG*) + (0.0087 × *MAP*)	0.08	0.62
	*Pmax*6 =	0.85 + (0.031 × *LAT*) - (0.038 × *LONG*) + (0.015 × *MAP*)	0.08	0.59
	*Pmax*24 =	0.62 + (0.039 × *LAT*) - (0.016 × *LONG*) + (0.058 × *MAP*)	0.16	0.49

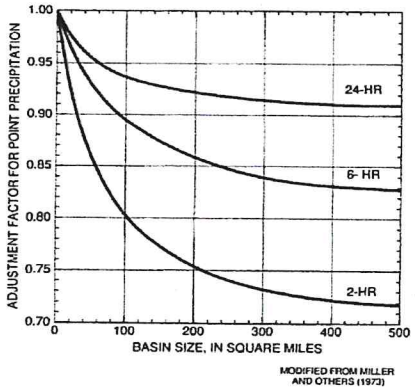


Figure 19. Depth-area adjustment curves for Montana.

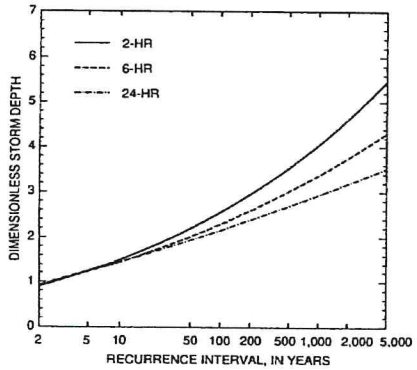


Figure 12. Regional frequency curves for dimensionless annual storm depths in Region 1, Montana.

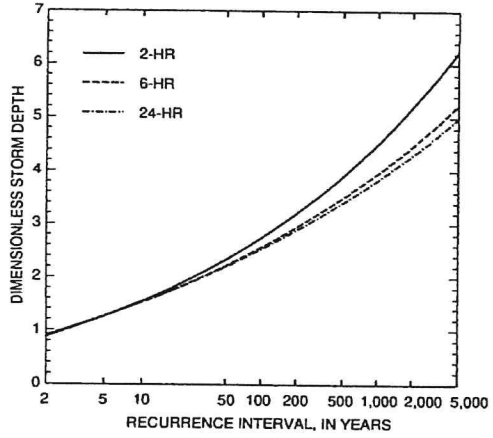


Figure 13. Regional frequency curves for dimensionless annual storm depths for Region 2, Montana.

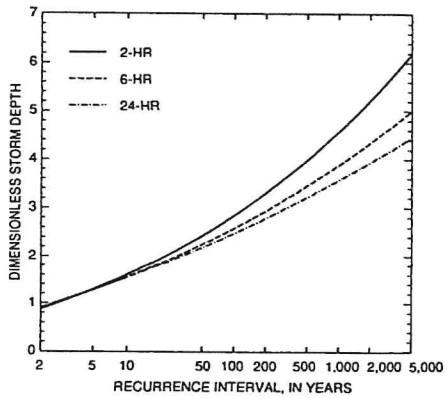


Figure 14. Regional frequency curves for dimensionless annual storm depths for Region 3, Montana.

Clark UH method Cra□y Mountain Dam 2□1□

Drainage □rea	Time of Concentration (hr)	Duration (hr)	Duration (min)	R Mtn sites	R plains sites
□1	. 6	.21	12.	4. 1	2.1

Table 4. Results of regression analysis for selected unit-hydrograph variables for stream sites in Montana

[T_c, time of concentration, in hours; A, drainage area, in square miles; R, basin-storage coefficient, in hours; t_p, Snyder standard lag, in hours; q_p, peak of dimensionless unit hydrograph; L, main channel length, in miles; L_{ca}, distance from basin centroid to mouth, in miles; S, main channel slope, in feet per mile]

Equation			Coefficient of determination (r^2)	Standard error (logarithm, base 10)	Equation number
T_C	=	$0.298\,A^{0.65}$	0.91	0.160	8
R	=	$2.90\,A^{0.31}$ ("mountains" sites)	.47	.390	9
R	=	$1.30\,A^{0.31}$ ("plains" sites)	.47	.390	10
t_p	=	$0.393\,A^{0.58}$	.88	.168	11
q_p	=	$8.46\,(LL_{ca}/\sqrt{S}\,)^{0.10}$	.30	.153	12
q_p	=	$7.24\,A^{0.10}$	.19	.164	13

24 hour precipitation hyetograph; 6 hour kernal, 50% exceedance probability for region 2 (USGS WRI 98-4100)
For 500 year storm

Fill in all grey cells

Basin average depth 5.21

Incremental Duration	Dimensionless depth (Table 14)	Depth-area adjustment (Figure 1)	Adjusted dimensionless depth	Incremental Time	Incremental dimensionless depth	Dimensionless depth per 1 hour period	Depth per 1 hour period	Incremental depth
				1	.121	.121	0.630	0.630
1	.121	1	.121	1	.6	.6	0.396	0.396
2	.11	1	.11	1	.11	.11	0.276	0.276
	.2	1	.2	1	.11	.11	0.266	0.797
6	.41	1	.41	1	.11	.11	0.266	0.797
	.06	1	.06	1	.121	.4	0.210	0.630
12	.61	1	.61	6	.11	.11	0.164	0.985
1	.66	1	.66	6	.14	.22	0.116	0.698
24	1.	1	1	12	.111		0.048	0.578
6	1.111	1	1.111	12	.66		0.029	0.344
4	1.11	1	1.111	12	.41	.6	0.019	0.224
6	1.22	1	1.22	12	.1	.1	0.008	0.094
2	1.2	1	1.2 1			2 hr sum		6.4
						24 hr sum		.21

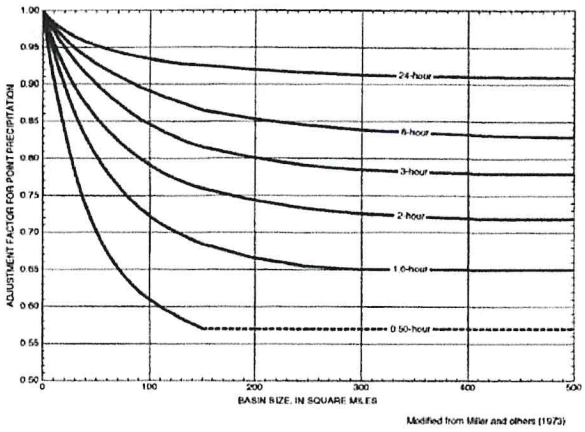
To avoid too much conservatism:
1) Use median value hyetograph pattern to distribute incremental storm depths and
2) Use typical or median (50% exceedance probability) storm characteristics.

hour	ppc				
1	.01	2	.266	4	.02
2	.01	26	.266		.02
	.01	2	.6	1	.02
4	.01	2	.06	2	.02
	.02	2	.2		.01
6	.02		.266	4	.01
	.02	1	.266		.01
	.02	2	.266	6	.01
	.02		.21		.01
1	.02	4	.21		.01
11	.04		.164		.01
12	.04	6	.164	6	.01
1	.04		.164	61	.01
14	.04		.116	62	.01
1	.04		.116	6	.01
16	.04	4	.116	64	.01
1	.116	41	.04	6	.01
1	.116	42	.04	66	.01
1	.116	4	.04	6	.01
2	.164	44	.04	6	.01
21	.164	4	.04	6	.01
22	.164	46	.04		.01
2	.21	4	.02	1	.01
24	.266	4	.02	2	.01

Table 14 for region 2

24-hour independent duration 6-hour kernel duration

Dependent duration (hours)	Exceedance probability								
	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
1	0.070	0.094	0.109	0.115	0.121	0.127	0.134	0.143	0.156
2	.120	.144	.163	.188	.197	.207	218	.232	.252
3	.170	.193	.214	.232	.250	.276	.290	.308	.334
6	.320	.344	.365	.384	.403	.424	.447	.476	.519
9	.470	.495	.516	.536	.556	.577	.601	.631	.675
12	.594	.618	.639	.658	.677	.698	.720	.749	.792
18	.822	.835	.846	.856	.866	.877	.890	.905	.928
24	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
36	1.172	1.154	1.139	1.125	1.111	1.096	1.080	1.064	1.048
48	1.235	1.218	1.203	1.190	1.177	1.162	1.146	1.126	1.096
60	1.300	1.277	1.257	1.239	1.220	1.200	1.178	1.150	1.108
72	1.326	1.300	1.278	1.258	1.235	1.215	1.191	1.160	1.114



Modified from Miller and others (1973)

Figure 17. Depth-area adjustment curves for Montana.

Table 19. Time-to-peak precipitation for various exceedance probabilities, Montana and northern Wyoming

Exceedance probability	Time-to-peak precipitation, in hours, for indicated independent duration, in hours, and region								
	2			6			24		
	Region			Region			Region		
	1	2	3	1	2	3	1	2	3
0.9	0.0833	0.0833	0.0833	0.25	2	0.25	2	8	4
.8	.0833	.0833	.167	.75	3	.75	5	11	7
.7	.0833	.0833	.25	1.25	4.25	1	8	18	12
.6	.0833	.0833	.417	2	5.25	1.5	12	22	17
.5	.167	.25	.50	3	6.5	2.25	17	27	22
.4	.25	.333	.667	4	7.5	3	24	32	28
.3	.417	.50	.917	5.5	9	4	31	37	35
.2	.75	.833	1.167	7.5	10.25	5	40	44	43
.1	1.167	1.333	1.583	10	12.25	7	52	52	53

hour	ppc
1	□.□1□
2	□.□1□
3	□.□1□
4	□.□1□
5	□.□2□
6	□.□2□
7	□.□2□
8	□.□2□
9	□.□2□
1□	□.□2□
11	.□4
12	□.□4□
1□	□.□4□
14	□.□4□
1□	□.□4□
16	□.□4□
1□	□.116
1□	□.116
1□	□.116
2□	□.164
21	□.164
22	□.164
2□	□.21□
24	□.266
2□	□.266
26	□.266
2□	□.6□□
2□	□.□□6
2□	□.2□6
□□	□.266
□1	□.266
□2	□.266
□□	□.21□
□4	.21
□□	□.164
□6	□.164
□□	□.164
□□	□.116
□□	□.116
4□	□.116
41	□.□4□
42	□.□4□
4□	□.□4□
44	□.□4□
4□	□.□4□
46	□.□4□
4□	□.□2□
4□	□.□2□
4□	□.□2□
□□	□.□2□
□1	□.□2□
□2	□.□2□
□□	□.□1□
□4	□.□1□
□□	□.□1□
□6	□.□1□
□□	.□1
□□	□.□1□
□□	□.□1□
6□	□.□1□
61	□.□□□
62	□.□□□
6□	□.□□□
64	□.□□□
6□	□.□□□
66	□.□□□
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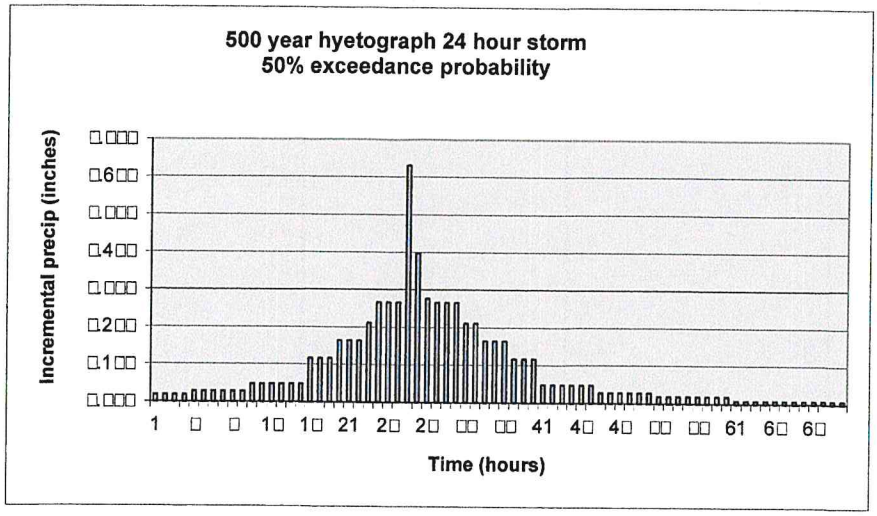
□2	□.□□□
	6.450



Hydrometrics, Inc.
3020 Bozeman Ave,
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date: 4/10/2024 Sheet: 1
Project No: 23003.1
Project Name: Rainbow Lke
By: DD/RKK Ckd. By: RKK
Location: K:\project\23003- CCMR - Rainbow Lake Inspection\Calculations

I. Purpose:
To provide information to support the HEC-HMS Model, document the stage storage relationship in the reservoir.

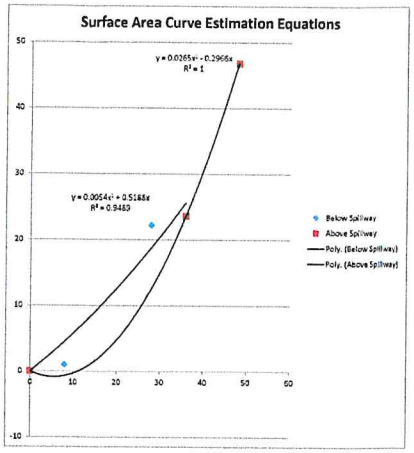
II. References:
Gary Fischer initially prepared calculations using a local datum. His calculations were performed in 2018. These calculations updated his values based on survey gathered in 2023/2024 (Stahly) and also updated his values to NAVD 88.

Note that there is a 4.41 foot difference between the local datum used prior to 2023 and NAVD 88. NAVD 88 has a larger value [e.g. 5603.41 (NAVD 88) vs. 5599 (local)].

III. Assumptions:

Dam Characteristics	
Hydraulic Height	36 ft
Structural Height	40 ft
Toe Elev.	5603 ft
Spillway Invert	5639 ft
Low Point on Crest	5643.1 ft

Elevation of Inlet Grate
Lidar has Outlet Flume Elevation of 5603 ft
Survey has Outlet Pipe Flume Elevation of 5603 ft (NAVD 88)
Invert of Outlet is 5598.5+4.41 = 5602.9 ft at outlet per As-built Drawings
Inlet is approximately 115 feet upstream of dam crest (based on dive report)
Slope of existing pipe is approximately 2.5% per As-built drawings.
Google Earth Measures 260 feet from Outlet Pipe to Approx. Inlet Location
Inlet likely 6.5 feet higher than outlet.
So Inlet Elevation is Approx. 5610 ft.
Assume 2 foot drop (Inlet, top of grate at 5612 ft or higher if existing outlet pipe slope is >2.5%.
Dive Equipment measured 24 feet below WSEL, with diver 2 feet above grate which was at spillway (5639.0'), so inlet at 5613'.



IV. Calculations

Surface Area Calculations

Google Earth

Surface Area Measurements	
	Surface Area (ac)
Full Pool	23.7

1951/1980 USGS Topo (used only as relative elevations - do not correspond to dam elevations)

Topo Elev. (ft)	Height (ft)	USGS Topo Area (ac)	
5612	0	0	<---Assumed to correlate with 5603.4'
5620	8	1.00	
5660	28	22.23	
5668	36	23.70	
5660	48	46.88	(Google Earth measured value)

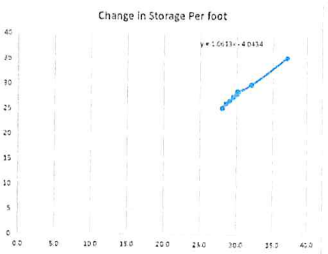
Note: Reservoir on USGS map is only 20 acres and could be from the original dam; this area was not used for analysis

Spillway --->	5647.6	35.6	23.44	(Google Earth measured value)

Stage Storage Curve

NAVD 88	Height	Area	Storage	Notes	
5603.4	0.0	0	0.0	Note that 2002 inlet pipe inspection references diver instruments reading a depth of 24 feet at the inlet, rather than 35.6 feet., so grate is likely 25-26 feet deep below spillway (~5613)	
5613.0	0.0	0.0	0.0		
5620.0	7.0	3.9	13.6		
5630.0	17.0	10.4	85.0		
5639.0	26.0	23.4	237.0	Emergency Spillway Invert	
5639.5	26.5	23.7	248.8		
5640.0	27.0		260.7	providing good values below this elevation, likely due to collection	
5640.5	27.5		283.6		
5640.8	27.8		308.1	Top of Silt Screen	
5641.0	28.0		333.3		UDAR Used For Storage Differences above Spillway
5641.5	28.5		359.4		
5642.0	29.0		386.1		
5642.5	29.5		413.5		
5643.0	30.0		441.4		
5643.1	30.1		469.9	Crest Low Point	
5643.0	32.0				
5650.0	37.0				

Intercept Estimates for Depth		
Raw UDAR Volume	Differenc e	Differenc e Per Foot
0	0	
0.2877686	0.287769	0.535537
2.0497934	1.782025	3.56405
13.530992	11.4812	22.9624
20.873554	7.342562	24.47521
25.915909	5.042355	25.21178
38.964699	13.04878	26.09752
52.293593	13.32893	26.65785
66.0	13.69744	27.39494
79.969215	13.97814	27.95628
82.818595	2.84938	28.4938
139.49008	56.67149	29.8271
314.92624	175.4362	35.08723



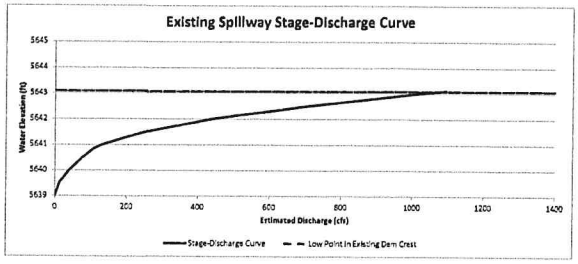
Note, it looks like this is a reasonable estimate by extrapolating the change towards 0 and removing data points below 5641

Stage-Discharge Curve

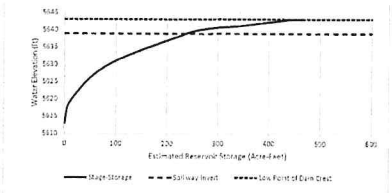
Existing Spillway

Storage (ac-ft)	Discharge (cfs)	Elevation (ft)
0.0	0.0	5603.4
0.0	0.0	5613.0
13.6	0.0	5620.0
85.0	0.0	5630.0
237.0	0.0	5639.0
248.8	13	5639.5
260.7	41	5640.0
283.6	78	5640.5
308.1	106	5640.8
333.3	134	5641.0
359.4	256	5641.5
386.1	437	5642.0
413.5	688	5642.5
441.4	1022	5643.0
469.9	1095	5643.1

Low Point in Dam	
5643.1	0
5643.1	40000



V. Conclusions



Global Summary Results for Run "500-year EC Run 1"

Project: Rainbow Lake Spillway Simulation Run: 500-year EC Run 1

Start of Run: 01Jan2000, 00:00
End of Run: 04Jan2000, 00:00
Compute Time: DATA CHANGED, RECOMPUTE

Basin Model: Crazy Mtn Dam-2023 Spillway
Meteorologic Model: 500 yr 24 hr rainfall
Control Specifications: Control 1

Show Elements: All Elements Volume Units: (•) IN ( ) ACRE-FT Sorting: Watershed Explorer

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Hammond Creek	5.1	390.4	2 January 2000, 1...	2.35
Reservoir 2023 Spil...	5.1	365.8	2 January 2000, 1...	2.25

Project: Rainbow Lake Spillway Simulation Run: 500-year EC Run 1
Subbasin: Hammond Creek

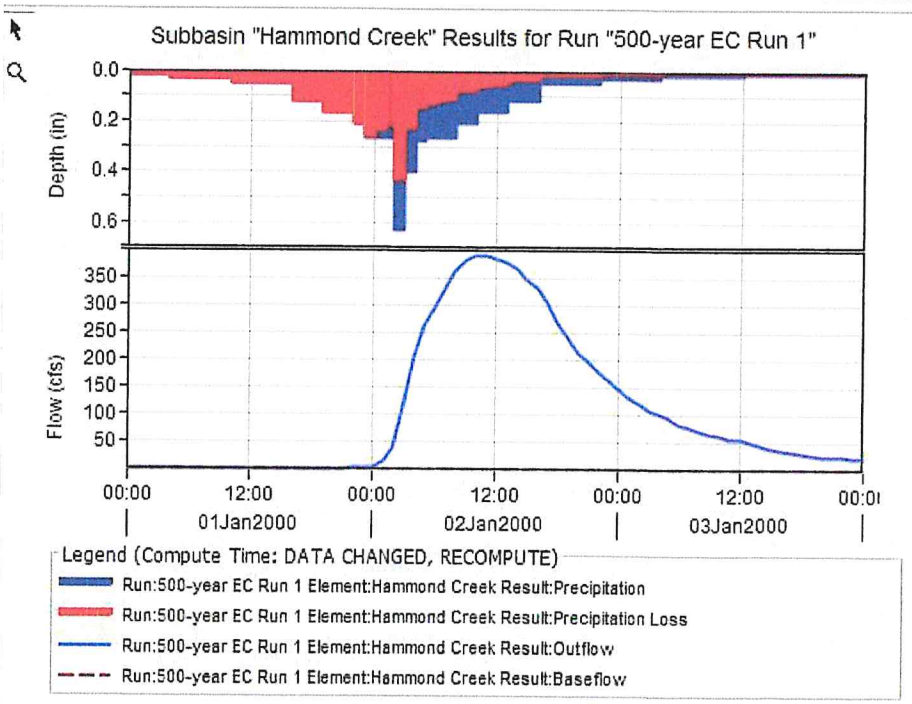
Start of Run: 01Jan2000, 00:00
End of Run: 04Jan2000, 00:00
Compute Time: DATA CHANGED, RECOMPUTE

Basin Model: Crazy Mtn Dam-2023 Spillway
Meteorologic Model: 500 yr 24 hr rainfall
Control Specifications: Control 1

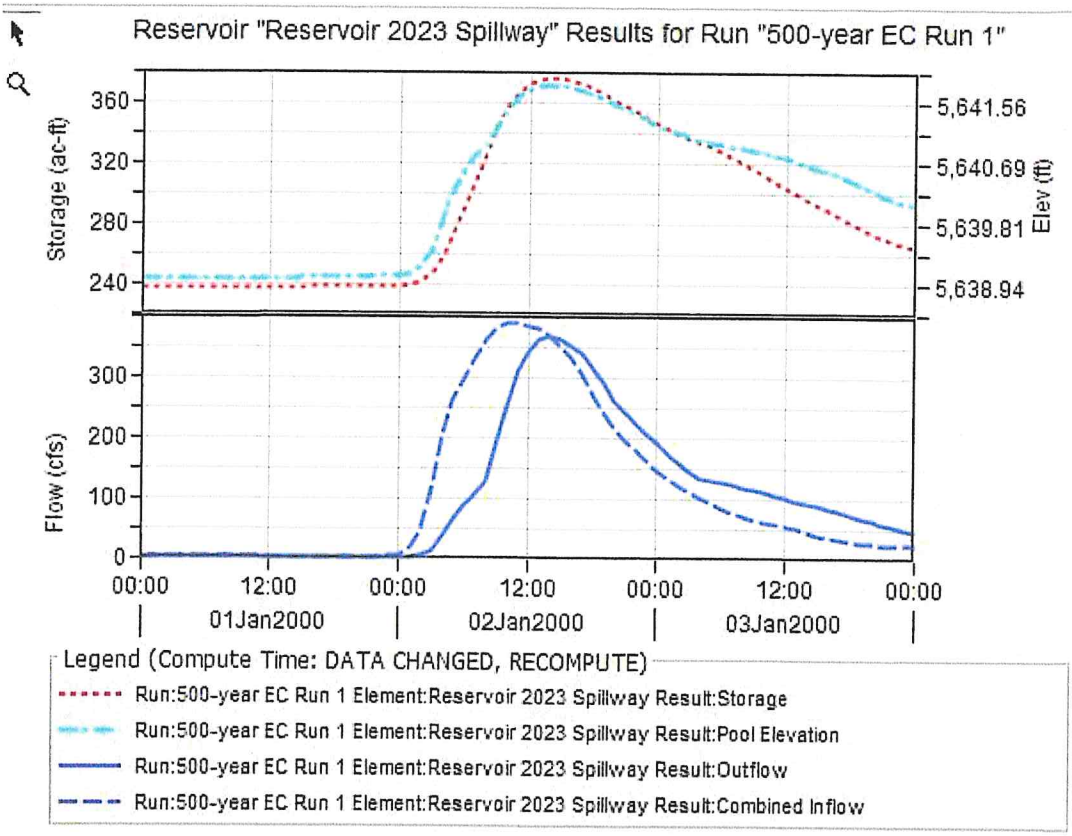
Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Discharge:	390.4 (CFS)	Date/Time of Peak Discharge:	02Jan2000, 11:00
Precipitation Volume:	6.46 (IN)	Direct Runoff Volume:	2.35 (IN)
Loss Volume:	4.07 (IN)	Baseflow Volume:	0.00 (IN)
Excess Volume:	2.38 (IN)	Discharge Volume:	2.35 (IN)



File Edit View



Project: Rainbow Lake Spillway Simulation Run: 500-year EC Run 1
Reservoir: Reservoir 2023 Spillway

Start of Run:	01Jan2000, 00:00	Basin Model:	Crazy Mtn Dam-2023 Spillway
End of Run:	04Jan2000, 00:00	Meteorologic Model:	500 yr 24 hr rainfall
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	390.4 (CFS)	Date/Time of Peak Inflow:	02Jan2000, 11:00
Peak Discharge:	365.8 (CFS)	Date/Time of Peak Discharge:	02Jan2000, 14:00
Inflow Volume:	2.35 (IN)	Peak Storage:	375.6 (ACRE-FT)
Discharge Volume:	2.25 (IN)	Peak Elevation:	5641.8 (FT)

Exhibit 11.a

Exhibit 11.a

WATER RIGHTS LEASE AGREEMENT

THIS AGREEMENT is made and entered into, on the Effective Date of January 15, 2026, between CMR Ranch Owner, LLC ("Lessor"), and The Club at Crazy Mountain Ranch, LLC ("Lessee") who are collectively referred to hereinafter as "the Parties."

WHEREAS, Lessor desires to lease water to Lessee and Lessee desires to lease water from Lessor through this Water Rights Lease Agreement (Agreement) for the irrigation of property that is more fully described below (the "Golf Course"); and

WHEREAS, Lessor owns the water rights subject to this Agreement, and which are more particularly described in this Agreement; and

WHEREAS, Lessee is responsible for Golf Course operations, and

WHEREAS, On or about May 23, 2025, Lessor filed applications 43A 30170988 and 43A 30170989 with the Montana Department of Natural Resources and Conservation ("DNRC") to change certain water rights ("Change Apps") including the water rights that are the subject of this Agreement, to allow for Golf Course irrigation.

WHEREAS, during the processing of the Change Apps, the Parties intend this Agreement to provide a mechanism to allow for Lessor's water rights to be used for Golf Course irrigation pursuant to §85-2-428, MCA.

WHEREAS, the Parties intend to submit Temporary Lease of Water Right form 650's to DNRC after execution of this Agreement to enable Lessor's water rights to be used for Golf Course irrigations pursuant to §85-2-428, MCA ("Lease Applications").

THEREFORE, in consideration of the mutual promises and other valuable consideration described below, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Lease of Water Rights: Under the terms of this Agreement, Lessor agrees to lease the total available consumptive volume of the following appropriation rights to Lessee, and agrees to forgo the use of water under each such water right during any calendar year in which Lessee uses leased water under such right: 43A 40444 00, 43A 40446 00, 43A 40464 00 ("Leased Water Rights").

2. Limitation on Use of Water Rights: Except as approved by DNRC, Lessor also agrees to not utilize 43A 40447 00, 43A 40448 00, 43A 40449 00, 43A 40450 00, 43A 40451 00, 43A 40452 00, 43A 40453 00, 43A 40454 00, 43A 40455 00, 43A 40456 00, 43A 40457 00, 43A 40458 00, 43A 40459 00, 43A 40460 00, 43A 40461 00 and 43A 40462 00 during any calendar year on the portion of the place of use of the Leased Water Rights to the extent then temporarily retired in such calendar year within the term of this Agreement.

3. Purpose of Use. Water leased pursuant to this Agreement is to be used for irrigation in the following described place of use.

ID	Acres	Gov Lot	Qtr Sec	Sec	Twp	Rge	County
1	5.78		S2SE	11	2N	10E	Park
2	0.80		W2W2NW	13	2N	10E	Park
3	81.59			14	2N	10E	Park
4	6.83		N2NW	23	2N	10E	Park
Total:	95.00						

4. Payment for Leased Water. Lessee agrees to pay Lessor $15.00 per acre-foot of Leased Water utilized by the Lessee hereunder.

5. Term of Agreement. The term of this Agreement is ten (10) years beginning on the Effective Date and lasting through the 2035 irrigation season.

6. Administration of Leased Water. In the absence of a court appointed Water Commissioner the Parties agree the Leased Water Rights will be diverted and used in accordance with §85-2-428, MCA, the subject water rights, this Agreement, and all conditions and requirements of DNRC approval of the Lease Applications. Upon appointment of a Water Commissioner to admeasure and distribute water to all appropriators in accordance with Title 85, Chapter 5, MCA, the Parties acknowledge that delivery of Leased Water Rights shall be subject to the supervision and authority of the Water Commissioner.

7. Contingencies. The implementation of this Agreement is expressly conditioned upon satisfaction of the following conditions and contingencies, in addition to the other terms of this Agreement:

i. The Lease Applications must have DNRC approval, including final resolution of any objections thereto, and

ii. Both parties must provide the other with notice accepting all conditions and requirements of the approved Lease Applications.

If these contingencies are not satisfied by April 30, 2026, either Party may withdraw from this Agreement by sending written notice to the other party to that effect. Upon such withdrawal, Lessee shall have no obligation or right to continue to lease the Leased Water Rights, the Lessor shall have no obligation to continue to lease the Leased Water Rights to Lessee, this Agreement shall be of no further force and effect, and the Parties shall have no liability to the other Party under this Agreement.

8. It shall be Lessee's responsibility to satisfy all conditions and requirements imposed by DNRC on the diversion and use of leased water, including but not limited to measurement and reporting requirements.

9. Termination. In each successive year of the term, either Party may terminate this Agreement upon written notice served prior to the 30th Day of April. Notice of termination served after the 30th Day of April shall be effective at the end of November in the same calendar year.

10. Return of Rights to Previous Use. Upon termination of this Agreement, Lessee agrees to execute any and all documents required to return full use of all Leased Water Rights to Lessor.

11. Default. If either party fails to perform in material respect any obligations required by this Agreement, the other party may serve a written notice upon the failing party specifying the default. If the defaulting party shall not have corrected such default within thirty (30) days of notice, then the non-defaulting party may terminate this Agreement and retake or return possession, if applicable, without additional notice.

12. Notice. Any notice to be given under this Agreement shall be in writing and shall either be served upon the party electronically, personally or by registered or certified mail, return receipt requested, directed to the address of the party set forth in this paragraph. A party wishing to change its designated address shall do so by written notice to the other party. Notice served by registered or certified mail shall be deemed complete two business days following deposit in the United States mail. Rejection or other refusal to accept or the inability to deliver because of changed address for which no notice was given shall be deemed to be receipt of the notice.

Lessors' liaisons, address, and phone is:

CMR Ranch Owner, LLC
c/o Sam Byrne, Managing Partner and President
CrossHarbor Capital Partners
1 Boston Place Suite 2300, Boston, MA 02108
sbyrne@crossharborcapital.com
(617)-624-8300

And

Peter G. Scott Law Offices, PLLC
682 S. Ferguson Ave. Ste 4
Bozeman MT 59718
peter@scott-law.com
(406) 585-3295

Lessees' liaisons, address, and phone is:

The Club at Crazy Mountain Ranch, LLC
c/o David Hardwick, General Manager
515 Rock Creek Rd, Livingston, MT 59047
dhardwick@crazymountainranch.com
(406) 640-2795

And

Jay E. Bothwick, Managing Director
CrossHarbor Capital Partners
1 Boston Place Suite 2300, Boston, MA 02108
jbothwick@crossharborcapital.com
(617)-624-8300

13. No Abandonment of Leased Water Rights. Consistent with protections afforded in §85-2-404(4), MCA, nothing in this Agreement shall be interpreted to as evidence of abandonment or intent to abandon the Leased Water Rights or any other water rights referred to in this Agreement.

14. Indemnification. Lessee shall indemnify and hold harmless the Lessor against any claim or action by DNRC or any third parties challenging the use of the water leased under this Agreement or challenging the validity of the statutes allowing for the lease of water. This provision does not extend to any claim that arises out of or as a result of the negligent or willful conduct of the Lessor not authorized under this Agreement.

15. Binding Effect. The provisions of this lease Agreement shall be binding upon the heirs, assigns, personal representatives, administrators and successors of the parties in like manner as upon the original parties, except as provided by mutual written agreement.

16. Cooperation of the Parties. The Parties hereto agree to cooperate fully and to provide such assistance and information as may be necessary to implement this Agreement.

17. Venue, Interpretation and Attorney Fees. The venue for any court action arising under this agreement must be in the First Judicial District in and for Lewis and Clark County, Montana. This Agreement must be interpreted according to the laws of Montana. In the event an action is filed to enforce, interpret, or dispute this agreement, the prevailing party shall be entitled to recover reasonable attorney fees from the other party in the suit.

18. Execution. This Agreement may be executed in counterpart pages delivered by email or facsimile, either of which will be considered original.

IN WITNESS WHEREOF, the parties hereto execute this Agreement:

CMR RANCH OWNER LLC By Sam Byrne (Jan 15, 2026 07:22:59 PST) On 15/01/2026, 2026 Position: Managing Partner and President	THE CLUB AT CRAZY MOUNTAIN RANCH LLC By David Hardwick On 15/01/2026, 2026 Position: General Manager

2026.01.14 CMR Ranch Owner to Golf Short Term Lease_Final

Final Audit Report 2026-01-15

Created:	2026-01-15
By:	Reilly Tunby (tunby@dmsnaturalresources.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA3PhqtYZvR39GrOPn8u1mlhqLRNMZ2cpM

"2026.01.14 CMR Ranch Owner to Golf Short Term Lease_Final " History

Document created by Reilly Tunby (tunby@dmsnaturalresources.com)
2026-01-15 - 3:11:40 PM GMT

Document emailed to Sam Byrne (sbyrne@crossharborcapital.com) for signature
2026-01-15 - 3:11:47 PM GMT

Document emailed to David Hardwick (dhardwick@crazymountainranch.com) for signature
2026-01-15 - 3:11:48 PM GMT

Email viewed by David Hardwick (dhardwick@crazymountainranch.com)
2026-01-15 - 3:13:13 PM GMT

Document e-signed by David Hardwick (dhardwick@crazymountainranch.com)
Signature Date: 2026-01-15 - 3:15:06 PM GMT - Time Source: server

Email viewed by Sam Byrne (sbyrne@crossharborcapital.com)
2026-01-15 - 3:19:32 PM GMT

Document e-signed by Sam Byrne (sbyrne@crossharborcapital.com)
Signature Date: 2026-01-15 - 3:21:59 PM GMT - Time Source: server

Agreement completed.
2026-01-15 - 3:21:59 PM GMT

Exhibit 11.b.1

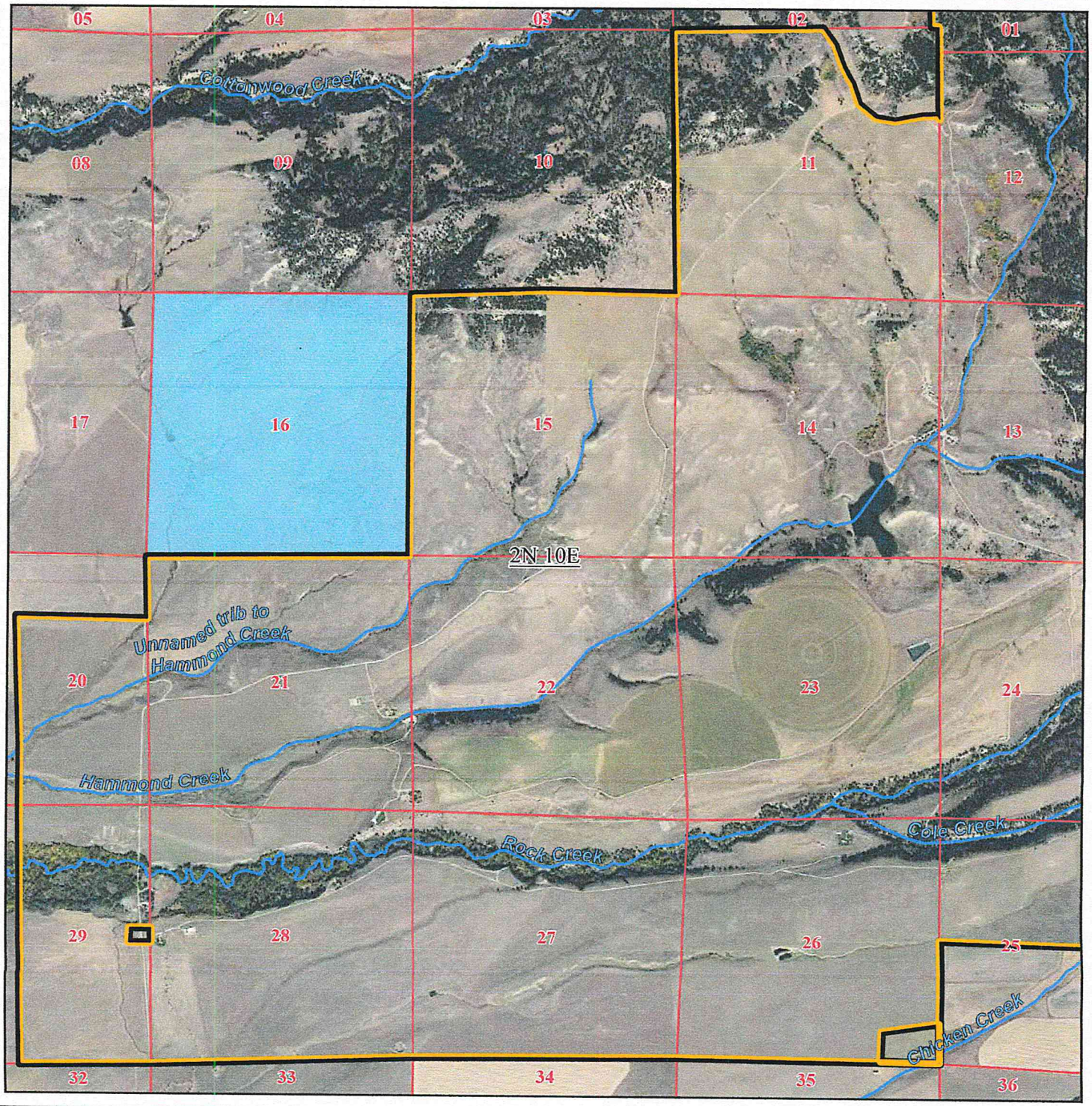
CMR Ranch Owner, LLC

Park County, MT

N W E S

Blank Aerials

Exhibit 11.b.1



CMR Ranch Owner, LLC Property Border

DMS NATURAL RESOURCES

Created 11/25/2025
Aerial Imagery: 2021 NAIP

0 0.45 0.9

Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.

CMR Ranch Owner, LLC

Park County, MT

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W E
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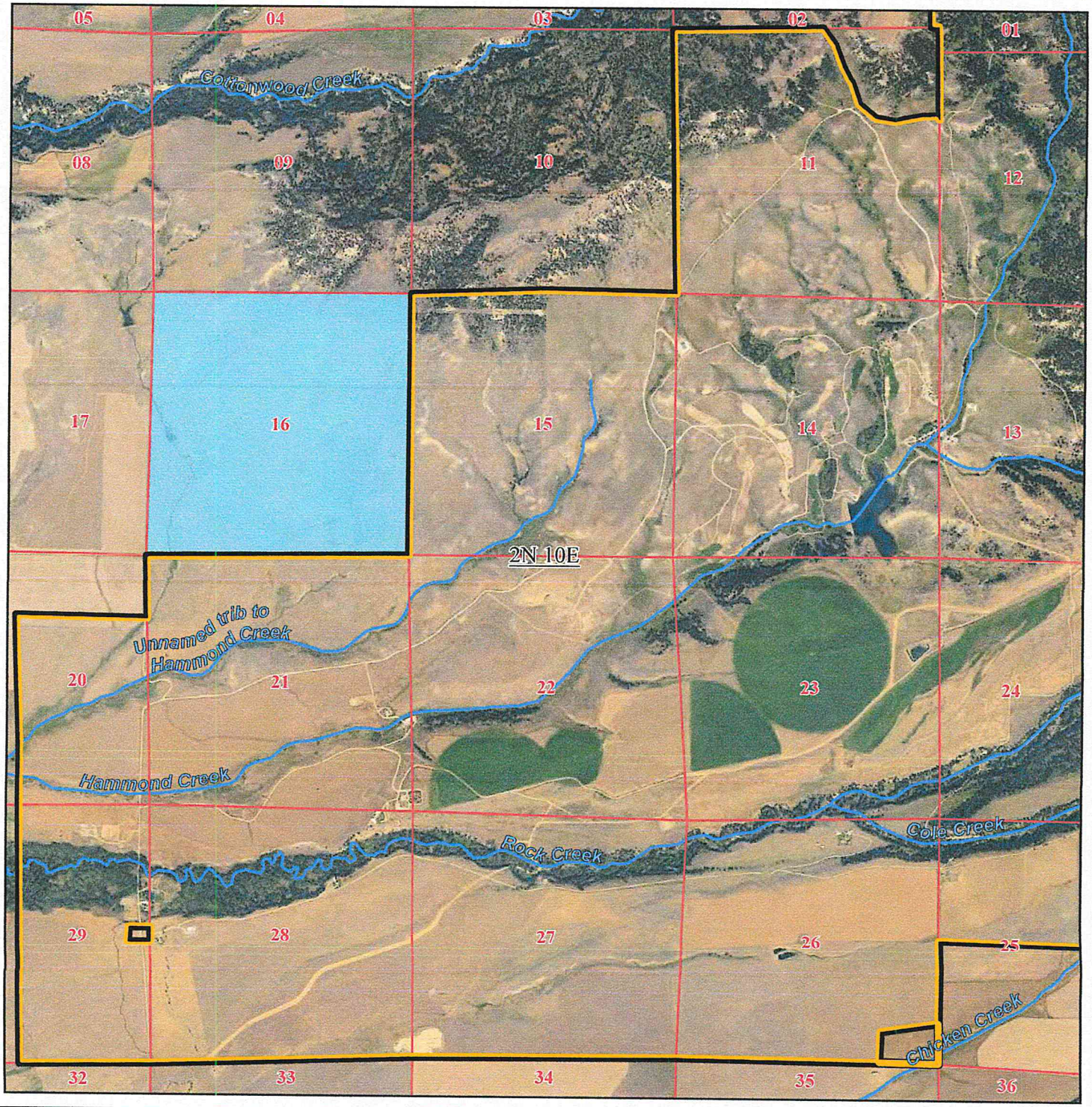
Blank Aerials



CMR Ranch Owner, LLC Property Border

DMS NATURAL RESOURCES

Created 11/25/2025
Aerial Imagery: 2024 NAIP

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Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.

Exhibit 11.b.2

Exhibit 11.b.2

AFFIDAVIT OF TY LEO FERGUSON

STATE OF MONTANA)
)ss:
COUNTY OF PARK)

I, Ty L. Ferguson, being first duly sworn, deposes and says:

1. I am over the age of 18 years, of sound mind, and have personal knowledge as to the matters attested to herein.

2. I am 61 years old. I currently reside at Clyde Park, Montana. I am employed as the Director of Agricultural Operations for CMR Ranch Owner LLC.

3. CMR Ranch Owner LLC owns property located within Township 2 North, Range 10 East, Township 2 North, Range 11 East and Township 3 North, Range 11 East ("the property"). The property ownership is shown on the map provided as Exhibit A. I have worked on this property for the past 27 years. During these 27 years I worked for the past owners including Glen Patch, Philip Morris USA Inc., CH CMR Partners LLC. I now work for the current owner, CMR Ranch Owner LLC.

4. As the Director of Agricultural Operations for CMR Ranch Owner LLC, I am responsible for maintaining all of the natural resources on the property, irrigation of the hay fields and pasture areas, and the livestock on the property. Throughout the 27 years I have worked on the property my job title has varied, but my job responsibilities have been the same.

5. Over the 27 years I have worked on the property I have gained knowledge of the historic water use on the property from observations of historic infrastructure on the property as well as discussions with individuals who worked on the property in the 1990s, 1980s, and prior to 1973, including former ranch employees and ranch managers. The following description of the historic irrigation on the property north of Rock Creek is my understanding of the historic water use based on these conversations and my knowledge of the irrigation infrastructure.

6. Historically and currently, the primary crop grown on all fields across the property is grass and/or alfalfa hay. Approximately one out of every ten years the property rotates a crop of peas, barley, oats, or other similar cereal crops before replanting the field for hay production.

Historic Irrigation North of Rock Creek

7. The map provided as Exhibit B depicts my understanding of the extent and location of historic irrigation prior to 1973 on the property north of Rock Creek, and the locations of the Upper Criswell Ditch and Lower Criswell Ditch. Historically, the Upper Criswell Ditch was the primary ditch used by the property to convey water north of Rock Creek. It is my understanding that historically all irrigated acres north of Rock Creek were physically irrigable from the Upper Criswell Ditch and the Lower Criswell Ditch was historically used as a redundant and/or alternate diversion if needed operationally.

8. The ditch system from Rock Creek historically was flumed across Hammond Creek at two locations, shown by yellow stars on Exhibit B. The property has natural flow irrigation water rights from Hammond Creek which were also diverted at these two locations. Stored water from Rock Lake was also historically conveyed across Hammond Creek at these locations later in the irrigation season.

9. Historically, all fields were flood irrigated by lateral ditches and tarp dams in the ditches which were moved throughout the ditch system to control the application of water.

10. Historically, the date the property began irrigating from Rock Creek varied from year-to-year depending on seasonal conditions. However, the property typically began diverting water from Rock Creek into the Upper Criswell Ditch for irrigation north of Rock Creek around early to mid-May, once the snow and ice cleared from the ditch. During the first part of the irrigation season the property irrigated the fields between Hammond Creek and Rock Creek (pink hashed areas on Exhibit B) with the property's natural flow Rock Creek water rights. The fields along Hammond Creek (yellow hashed on Exhibit B) were irrigated with the property's Hammond Creek natural flow claims. Historically, the property typically continued irrigating with the natural flow water rights through the first cutting of hay which typically occurred in early July. Historically, the property diverted water continuously through the Upper Criswell Ditch and rotated water between fields during the cutting and haying process.

11. Historically, a water commissioner is appointed on Rock Creek during the later portion of the season in most years. Due to the relatively junior priority date of the property's natural flow water rights and water supply shortages in the Rock Creek system, the property's natural flow water rights have typically been called out of priority shortly after the water commissioner is appointed. To the best of my knowledge, the property's natural flow water rights have typically been called out of priority and releases from Rock Lake initiated around mid to late July each year, coinciding with the end of the first cutting of hay.

12. Once the property's natural flow water rights were called out of priority, the property began releasing stored water from Rock Lake. Based on my experience operating and controlling the Rock Lake tunnel, historically and currently the property has had full control over the

rate and timing of releases from Rock Lake. The property can adjust the headgate in Rock Lake tunnel and manage releases to ensure that stored water is delivered to the Upper Criswell Ditch through the remainder of the irrigation season.

13. Historically, water released from Rock Lake continued to irrigate all of the fields shown on Exhibit B. The stored water from Rock Lake was diverted and conveyed via the Upper Criswell Ditch. Historically, a second cutting was typically obtained in early September. As stated above, water was historically diverted continuously and rotated between fields to allow for cutting. The property continued to irrigate after the second cutting of hay for pasture regrowth. The date the property stopped irrigating varied from year-to-year depending on operational needs and seasonal conditions. The stored water was typically exhausted by late September. At that point in time the water commissioner was typically done for the year. It is my understanding that my predecessors then irrigated using natural flow claims again through October in most years.

Current Irrigation North of Rock Creek

14. There have been several changes to the irrigation on the property since the historic, pre-1973 conditions described above. Namely, current irrigation has been focused to four pivots, installed between approximately 2000 and 2019, and a flood-irrigated field east of the four pivots. The map provided as Exhibit C depicts the current irrigation on the property.

15. Currently, water is diverted from Rock Creek solely via the Upper Criswell Ditch. Water is conveyed via the Upper Criswell Ditch to the flood irrigated field, as well as a gravity fed intake structure for the four pivot systems. A booster pump is used to provide added pressure for the end-gun of the largest (eastern) pivot when the pivot is on its uphill swing. Other than this intermittently used booster pump, the remainder of the pivots are fed solely by gravity flow. The flood irrigated field is currently irrigated using a "love machine" which is a machine which "drives" down the ditch pulling a tarp dam and pushes water across the field.

16. The current timing and pattern of water use has remained largely unchanged from the pre-1973 use described above. The property continues to divert water for irrigation as soon as the ditches are clear of snow and ice, typically beginning around early to mid-May. The property typically irrigates with the Rock Creek natural flow claims through the first cutting of hay in the first half of July. When we are cutting hay/crops in area, we continuously divert from Rock Creek, and rotate the water between fields to allow for cutting. As described above, the property's natural flow claims are typically called out of priority in mid-July, then we open the Rock Lake tunnel and continue to irrigate the pivots and flood fields shown on Exhibit C with stored water from Rock Lake. The stored water is typically exhausted by late September. At that point in time the water commissioner is typically done for the year. We then irrigate using natural flow claims again through

October in most years. During my time on the property, we have managed releases from Rock Lake to ensure that irrigation water is available through the remainder of the irrigation season.

FURTHER YOUR AFFIANT SAYETH NAUGHT.

DATED this 2 day of Feb, 2025.

Ty L. Ferguson

Subscribed and Sworn to before me this 10 day of 02, 2025.

(SEAL)

BLERIM SOPA
Notary Public - Arizona
Maricopa County
Commission # 670825
My Comm. Expires Aug 7, 2028

Notary Public for the State of Arizona

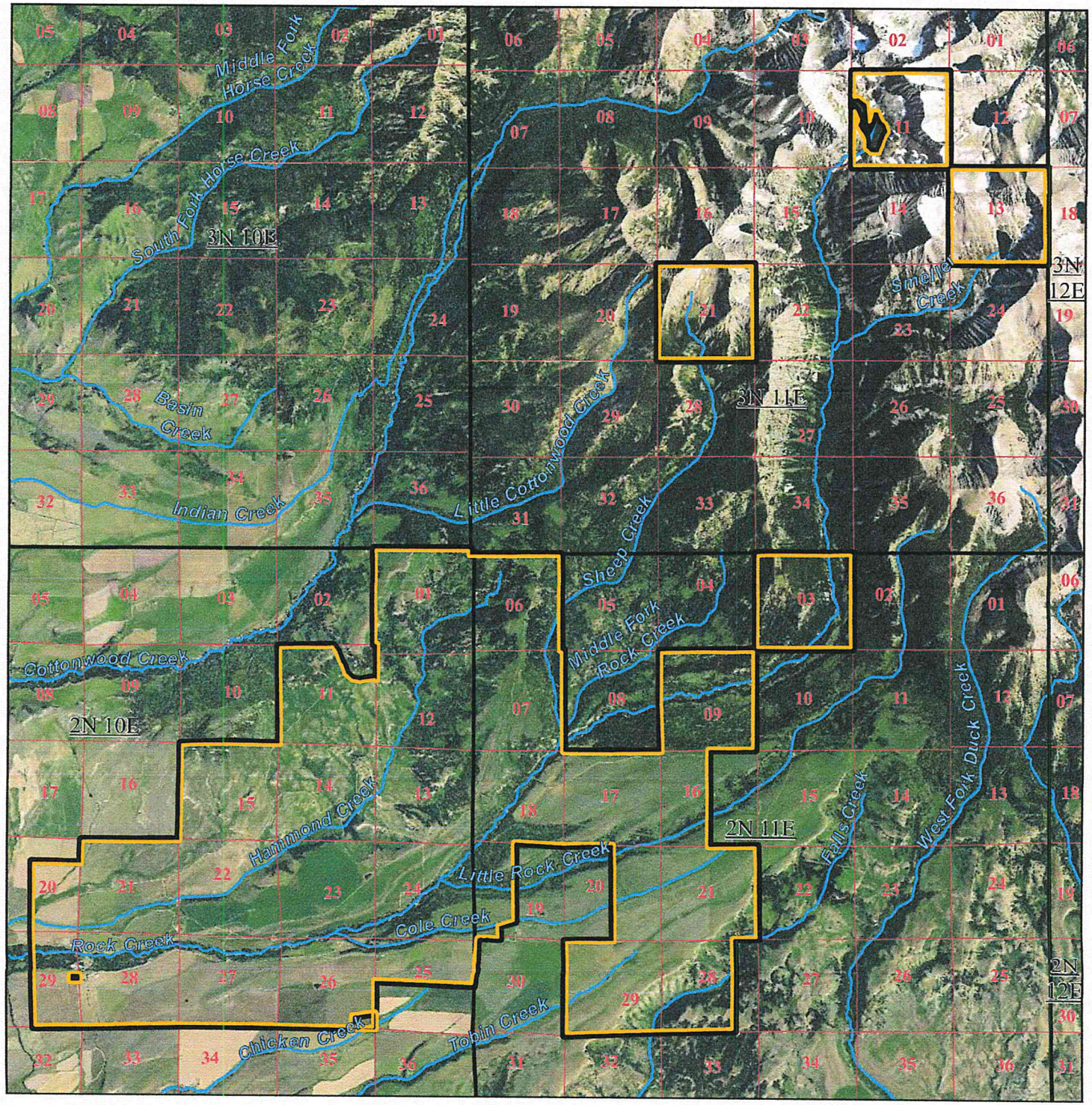
CMR Ranch Owner LLC

Park County, MT

N
W E
S

Property Overview

Exhibit A



CMR Ranch Owner LLC Property Border

Created 5/3/2022
Aerial Imagery: 11/09/2020 NAIP

DMS NATURAL RESOURCES

0 1.25 2.5
Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.

CMR Ranch Owner, LLC

Park County, MT

N
W E
S

North Side Historic Irrigation

Exhibit B

CMR Ranch Owner, LLC Property

PODs

North Side Natural Flow Claims (Secondary PODs for Stored Water Claims)

Hammond Creek Claims (Section 21 POD is a Secondary POD for Stored Water Claim 43A 40463 00)

Ditches

Upper Criswell Ditches

Lower Criswell Ditches

Criswell-Logan Ditch

POUs

North Side Natural Flow Claims & Stored Water Claims

Hammond Creek Claims & Stored Water Claim 43A 40463 00

Created 1/21/2025
Aerial Imagery: 8/7/1948 USDA

DMS
NATURAL RESOURCES

0 0.5 1
Miles

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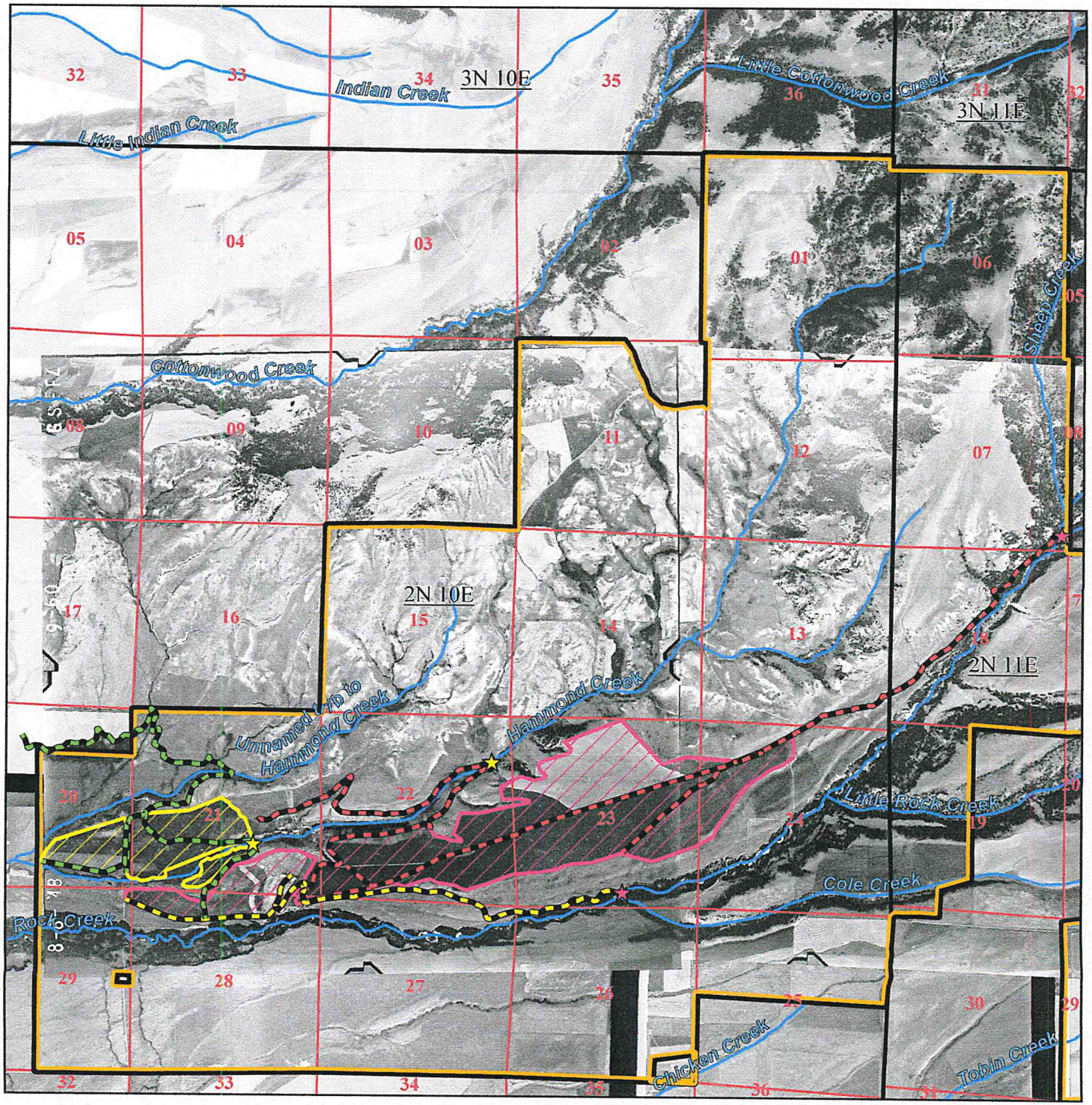


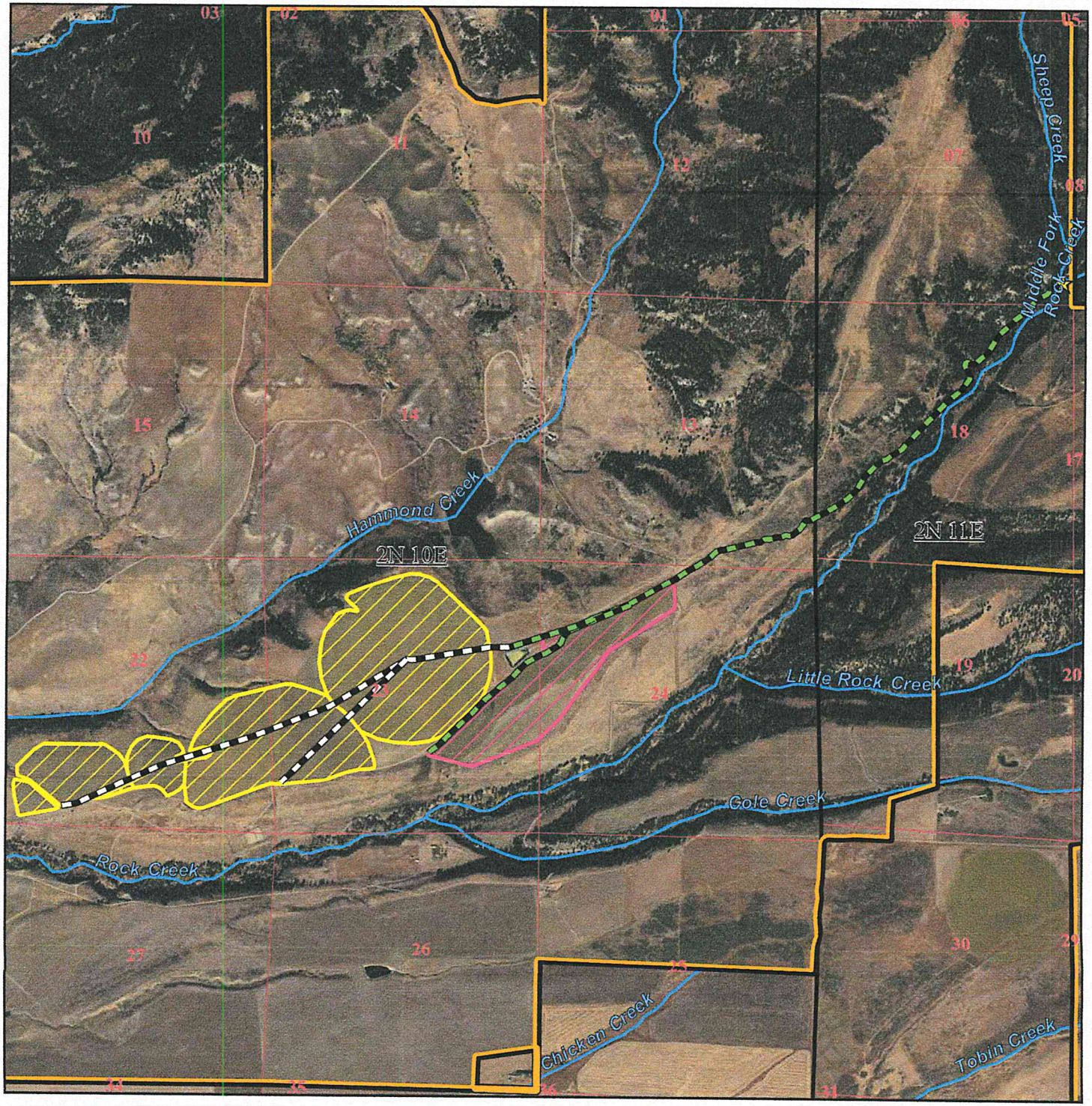
CMR Ranch Owner, LLC

Park County, MT

N W E S

Current Irrigation

Exhibit C



CMR Ranch Owner, LLC Property

Headgate Diversion from Rock Creek

Conveyance Infrastructure

Upper Criswell Ditches

Burried Pipeline

Current Irrigation

Pivot Irrigation

Flood Irrigation

DMS NATURAL RESOURCES

Created 1/27/2025
Aerial Imagery: 2017 NAIP

0 0.425 0.85

Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.

AFFIDAVIT OF TY LEO FERGUSON

STATE OF MONTANA)
)ss:
COUNTY OF PARK)

I, Ty L. Ferguson, being first duly sworn, deposes and says:

1. I am over the age of 18 years, of sound mind, and have personal knowledge as to the matters attested to herein.

2. I am 58 years old. I currently reside at Clyde Park, Montana. I am employed as the Director of Agricultural Operations for CMR Ranch Owner LLC.

3. CMR Ranch Owner LLC owns property located within Township 2 North, Range 10 East, Township 2 North, Range 11 East and Township 3 North, Range 11 East. The property ownership is shown on the map provided as Exhibit A. I have worked on this property for the past 24 years. During these 24 years I worked for the past owners including Glen Patch, Philip Morris USA Inc., CH CMR Partners LLC. I now work for the current owner, CMR Ranch Owner LLC.

4. As the Director of Agricultural Operations for CMR Ranch Owner LLC, I am responsible for maintaining all of the natural resources on the property, irrigation of the hay fields and pasture areas, and the livestock on the property. Throughout the 24 years I have worked on the property my job title has varied, but my job responsibilities have been the same.

5. One of my responsibilities on the property is the operation of Rock Lake. Rock Lake is an important source of irrigation and stock water for the ranch. It is located in Section 11, Township 3 North, Range 11 East. Each year, water is stored in the lake over the winter, spring, and early summer. We begin diverting water from Rock Lake when stream flow is no longer adequate to serve the Ranch's natural flow rights. The stored water travels down Rock Creek, to our diversions from Rock Creek located in the SESESE of Section 7, Township 2 North, Range 11 East, the SWNWSE of Section 8, Township 2 North, Range 11 East, and the SWSE of Section 23 in Township 2 North Range 10 East. At these diversions, we divert the Rock Lake stored water into our ditches for irrigation and stock use. We shut the Rock Lake diversion each year after the irrigation season.

6. Prior to 2017, I personally hiked up to Rock Lake to open the diversion. I also would hike up after the irrigation season to shut the diversion. Between 2017 and 2021, one of the other ranch employees, Jonathan Croston, hiked up to Rock Lake to open/close the tunnel. Jonathan would report back to me the condition of the lake each time he hiked up to the

lake. Based on me personally hiking to the lake to open the tunnel prior to 2017, combined with Jonathan's observations since 2017, in each of the 24 years I have been working for the ranch, the water in Rock Lake is always flowing over the dam and spillway when we have gone up to Rock Lake to open the diversion.

FURTHER YOUR AFFIANT SAYETH NAUGHT.

DATED this 5 day of October, 2022.

Ty L. Ferguson

Subscribed and Sworn to before me this 5th day of October, 2022.

(SEAL)

Notary Public for the State of Montana

LESLIE PETERSON
Notary Public for the
State of Montana
Residing at CLYDE PARK, MT
My Commission Expires
February 18, 2026

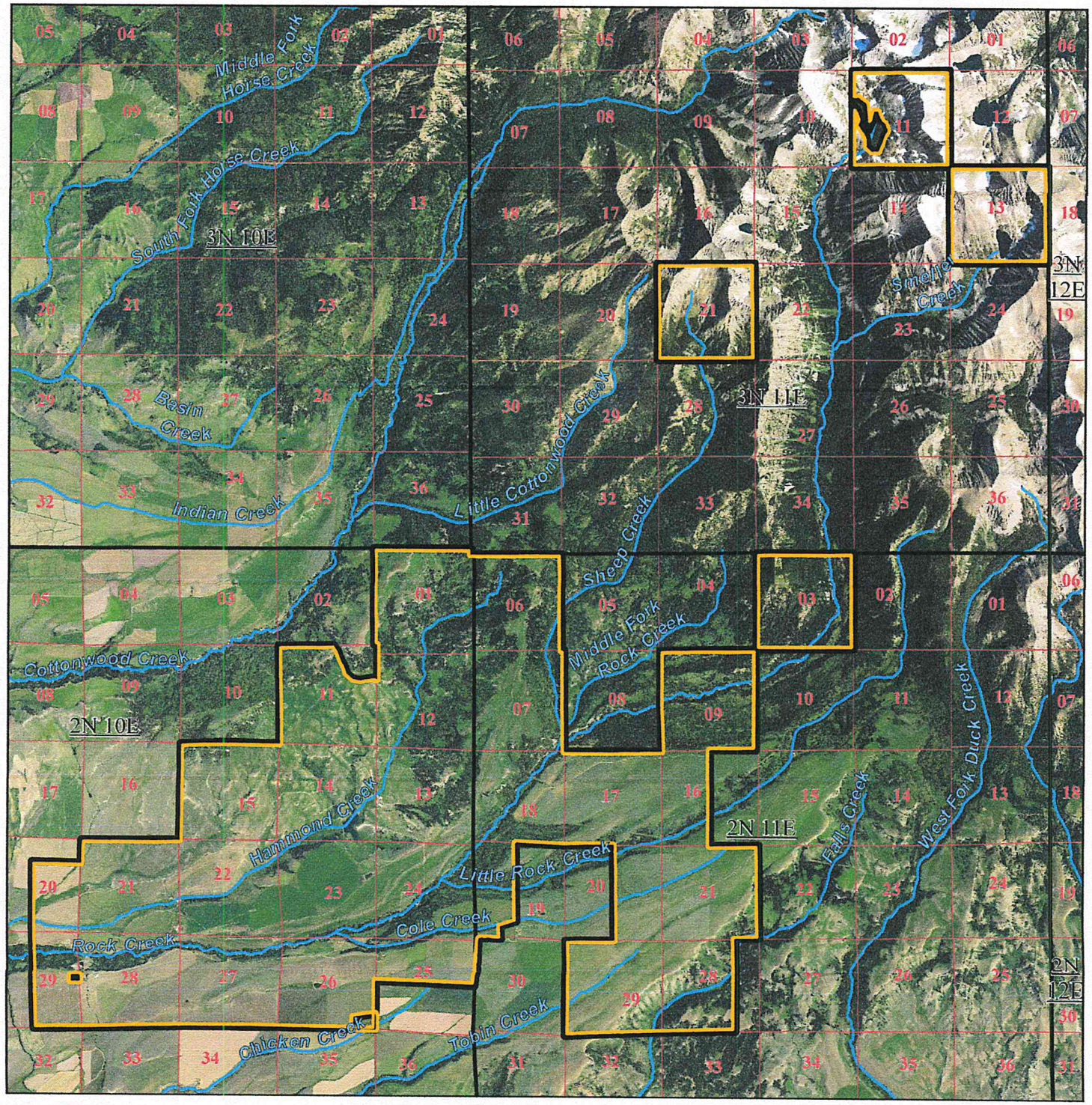
CMR Ranch Owner LLC

Park County, MT

N
W E
S

Property Overview

Exhibit A



CMR Ranch Owner LLC Property Border

Created 5/3/2022

Aerial Imagery: 11/09/2020 NAIP

DMS NATURAL RESOURCES

0 1.25 2.5

Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.

Exhibit 11.b.3

2020

Rock Creek 2020

Exhibit 11.b.3

Rock Creek — ~~Aug~~ July — Date and Number of Inches

Lake on

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARthun Queen Ranch 90																			90												
ATkinson Mellish 175																			175												
~~GM Ranch~~ 300																							300								
~~Don Corkus~~ 110																			110												
Gilbert Phil 100																			100												
Arthun Ranch "Keefer"																															
Knutson Scott 200	200																		200												
Knutson Scott 56																			56												
Canon Jamie 100																			100												
Boyd Bob																															
Melvin John 140																															
Michael John 120																			120												
michael John 112																			112												
milKovich Tom																			100												
Daniel Joan 33																			33												
Smith Todd																			140												
~~Standing~~ Firm 192																			192												
Rock Lake on 7-23'-20																															
Worked Days.																			X			X	X	X						X
6days X 100.00 = 600.																			70			40	40	40						40
milege 165 x .525 = 66.																															
6666.00																															

Filed this 7 day of Sept A.D. 20 23

at 12:00 o'clock P M

Mollie Burkett

Clerk of District Court
Park County, Montana

By _____ Deputy

Rock Creek Aug. 1-31 2020 Date and Number of Inches

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Arthun Ranch Queen	90																													
Atkinson Melissa.	125																													
Boyd Bob.	⊖																													
C.M. Ranch	300																													
Forkus Don.	110											110																		
Gilbert Phil.	100									100																				
Arthun Ranch "Keefer"	⊖																													
Knutson Scott "320"	200																													
Knutson Scott 56'	Off																													
Lannen Jamie	100									100																				
Melvin John	⊖																													
Michael John III 120	120																													
Michael II 112	off																													
Millkovich Tom	100																			100										
Daniel Joan	33																													
~~Sarrafin Jeff~~																														
Smith Todd.																					100									
Sunking Tim	192																													
Jim Taylor	Off																													
Leon Sarrafin	Off																													
Dean Flat	off																													
Flatt Cox	Off																													
Flatt - Cargill	off																													
	X		X	X		X	X		X		X		X		X			X			X			X			X	X	

Days Worked 15 Days X 100.00 = 1500.00
mileage 6000 X .575 = 345.00
1845.00

Rock Creek

Sept. 2020 Date and Number of inches

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Arthur Ranch "Queen"																														
Atkinson Melissa	125									90																				
Boyd Bob.																														
Cm Ranch	300																													
Don Forkus																														
Gilbert Phil																														
Keefer																														
Knutson Scott	200																													
Knutson Scott	576	off																												
Lannon Jamie	100	off																												
Melvin John.		off																												
Michael John	120	off																												
Michael John	112	off																												
Milkovich Tom	100															100														
Daniel Joan		off																												
Smith Todd.																	100													
Sunling Tim.	125																													
Jim Taylor	off																													
Leon Sarrazin	off																													
Dean Flatt	off																													
Cox	off																													
Cargil	off	X			X		X			X			X			X			X		X		X	X			X		X	
milege 520 x 525 = 299.00		30			40		30			30			40			30			30		40		30	30			40		40	
Days worked: 13 days x 100.00 =																														
1300.00																														
+ 299.00																														
1599.00																														

Lake off at 15-30

2021

CLERK OF DISTRICT COURT
P.O. BOX 437
LIVINGSTON, MONTANA 59047
406 222-4125

July 17, 2025

CMR Ranch Owner LLC
c/o DMS Natural Resources, LLC
602 S. Ferguson Ave, STE 2
Bozeman, MT 59718

Dear Sirs:

You are hereby notified that Richard Sarrazin, Water Commissioner for Rock Creek for the season of 2021 has filed his report from June 24, 2021 through September 30, 2021. That an order has been made apportioning the amount of the compensation and expenses of said commissioner amongst the users of said waters as required by law, and that your proportion thereof amounts to $ 502.69 which includes Mileage and Workers Compensation. Objections to said order may be made by any persons interested within 20 days after this date, and unless objections are filed thereto as herein specified, said order will be deemed final, and the said above amount will thereupon become due and payable at once and if not paid, execution may be issued against you therefor without further notice.

Molly Bradberry
Clerk of District Court

PLEASE MAKE YOUR CHECKS PAYABLE TO RICHARD SARRAZIN

Water Commissioner Report

Judicial District #_____ County_____ Clerk of Court_____
Water Commissioner_____ Water Body_____

June 2021	Water Use: Ditch Name	Atkinson	Boyd	CMR	Daniel	orkus Fami	Gilbert	Lannen	Melvin	Michaels1	Michaels1	Milkovich	Queen Ra	Knutson3	Knutson5	Smith	Sundling	Taylor	Sarrazin	Flatt	Flatt/Cox
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
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14																					
15																					
16																					
17																					
18																					
19																					
20																					
21																					
22																					
23																					
24	64	175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
25	35	175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
26	64	175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
27		175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
28	45	175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
29		175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
30	64	175	140	0	30	0	100	100	140	112	120	100	200	200	56	140	195	166	125	108	
TOTAL	272	1225	980	0	210	0	700	700	980	784	840	700	1400	1400	392	980	1365	1162	875	756	0

Commissioner Expenses					
Daily Wage	100	per day	5	days	$ 500
Mileage	0.56	per mile	272	miles	$ 152.32
ers Comp	150	per month			$ 150
Other Expenses (list)		phone, log books, etc			$ 0
Total Commissioner Expenses for the month					**$ 802.32**

Water Commissioner Report

Monthly Billing Summary
June-2021

Water User	Total Inches	Total	Bill	Bill to
Atkinson	1225	8%	$63.62	
Boyd	980	6%	$50.89	
CMR	0	0%	$0.00	
Daniel	210	1%	$10.91	
Forkus Family	0	0%	$0.00	
Gilbert	700	5%	$36.35	
Lannen	700	5%	$36.35	
Melvin	980	6%	$50.89	
Michaels112	784	5%	$40.72	
Michaels120	840	5%	$43.62	
Milkovich	700	5%	$36.35	
Queen Ranches	1400	9%	$72.71	
Knutson320	1400	9%	$72.71	
Knutson56	392	3%	$20.36	
Smith	980	6%	$50.89	
Sundling	1365	9%	$70.89	
Taylor	1162	8%	$60.35	
Sarrazin	875	6%	$45.44	
Flatt	756	5%	$39.26	
Flatt/Cox	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	

Water Commissioner Report

Judicial District #_____ County_____ Clerk of Court_____

Water Commissioner_____ Water Body_____

July 2021	Water Use: Ditch Name	Atkinson	Boyd	CMR	Daniel	orkus Fami	Gilbert	Lannen	Melvin	Michael,J	Michael,L	Milkovich	Queen Ra	Knutson3,	Knutson5	Smith	Sundling	Taylor	Sarrazin	Platt	Platt/Cox
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
2		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
3		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
4		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
5		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
6		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
7		175	50		30		100	100	50		120	100	90	200	56	140	195	100	100	100	
8		175	50		30		100	100	50		120	100	90	200	56	140	195				
9		175	50		30		100	100	50		120	100	90	200	56	140	195				
10		175	50		30		100	100	50		120	100	90	200	56	140	195				
11		175	50		30		100	100	50		120	100	90	200	56	140	195				
12		175	50		30		100	100	50		120	100	90	200	56	140	195				
13		175	50		30		100	100	50		120	100	90	200	56	140	195				
14		175	50		30		100	100	50		120	100	90	200	56	140	195				
15		175			30		100				120	100	90	200		140	195				
16		175		300	30	110	100				120	100	90	200		140	195				
17		175		300	30	110	100				120	100	90	200		140	195				
18		175		300	30	110	100				120	100		200		140	195				
19		175		300	30	110	100				120	100		200		140	195				
20		175		300	30	110	100				120	100		200		140	195				
21		175		300	30	110	100				120	100		200		140	195				
22		175		300	30	110	100				120	100		200		140	195				
23		175		300	30	110	100				120	100		200		140	195				
24		175		300	30	110	100				120	100		200		140	195				
25		175		300	30	110	100				120	100		200		140	195				
26		175		300	30	110	100				120	100		200		140	195				
27		175		300	30	110	100				120	100		200		140	195				
28		175		300	30	110	100				120	100		200		140	195				
29		175		300	30	110	100				120	100		200		140	195				
30		175		300	30	110	100				120	100		200		140	195				
31		175		300	30	110	100				120	100		200		140	195				
TOTAL	768	5425	700	4800	930	1760	3100	1400	700	0	3720	3100	1530	6200	784	4340	6045	700	700	700	0

Commissioner Expenses:						
Daily Wage:	100	per day	12	days	$	1200
Mileage:	0.56	per mile	768	miles	$	430.08
ers Comp:	150	per month			$	150
Other Expenses (list):			phone, log books, etc		$	0
Total Commissioner Expenses for the month					$	1780.08

Water Commissioner Report

Monthly Billing Summary
July 2021

Water User	Total Inches	Total	Bill
Atkinson	5425	12%	$207.08
Boyd	700	2%	$26.72
CMR	4800	10%	$183.22
Daniel	930	2%	$35.50
Forkus Family	1760	4%	$67.18
Gilbert	3100	7%	$118.33
Lannen	1400	3%	$53.44
Melvin	700	2%	$26.72
Michael.112	0	0%	$0.00
Michael.120	3720	8%	$142.00
Milkovich	3100	7%	$118.33
Queen Ranches	1530	3%	$58.40
Knutson320	6200	13%	$236.66
Knutson56	784	2%	$29.93
Smith	4340	9%	$165.66
Sundling	6045	13%	$230.75
Taylor	700	2%	$26.72
Sarrazin	700	2%	$26.72
Flatt	700	2%	$26.72
Flatt/Cox	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00

Water Commissioner Report

Judicial District #_____ County_____ Clerk of Court_____
Water Commissioner_____ Water Body _____

August 2021	Water Use: Ditch Name	Atkinson	Boyd	CMR	Daniel	orkus Fami	Gilbert	Lannen	Melvin	Michael.I	Michael.L	Milkovich	Queen Ra	Knutson3;	Knutson5	Smith	Sundling	Taylor	Sarrazin	Flatt	Flatt/Cox
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1	64	175		300	30		100				120	50		175		50	195				
2		175		300	30		100				120	50		175		50	195				
3		175		300	30		100				120	50		175		50	195				
4	45	175		300	30		100				120	50		175		50	195				
5		175		300	30		100				120	50		175		50	195				
6		175		300	30		100				120	50		175		50	195				
7	64	175		300	30		100				120	50		175		50	195				
8		175		300	30		100				120	50		175		50	195				
9		175		300	30		100				120	50		175		50	195				
10	64	175		300	30		100				120	50		175		50	195				
11		175		300	30		100				120	50		175		50	195				
12		175		300	30		100				120	50		175		50	195				
13	45	175		300	30		100				120	50	75	175		50	195				
14		175		300	30		100				120	50	75	175		50	195				
15	64	175		300	30		100				120	50	75	175		50	195				
16		175			30		100				120	50	75	175		50	195				
17		175			30	110	100				120	50	75	175		50	195				
18		175			30	110	100				120	50	75	175		50	195				
19		175			30	110	100				120	50	75	175		50	195				
20	45	175			30	110	100				120	50	75	175		50	195				
21		175			30	110	100				120	50	75	175		50	195				
22		175			30	110	100				120	50	75	175		50	195				
23	45	175			30	110	100				120	50	75	175		50	195				
24		175			30		100				120	50	75	175		50	195				
25		175			30		100				120	50	75	175		50	195				
26	64	175			30		100				120	50	75	175		50	195				
27		175			30		100				120	50	75	175		50	195				
28		175			30		100				120	50	75	175		50	195				
29		175			30		100				120	50	75	175		50	195				
30		175			30		100				120	50	75	175		50	195				
31	45	175			30		100				120	50	75	175		50	195				
TOTAL	545	5425	0	4500	930	770	3100	0	0	0	3720	1550	1425	5425	0	1550	6045	0	0	0	0

Commissioner Expenses:						
Daily Wage:	100	per day	10	days	$	1000
Mileage:	0.56	per mile	545	miles	$	305.2
ers Comp:	150	per month			$	150
Other Expenses (list):		phone, log books, etc.			$	0
Total Commissioner Expenses for the month					$	1455.2

Water Commissioner Report

Monthly Billing Summary
August 2021

Water User	Total Inches	Total	Bill
Atkinson	5425	16%	$229.22
Boyd	0	0%	$0.00
CMR	4500	13%	$190.14
Daniel	930	3%	$39.30
Forkus Family	770	2%	$32.53
Gilbert	3100	9%	$130.98
Lannen	0	0%	$0.00
Melvin	0	0%	$0.00
Michael.112	0	0%	$0.00
Michael.120	3720	11%	$157.18
Milkovich	1550	5%	$65.49
Queen Ranches	1425	4%	$60.21
Knutson320	5425	16%	$229.22
Knutson56	0	0%	$0.00
Smith	1550	5%	$65.49
Sundling	6045	18%	$255.42
Taylor	0	0%	$0.00
Sarrazin	0	0%	$0.00
Flatt	0	0%	$0.00
Flatt/Cox	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00

Water Commissioner Report

Judicial District #_____ County_____Clerk of Court_____
Water Commissioner_____Water Body_____

August Year	Water User Ditch Name	Atkinson	Boyd	CMR	Daniel	arkus Fami	Gilbert	Lannen	Melvin	Michael.L	Michael.L.	Milkovich	Queen Ra	Knutson3	Knutson5	Smith	Sundling	Taylor	Sarrazin	Flatt	Flatt/Cox
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1	45			100	30							50		175		50	195				
2				100	30							50		175		50	195				
3				100	30							50		175		50	195				
4				100	30							50		175		50	195				
5				100	30							50		175		50	195				
6				100	30							50		175		50	195				
7				100	30							50		175		50	195				
8				100	30							50		175		50	195				
9				100	30							50		175		50	195				
10				100	30							50		175		50	195				
11	45			100	30							50		175		50	195				
12				100	30							50		175		50	195				
13				100	30							50		175		50	195				
14				100	30							50		175		50	195				
15				100	30							50		175		50	195				
16				100	30							50		175		50	195				
17				100	30							50		175		50	195				
18				100	30							50		175		50	195				
19	45			100	30							50		175		50	195				
20				100	30							50		175		50	195				
21				100	30							50		175		50	195				
22				100	30							50		175		50	195				
23				100	30							50		175		50	195				
24				100	30							50		175		50	195				
25	45			100	30							50		175		50	195				
26				100	30							50		175		50	195				
27				100	30							50		175		50	195				
28				100	30							50		175		50	195				
29				100	30							50		175		50	195				
30	45			100	30							50		175		50	195				
31																					
TOTAL	225	0	0	3000	900	0	0	0	0	0	0	1500	0	5250	0	1500	5850	0	0	0	0

Commissioner Expenses:					
Daily Wage:	100	per day	5	days	$ 500
Mileage:	0.56	per mile	225	miles	$ 126
ers Comp:	150	per month			$ 150
Other Expenses (list):		phone, log books, etc			$ 0
Total Commissioner Expenses for the month					$ 776

Water Commissioner Report

Monthly Billing Summary
September 2021

Water User	Total Inches	Total	Bill	Bill to
Atkinson	0	0%	$0.00	$499.92
Boyd	0	0%	$0.00	$77.61
CMR	3000	17%	$129.33	$502.69
Daniel	900	5%	$38.80	$124.50
Forkus Family	0	0%	$0.00	$99.72
Gilbert	0	0%	$0.00	$285.67
Lannen	0	0%	$0.00	$89.79
Melvin	0	0%	$0.00	$77.61
Michael.112	0	0%	$0.00	$40.72
Michael.120	0	0%	$0.00	$342.80
Milkovich	1500	8%	$64.67	$284.84
Queen Ranches	0	0%	$0.00	$191.32
Knutson320	5250	29%	$226.33	$764.93
Knutson56	0	0%	$0.00	$50.28
Smith	1500	8%	$64.67	$346.72
Sundling	5850	33%	$252.20	$809.26
Taylor	0	0%	$0.00	$87.07
Sarrazin	0	0%	$0.00	$72.16
Flatt	0	0%	$0.00	$65.98
Flatt/Cox	0	0%	$0.00	$0.00
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	
0	0	0%	$0.00	

2025

Amended

Water Commissioner Report

Judicial District # 12 County Park Clerk of Court Molly Bradberry
Water Commissioner Zach Sarrazin Water Body Rock Creek
Lacey Arthur

July 2025	Water Use	Atkinson	Boyd	CMR	Daniel	[illegible]rkus Fami	Gilbert	Lannen	Melvin	Michaels1	Michaels1	Milkovich	Queen Ra	Knutson3	KnutsonSt	Smith	Sundling	Taylor	Sarrazin	Flatt	Flatt/Cox	Knutson-Keefer ditch	
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	
1																							
2																							
3																							
4																							
5																							
6																							
7	77	162	50	200	30		50	50	50	112	120	35	268	175	56	35	195	83	125	54	off		
8	57	162	50	off	30		50	50	50	112	120	35	268	175	56	35	195	83	125	54	off		
9		162	50	off	30		50	50	50	112	120	35	268	175	56	35	195	83	125	54	off		
10	95	162	140	off	30		100	100	140	112	120	35	268	175	56	35	195	off	off	off	off		
11	25	162	140	off	30		100	100	140	112	120	35	268	175	56	35	195	off	off	off	off		100
12		162	140	off	30		100	100	140	112	120	35	268	175	56	35	195	off	off	off	off		100
13		162	140	off	30		100	100	140	112	120	35	268	175	56	35	195	off	off	off	off		100
14	33	110	75	off	30	110	100	75	75	112	120	35	200	175	56	35	195	off	off	off	off		100
15		110	75	off	30	110	100	75	75	112	120	35	200	175	off	35	195	off	off	off	off		75
16	102	175	140	off	30	110	100	100	140	off	120	87	162	175	off	87	195	off	off	off	off		75
17	40	175	140	off	30	110	100	100	140	off	120	87	162	175	off	87	195	off	off	off	off		100
18	314	175	140	off	30	110	100	100	140	off	120	87	162	175	off	87	195	off	off	off	off		100
19	49	175	140	off	30	110	100	100	140	off	120	100	162	200	off	100	195	off	off	off	off		100
20	46	227	140	off	30	110	100	100	140	off	120	100	162	200	off	140	195	off	off	off	off	off	
21		227	140	286	30	110	100	100	140	off	120	100	162	200	off	140	195	off	off	off	off	off	
22	25	227	100	286	30	56	100	100	100	off	120	100	160	200	off	100	195	off	off	off	off	off	
23		227	100	271	30	56	100	100	100	off	120	100	160	200	off	100	195	off	off	off	off	off	
24		227	100	271	30	56	100	100	100	off	120	100	160	200	off	100	195	off	off	off	off	off	
25	25	162	50	271	30	56	100	100	100	off	120	100	150	175	off	100	195	off	off	off	off	off	
26		162	50	271	30	56	100	100	off	off	120	100	150	175	off	100	195	off	off	off	off	off	
27		162	50	271	30	56	100	100	off	off	120	100	150	175	off	100	195	off	off	off	off	off	
28	40	227	50	286	30	56	100	50	off	off	120	100	90	175	off	100	195	off	off	off	off	off	
29		227	50	286	30	56	100	50	off	off	120	100	90	175	off	100	195	off	off	off	off	off	
30		227	50	278	30	56	100	50	off	off	120	100	90	175	off	100	125	off	off	off	off	off	
31	35	193	50	278	30	56	100	50	off	off	120	100	90	175	off	100	125	off	off	off	off	off	
TOTAL	963	4549	2350	3255	750	1440	2350	2100	2100	1008	3000	1876	4538	4525	448	1956	4735	249	375	162	0	850	

FILED
BY Molly Bradberry
DEPUTY

2025 SEP 22 AM 8:33

PARK COUNTY
CLERK OF DISTRICT COURT
MOLLY BRADBERRY

CLERK OF DISTRICT COURT
SIXTH JUDICIAL DISTRICT

Molly Bradberry
Pamela Reisenauer, Deputy
Shannon Brown, Deputy
Dustin Brown, Deputy

October 10, 2025

CMR Ranch Owner, LLC
c/o DMS Natural Resources, LLC
602 S. Ferguson Ave, STE 2
Bozeman, MT 59718

Dear Sirs,

You are hereby notified that Richard Sarrazin, Water Commissioner for Rock Creek for the season of 2025 has filed the report from August 1, 2025 through August 31, 2025. That an order has been made apportioning the amount of the compensation and expenses of said commissioner amongst the users of said waters as required by law, and that your proportion there of amounts to $257.39 for Richard Sarrazin which includes Mileage and Workers Compensation. Objections to said order may be made by any persons interested within 20 days after this date, and unless objections are filed thereto as herein specified, said order will be deemed final, and the said above amount will thereupon become due and payable at once and if not paid, execution may be issued against you therefor without further notice.

Sincerely,

Molly Bradberry
Clerk of District Court
Park County Montana 59047

PLEASE MAKE CHECK IN AMOUNT OF $257.39 PAYABLE TO RICHARD SARRAZIN

PLEASE MAIL CHECK TO CLERK OF COURT, PO BOX 437, LIVINGSTON, MT 59047

Post Office Box 437 . Livingston, MT 59047 . Office 406-222-4125 . Fax 406-222-4128 . mbradberry@mt.gov

Water Commissioner Report

Judicial District # 6 County Park Clerk of Court Molly Brackberry
Water Commissioner R. Sarrazin Water Body Rock Creek August 2025

August 2025	Water User Ditch Name	Atkinson	Boyd	CMR	Daniel	rkus Fami	Gilbert
DATE	MILES	Inches	Inches	Inches	Inches	Inches	Inches
1	40	193	0	278.4	0	50	50
2		193	0	278.4	0	50	50
3		193	0	278.4	0	50	50
4	40	193	0	270.8	0	50	50
5		193	0	270.8	0	50	50
6		193	0	270.8	0	50	50
7		193	0	270.8	0	50	50
8		193	0	278.4	0	50	50
9		193	0	278.4	0	50	50
10	42	193	0	278.4	0	50	50
11		193	0	278.4	0	50	50
12	45	227	0	278.4	0	50	50
13		227	0	256.4	0	0	0
14		227	0	256.4	0	0	0
15	45	227	0	256.4	0	0	0
16		227	0	256.4	0	0	0
17	45	227	0	off	0	0	0
18		227	0	off	0	0	0
19	45	227	0	off	0	0	0
20		227	0	off	0	0	0
21		227	0	off	0	0	0
22		227	0	off	0	0	0
23		227	0	off	0	0	0
24		227	0	off	0	0	0
25	35	227	0	off	0	0	0
26		227	0	off	0	0	0
27		227	0	off	0	0	0
28		227	0	off	0	0	0
29		227	0	off	0	0	0
30		227	0	off	0	0	0
31	35	227	0	off	0	0	0
TOTAL	372	6663	0	4336	0	600	600

Commissioner Expenses Rich Sarrazin					
Daily Wage	150	per day	9	days	$ 1350
Mileage	0.7	per mile	372	miles	$ 260.4
ers Comp	100	per month			$ 100
Other Expenses (list)			phone, log books, etc		$ 0
Total Commissioner Expenses for the month					$ 1710.4

Monthly Billing Summary

Water Use	Total Inche	Percent of Total	Monthly Bill
Atkinson	6663	55%	$934.21
Boyd	0	0%	$0.00
CMR	4336	36%	$607.94
Daniel	0	0%	$0.00
rkus Famil	600	5%	$84.12
Gilbert	600	5%	$84.12
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00
0	0	0%	$0.00

cc Water Users August Email
Judge Larsen
Water Court
R Sarrazin
L Atkinson

10-1-25

CLERK OF DISTRICT COURT
SIXTH JUDICIAL DISTRICT

Molly Bradberry
Shannon Brown, Deputy
Dustin Brown, Deputy

November 3, 2025

CMR Ranch Owner LLC
c/o DMS Natural Resources
602 S Ferguson Ave STE 2
Bozeman, MT 59718

Dear Sirs,

You are hereby notified that Richard Sarrazin, Water Commissioner for Rock Creek for the season of 2025 has filed the report from September 1, 2025 through September 30, 2025. That an order has been made apportioning the amount of the compensation and expenses of said commissioner amongst the users of said waters as required by law, and that your proportion there of amounts to $484.24 for Richard Sarrazin which includes Mileage and Workers Compensation. Objections to said order may be made by any persons interested within 20 days after this date, and unless objections are filed thereto as herein specified, said order will be deemed final, and the said above amount will thereupon become due and payable at once and if not paid, execution may be issued against you therefor without further notice.

Sincerely,

Molly Bradberry
Clerk of District Court
Park County Montana 59047

PLEASE MAKE CHECK IN AMOUNT OF $484.24 PAYABLE TO RICHARD SARRAZIN

PLEASE MAIL CHECK TO CLERK OF COURT, PO BOX 437, LIVINGSTON, MT 59047

Post Office Box 437 . Livingston, MT 59047 . Office 406-222-4125 . Fax 406-222-4128 . mbradberry@mt.gov

Water Commissioner Report

Judicial District 6 County Park Clerk of Court Molly Burkbery

Water Commissioner Section Water Body Sept 2022 Trout Creek

September 2022	Water Use Ditch Name	Atkinson	Boyd	CMR	Daniel	arkus Ean	Gilbert	Lannen	Nelson	Michaels	Michaels	Milkovich	Queen	Knutson	Knutson	Smith	Standing	Taylor	Sarrazin	Platt	Platt Cox	Knutson Keefer
DATE	MEDS	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1	xx	232	0	off	0	0	0	0	0	0	0	0	0	xxx	17x	0	7x	12x	0	0	0	0
2		232	0	off	0	0	0	0	0	0	0	0	0	xxx	12x	0	7x	12x	0	0	0	0
3		227	0	off	0	0	0	0	0	0	0	0	0	xxx	17x	0	7x	12x	0	0	0	0
4	xx	227	0	off	0	0	0	0	0	0	0	0	0	xxx	17x	0	7x	12x	0	0	0	0
5	xx	222	0	off	0	0	0	0	0	0	0	0	0	xxx	17x	0	7x	12x	0	0	0	0
6		227	0	off	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
7		222	0	off	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
8		178	0	off	0	0	0	0	0	0	0	0	xxx	17x	0		7x	12x	0	0	0	0
9		178	0	off	0	0	0	0	0	0	0	0	xxx	17x	0		7x	12x	0	0	0	0
10	xx	178	0	off	0	0	0	0	0	0	0	0	xxx	17x	0		7x	12x	0	0	0	0
11	xx	178	0	243.2	0	0	0	0	0	0	0	0	xxx	17x	0		7x	100	0	0	0	0
12	xx	178	0	243.2	0	0	0	0	0	0	0	off	xxx	17x	0	off		100	0	0	0	0
13	xx	142	0	221.2	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
14		142	0	228	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
15		142	0	228	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
16		142	0	243.2	0	0	0	0	0	0	0	off	xxx	17x	0	off		12x	0	0	0	0
17	xx	0	0	178.2	0	0	0	0	0	0	0	off	off	17x	0	off		93	0	0	0	0
18		0	0	178.2	0	0	0	0	0	0	0	off	off	17x	0	off		93	0	0	0	0
19		0	0	168.8	0	0	0	0	0	0	0	off	off	17x	0	off		93	0	0	0	0
20	xx	0	0	181.6	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
21		0	0	243.2	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
22		0	0	141.4	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
23		0	0	188	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
24		0	0	178	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
25		0	0	178	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
26		0	0	178	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
27	xx	0	0	188	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
28		147	0	188	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
29		147	0	188	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
30	xx	85	0	188	0	0	0	0	0	0	0	off	off	17x	0	off		125	0	0	0	0
TOTAL	xx	4414	0	4011.2	0	0	0	0	0	0	0	625	1430	2005	0	625		3691	0	0	0	0

Commissioners Expenses Rich Sarrazin						
Daily						
Water	150	per day	11	days	$	1650
Mileage	0.7	per mile	363	miles	$	423.5
ers Comp	100	per month			$	
Lawyer Fees for Commissioners					$	600
Total Commissioner Expenses for the month					$	2758.5

Water Commissioner Report

Monthly Billing Summary

Water User	Total Inches	Percent of Total	Monthly Bill	Annual Bill to Date
Atkinson	4344	18%	$483.69	
Boyd	0	0%	$0.00	
CMR	4011.2	21%	$484.24	
Daniel	0	0%	$0.00	
arkus Ean	0	0%	$0.00	
Gilbert	0	0%	$0.00	
Lannen	0	0%	$0.00	
Nelson	0	0%	$0.00	
Michaels II	0	0%	$0.00	
Michaels I2	0	0%	$0.00	
Milkovich	625	4%	$81.19	
Queen	1430	8%	$174.83	
Knutson25	2005	23%	$678.68	
Knutson50	0	0%	$0.00	
Smith	625	4%	$81.19	
Standing	3691	19%	$433.08	
Taylor	0	0%	$0.00	
Sarrazin	0	0%	$0.00	
Platt	0	0%	$0.00	
Platt Cox	0	0%	$0.00	
nutson Keef	0	0%	$0.00	
0				
0				

Exhibit 11.f

CMR Ranch Owner, LLC

Park County, MT

N W E S

Temporary Lease

Exhibit 11.f

CMR Ranch Owner, LLC Property Border

Secondary Pump Site from Rainbow Lake

43A 40444 00 & 43A 40446 00 Primary POD; 43A 40464 00 Secondary POD*

43A 40464 00 Primary POD (Rock Lake Dam)*

Conveyance Infrastructure

Upper Criswell Ditch & Laterals

Buried Irrigation Pipeline

Buried Pipeline to Rainbow Lake for Golf Course

Irrigation

43A 40444 00, 43A 40446 00, & 43A 40464 00* Historic POU to Retire, Irrigated Last 5 Years & Used to Determine Leasable Volume (519.9 Acres)

43A 40444 00, 43A 40446 00, & 43A 40464 00* Additional Historic POU to Retire (243.3 Acres)

Proposed Golf Course Irrigation - 43A 40444 00, 43A 40446 00, & 43A 40464 00* (95 Acres)**

*Natural flow claims 43A 40447 00, 43A 40448 00, 43A 40449 00, 43A 40450 00, 43A 40451 00, 43A 40452 00, 43A 40453 00, 43A 40454 00, 43A 40455 00, 43A 40456 00, 43A 40457 00, 43A 40458 00, 43A 40459 00, 43A 40460 00, 43A 40461 00, and 43A 40462 00, as well as stored water claims 43A 40463 00 & 43A 40465 00, are supplemental with the leased rights.

**A total of ~95 acres will be irrigated in association with the golf course in 2026. ~85 acres are golf course turf, depicted on this map. An additional ~10 acres of native grass are also irrigated around the edges of the greens. These ~10 acres of native grass are NOT depicted on this map.

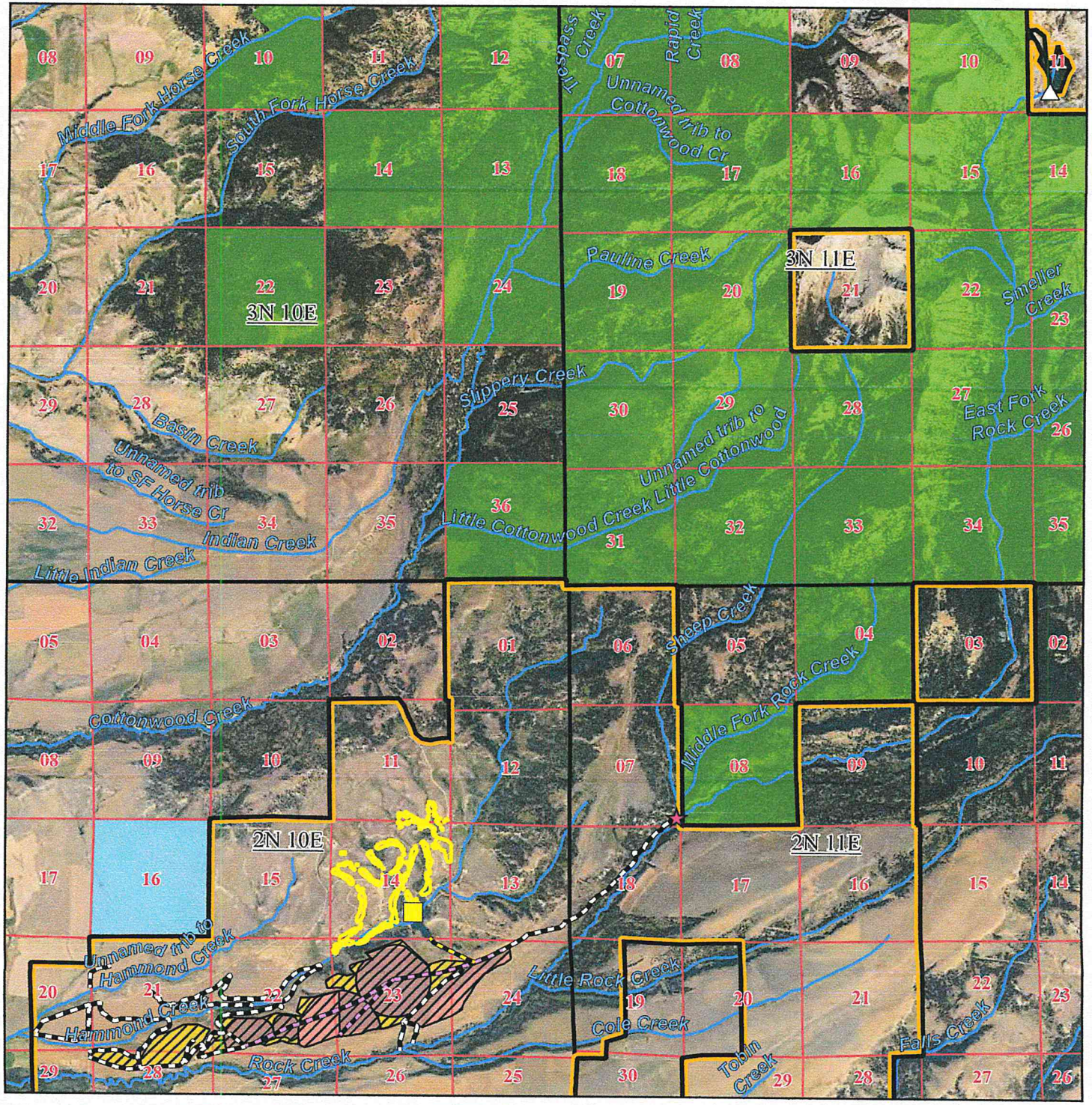
DMS NATURAL RESOURCES

Created 1/9/2026
Aerial Imagery: 2024 NAIP

0 1 2

Miles

Geographic features displayed on the map have not been surveyed by DMS and should not be construed as surveyed. This map includes publicly available data obtained from third-party sources. DMS makes no warranties as to the accuracy of data obtained from third-party sources.



CMR Ranch Owner, LLC

Park County, MT

N W E S

Temporary Lease

CMR Ranch Owner, LLC Property Border

Secondary Pump Site from Rainbow Lake

Conveyance Infrastructure

Upper Criswell Ditch & Laterals

Buried Irrigation Pipeline

Buried Pipeline to Rainbow Lake for Golf Course

Irrigation

43A 40444 00, 43A 40446 00, & 43A 40464 00* Historic POU to Retire, Irrigated Last 5 Years & Used to Determine Leasable Volume (519.9 Acres)

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Proposed Golf Course Irrigation - 43A 40444 00, 43A 40446 00, & 43A 40464 00* (95 Acres)**

*Natural flow claims 43A 40447 00, 43A 40448 00, 43A 40449 00, 43A 40450 00, 43A 40451 00, 43A 40452 00, 43A 40453 00, 43A 40454 00, 43A 40455 00, 43A 40456 00, 43A 40457 00, 43A 40458 00, 43A 40459 00, 43A 40460 00, 43A 40461 00, and 43A 40462 00, as well as stored water claims 43A 40463 00 & 43A 40465 00, are supplemental with the leased rights.

**A total of ~95 acres will be irrigated in association with the golf course in 2026. ~85 acres are golf course turf, depicted on this map. An additional ~10 acres of native grass are also irrigated around the edges of the greens. These ~10 acres of native grass are NOT depicted on this map.

DMS NATURAL RESOURCES

Created 1/9/2026
Aerial Imagery: 2024 NAIP

0 0.45 0.9

Miles

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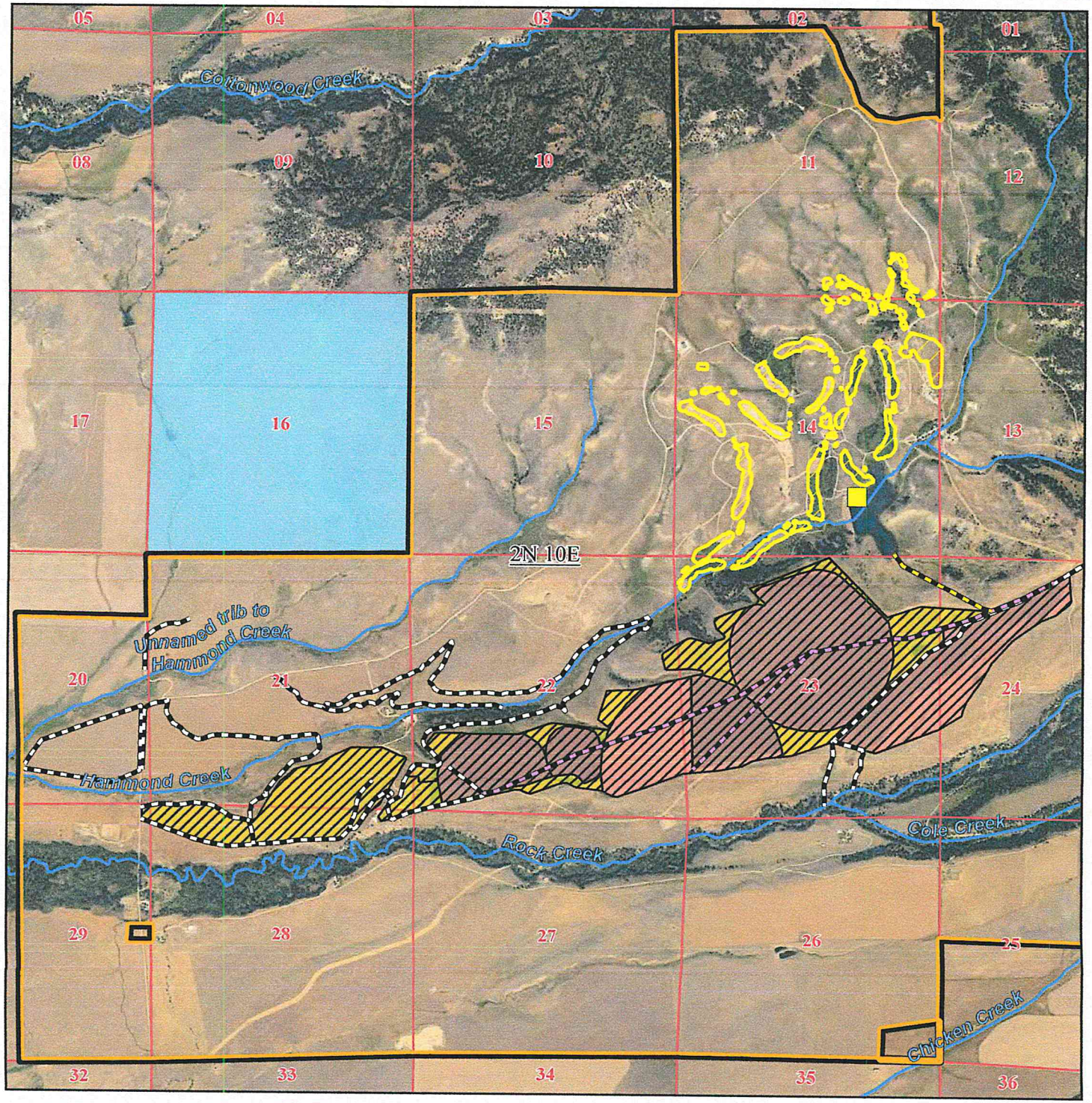


Exhibit 11.g.1

Exhibit 11.g.1

CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 11.g.1

2025 Rock Lake Outlet Flows "CFS"				
Date	CMR	Atkinson/Carlson	Natural	Total
22-Jul	7.146	1.3	2.97	11.416
23-Jul	7.146	1.3	3.84	12.286
24-Jul	7.146	1.3	4.39	12.836
25-Jul	7.146	1.3	4.37	12.816
26-Jul	7.146	1.3	4.5	12.946
27-Jul	7.146	1.3	4.42	12.866
28-Jul	7.146	1.3	4.32	12.766
29-Jul	7.146	1.3	4.6	13.046
30-Jul	7.146	1.3	4.4	12.846
31-Jul	7.146	1.3	4.03	12.476
1-Aug	7.146	1.3	4.37	12.816
2-Aug	7.146	1.3	4.37	12.816
3-Aug	7.146	1.3	3.41	11.856
4-Aug	7.146	1.3	2.3	10.746
5-Aug	7.146	1.3	1.49	9.936
6-Aug	7.146	1.3	0.85	9.296
7-Aug	7.146	1.3	2.65	11.096
8-Aug	7.146	1.3	4.59	13.036
9-Aug	7.146	1.3	2.55	10.996
10-Aug	7.146	1.3	0.7	9.146
11-Aug	7.146	1.3	1.57	10.016
12-Aug	7.146	1.3	2.92	11.366
13-Aug	7.146	1.3	3.31	11.756
14-Aug	7.146	1.3	1.94	10.386
15-Aug	7.146	1.3	0.54	8.986
16-Aug	0	1.3	2.38	3.68
17-Aug	0	1.3	2.96	4.26
18-Aug	0	1.3	3.41	4.71
19-Aug	0	1.3	3.01	4.31
20-Aug	0	1.3	2.77	4.07
21-Aug	0	1.3	2.73	4.03
22-Aug	0	1.3	2.72	4.02
23-Aug	0	1.3	2.38	3.68
24-Aug	0	1.3	2.22	3.52
25-Aug	0	1.3	2.34	3.64
26-Aug	0	1.3	2.31	3.61

CMR Ranch Owner, LLC
Form 650 Temporary Lease of Appropriation Right
43A 40446 00, 43A 40444 00, and 43A 40464 00
Exhibit 11.g.1

2025 Rock Lake Outlet Flows "CFS"				
Date	CMR	Atkinson/Carlson	Natural	Total
27-Aug	0	1.3	2.12	3.42
28-Aug	0	1.3	2.87	4.17
29-Aug	0	1.3	4.6	5.9
30-Aug	0	1.3	8.89	10.19
31-Aug	0	1.3	13.16	14.46
1-Sep	0	1.3	7.54	8.84
2-Sep	0	1.3	2.51	3.81
3-Sep	0	1.3	2.76	4.06
4-Sep	7.146	1.3	2.54	10.986
5-Sep	7.146	1.3	1.36	9.806
6-Sep	7.146	1.3	1.58	10.026
6-Sep	0	1.3	1.58	2.88
7-Sep	0	0	2.41	2.41
8-Sep	0	0	2.13	2.13
9-Sep	0	0	1.89	1.89
10-Sep	9	0	2.43	11.43
11-Sep	9	0	0.98	9.98
12-Sep	9	0	1.14	10.14
13-Sep	7.146	0	1.88	9.026
14-Sep	7.146	0	1.39	8.536
15-Sep	7.146	0	1.34	8.486
16-Sep	7.146	0	3.3	10.446
17-Sep	7.146	0	4.3	11.446
18-Sep	7.146	0	10.84	17.986
19-Sep	7.146	0	5.01	12.156
20-Sep	5.4	0	4.72	10.12
21-Sep	5.4	0	0.18	5.58
22-Sep	5.4	0	2.1	7.5
23-Sep	5.4	0	2.93	8.33
24-Sep	5.4	0	2.47	7.87
25-Sep	5.4	0	2.2	7.6
26-Sep	5.4	0	1.8	7.2
27-Sep	5.4	0	1.44	6.84
28-Sep	5.4	0	1.81	7.21
29-Sep	5.4	0	2.09	7.49
30-Sep	0	0	0	0

Exhibit 11.g.2

Exhibit 11.g.2

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date: 8/12/2025 Sheet: 1
Project No: 23007
Project Name: Crazy Mountain Ranch - Flow Monitoring
By: RKK Ckd. By: RL 8/12/25
Location: \\Hydro-NAS\data\project\23007 Rock Lake Flow Monitoring_13_Downstream Flow Monitoring\ALL FLOWS\[Rock Creek Flow Measurements.xlsx]September 4th

I. Purpose:

1 To Determine the Flow Rate in Rock Creek below the Criswell Diversion.

II. References:

1 Hydrometrics HSOP-240 Streamflow Maeasurment Using an Electromagnetic Velocity Meter (Hach FH950).

III. Assumptions:

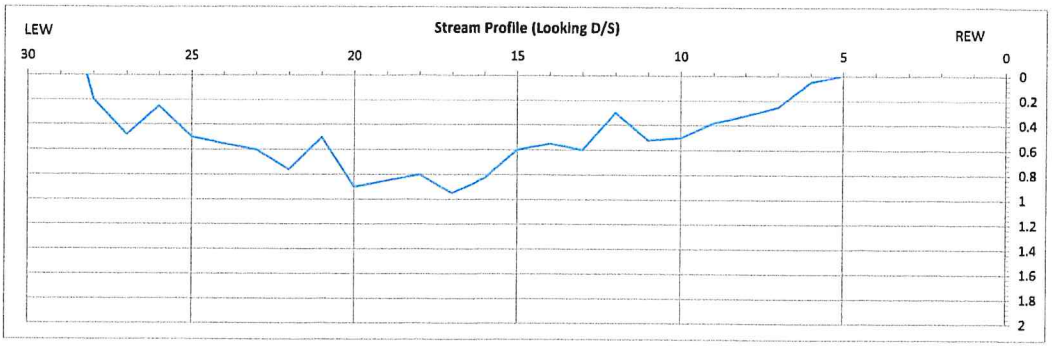
1 See Streamflow Measurements and References.

IV. Calculations

SW_RC_BCD_01			8/11/2025	2:00 PM		250811001
Dist (ft)	Width[1] (sq ft)	Depth (ft)	Area (sq ft)	Velocity (fps)	Discharge (cfs)	Discharge Fraction (%)
28.2	LEW	0	-	-	-	-
28	0.60	0.20	0.12	0.00	0.00	0.0%
27	1.00	0.48	0.48	0.33	0.16	0.9%
26	1.00	0.25	0.25	0.65	0.16	0.9%
25	1.00	0.50	0.50	0.96	0.48	2.7%
24	1.00	0.55	0.55	1.11	0.61	3.4%
23	1.00	0.60	0.60	0.98	0.59	3.3%
22	1.00	0.76	0.76	1.05	0.80	4.4%
21	1.00	0.50	0.50	2.12	1.06	5.9%
20	1.00	0.90	0.90	2.22	2.00	11.1%
19	1.00	0.85	0.85	2.41	2.05	11.4%
18	1.00	0.80	0.80	2.19	1.75	9.8%
17	1.00	0.95	0.95	1.85	1.76	9.8%
16	1.00	0.83	0.83	1.29	1.07	6.0%
15	1.00	0.60	0.60	1.75	1.05	5.9%
14	1.00	0.55	0.55	1.93	1.06	5.9%
13	1.00	0.60	0.60	2.04	1.22	6.8%
12	1.00	0.30	0.30	1.25	0.38	2.1%
11	1.00	0.52	0.52	1.41	0.73	4.1%
10	1.00	0.50	0.50	1.15	0.58	3.2%
9	1.00	0.38	0.38	0.94	0.36	2.0%
8	1.00	0.32	0.32	0.27	0.09	0.5%
7	1.00	0.25	0.25	0.00	0.00	0.0%
6	0.95	0.05	0.05	0.00	0.00	0.0%
5.1	REW	0	-	-	-	-

[1] Note that the calculated width in this table is determined by the mid-section method, per Turnipseed and Sauer (2010) calculated as ½ the distance from the previous vertical measurement + ½ the distance to the next vertical measurement

Total Flow:	**17.9**	cfs
Measurement Accuracy:	**Fair**	
	+/- 8%	
Upper Confidence Band	19.4	cfs
Lower Confidence Band	16.5	cfs



IV. Conclusions

1 Total Measured Flow is 17.9 cfs.

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date: 9/5/2025 Sheet: 1
Project No: 23007
Project Name: Crazy Mountain Ranch - Flow Monitoring
By: RL Ckd. By: RKK
Location: \\hydro-nh26\data\project\23007 Rock Lake Flow Monitoring_13_Downstream Flow Monitoring\ALL FLOWS\Rock Creek Flow Measurements.xls]September 4th

I. Purpose:

1 To Determine the Flow Rate in Rock Creek below the Criswell Diversion.

II. References:

1 Hydrometrics HSOP-24 Streamflow Maeasurment Using an Electromagnetic Velocity Meter (Hach FH950).

III. Assumptions:

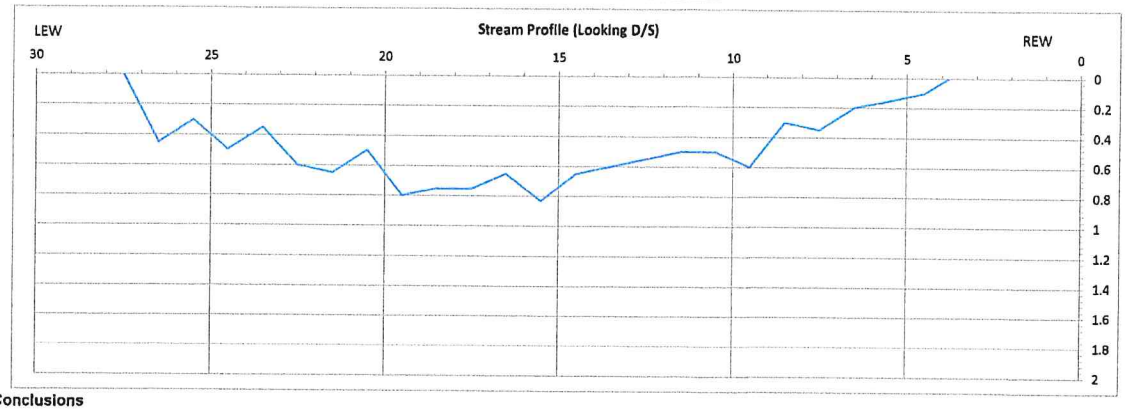
1 See Streamflow Measurements and References.

IV. Calculations

SW_RC_BCD_01			9/4/2025	10:30 AM		250911001
Dist (ft)	Width[1] (sq ft)	Depth (ft)	Area (sq ft)	Velocity (fps)	Discharge (cfs)	Discharge Fraction (%)
27.5	LEW	0	-	-	-	-
26.5	1.00	0.45	0.45	0.26	0.12	1.1%
25.5	1.00	0.30	0.30	0.00	0.00	0.0%
24.5	1.00	0.50	0.50	0.92	0.46	4.2%
23.5	1.00	0.35	0.35	0.61	0.21	1.9%
22.5	1.00	0.60	0.60	0.35	0.21	1.9%
21.5	1.00	0.65	0.65	0.91	0.59	5.4%
20.5	1.00	0.50	0.50	1.85	0.93	8.4%
19.5	1.00	0.80	0.80	1.85	1.48	13.5%
18.5	1.00	0.75	0.75	1.80	1.35	12.3%
17.5	1.00	0.75	0.75	1.31	0.98	8.9%
16.5	1.00	0.65	0.65	1.38	0.90	8.2%
15.5	1.00	0.83	0.83	0.08	0.07	0.6%
14.5	1.00	0.65	0.65	1.36	0.88	8.0%
13.5	1.00	0.60	0.60	1.09	0.65	6.0%
12.5	1.00	0.55	0.55	1.61	0.89	8.1%
11.5	1.00	0.50	0.50	0.75	0.38	3.4%
10.5	1.00	0.50	0.50	0.77	0.39	3.5%
9.5	1.00	0.60	0.60	0.62	0.37	3.4%
8.5	1.00	0.30	0.30	0.25	0.08	0.7%
7.5	1.00	0.35	0.35	0.18	0.06	0.6%
6.5	1.00	0.20	0.20	0.00	0.00	0.0%
5.5	1.00	0.15	0.15	0.00	0.00	0.0%
4.5	0.85	0.10	0.09	0.00	0.00	0.0%
3.8	REW	0	-	-	-	-

[1] Note that the calculated width in this table is determined by the mid-section method, per Turnipseed and Sauer (2010) - calculated as ½ the distance from the previous vertical measurement + ½ the distance to the next vertical measurement

	Total Flow:	11.0 cfs
Measurement Accuracy:	Fair	
	+/- 8%	
Upper Confidence Band	11.9	cfs
Lower Confidence Band	10.1	cfs



IV. Conclusions

1 Total Measured Flow is 11.0 cfs.

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date: 9/14/2025 Sheet: 1
Project No: 23007
Project Name: Crazy Mountain Ranch - Flow Monitoring
By: RL Ckd. By: RKK
Location: \\hydro-nas05\data\project\23007 Rock Lake Flow Monitoring_13_Downstream Flow Monitoring\ALL FLOWS\[Rock Creek Flow Measurments.xlsx]September 4th

I. Purpose:

1 To Determine the Flow Rate in Rock Creek below the Criswell Diversion.

II. References:

1 Hydrometrics HSOP-240 Streamflow Maeasurment Using an Electromagnetic Velocity Meter (Hach FH950).

III. Assumptions:

1 See Streamflow Measurements and References.
2 CP Elevation not a defined elevation. Elevation is relative to the location of the level.

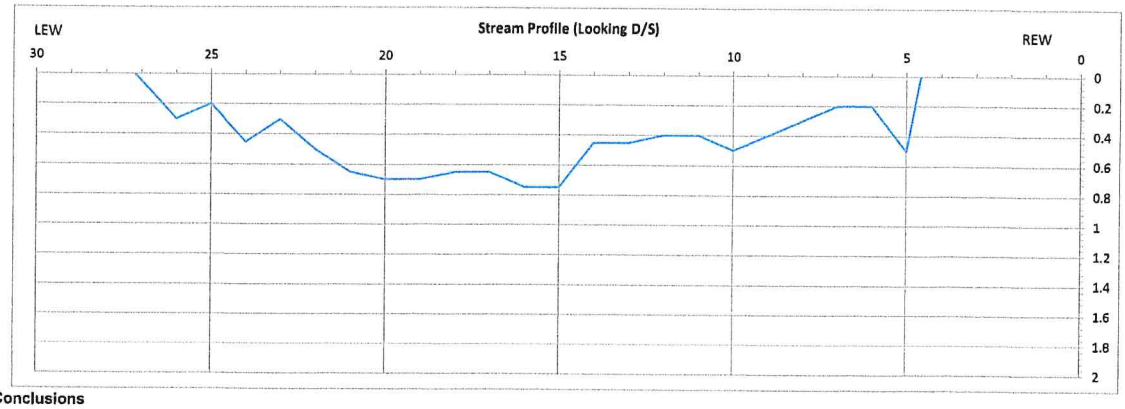
IV. Calculations

CP Elevation	5.58	(ft)
Stream Elevation	8.46	(ft)
Stream Stage Relative to CP	-2.88	(ft)

SW_RC_BCD_01			9/14/2025	4:00 PM		
Dist	Width[1]	Depth	Area	Velocity	Discharge	Discharge Fraction
(ft)	(sq ft)	(ft)	(sq ft)	(fps)	(cfs)	(%)
27.2	LEW	0	-	-	-	-
26	1.10	0.30	0.33	0.04	0.01	0.1%
25	1.00	0.20	0.20	0.33	0.07	0.5%
24	1.00	0.45	0.45	0.92	0.41	3.2%
23	1.00	0.30	0.30	0.75	0.23	1.7%
22	1.00	0.50	0.50	0.85	0.43	3.2%
21	1.00	0.65	0.65	1.36	0.88	6.7%
20	1.00	0.70	0.70	1.77	1.24	9.5%
19	1.00	0.70	0.70	2.61	1.83	13.9%
18	1.00	0.65	0.65	2.15	1.40	10.7%
17	1.00	0.65	0.65	1.91	1.24	9.5%
16	1.00	0.75	0.75	1.84	1.38	10.5%
15	1.00	0.75	0.75	1.30	0.98	7.4%
14	1.00	0.45	0.45	1.46	0.66	5.0%
13	1.00	0.45	0.45	1.66	0.75	5.7%
12	1.00	0.40	0.40	1.28	0.51	3.9%
11	1.00	0.40	0.40	0.47	0.19	1.4%
10	1.00	0.50	0.50	0.77	0.39	2.9%
9	1.00	0.40	0.40	0.94	0.38	2.9%
8	1.00	0.30	0.30	0.23	0.07	0.5%
7	1.00	0.20	0.20	0.38	0.08	0.6%
6	1.00	0.20	0.20	0.00	0.00	0.0%
5	0.70	0.50	0.35	0.00	0.00	0.0%
4.6	REW	0	-	-	-	-

[1] Note that the calculated width in this table is determined by the mid-section method, per Turnipseed and Sauer (2010) - calculated as ½ the distance from the previous vertical measurement + ½ the distance to the next vertical measurement

Total Flow:	13.1	cfs
Measurement Accuracy:	Poor	
	+/- 14%	
Upper Confidence Band	14.9	cfs
Lower Confidence Band	11.3	cfs



IV. Conclusions

1 Total Measured Flow is 13.1 cfs.

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date: 9/29/2025 Sheet: 1
Project No: 23007
Project Name: Crazy Mountain Ranch - Flow Monitoring
By: RL Ckd. By: RKK
Location: \\hydro-kh29\data\project\23007 Rock Lake Flow Monitoring_13_Downstream Flow Monitoring\ALL FLOWS\[Rock Creek Flow Measurements.xlsx]September 4th

I. Purpose:

1 To Determine the Flow Rate in Rock Creek below the Criswell Diversion.

II. References:

1 Hydrometrics HSOP-240 Streamflow Measurement Using an Electromagnetic Velocity Meter (Hach FH950).

III. Assumptions:

1 See Streamflow Measurements and References.

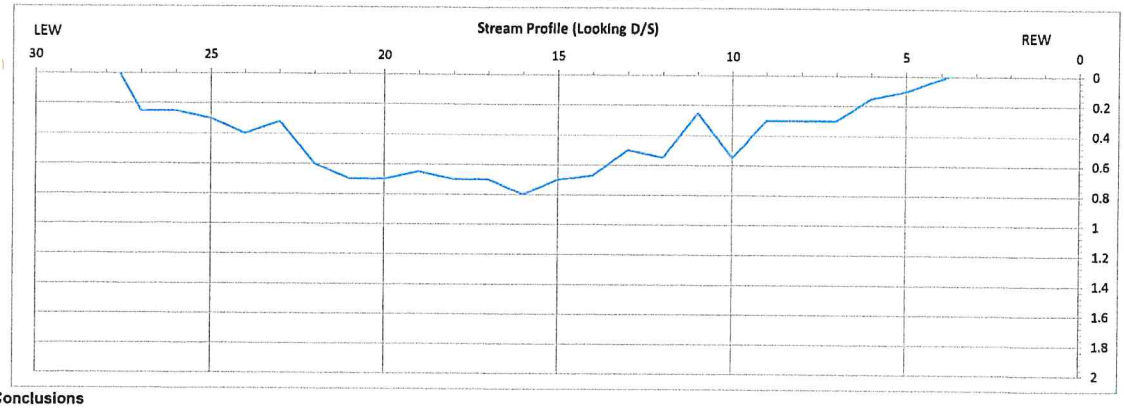
IV. Calculations

CP Elevation	0	(ft)
Stream Elevation	2.82	(ft)
Stream Stage Relative to CP	-2.82	(ft)

SW_RC_BCD_01			9/29/2025	11:45 AM		
Dist (ft)	Width[1] (sq ft)	Depth (ft)	Area (sq ft)	Velocity (fps)	Discharge (cfs)	Discharge Fraction (%)
27.6	LEW	0	-	-	-	-
27	0.80	0.25	0.20	0.00	0.00	0.0%
26	1.00	0.25	0.25	0.90	0.23	1.4%
25	1.00	0.30	0.30	0.98	0.29	1.9%
24	1.00	0.40	0.40	1.01	0.40	2.6%
23	1.00	0.32	0.32	0.90	0.29	1.8%
22	1.00	0.60	0.60	0.91	0.55	3.5%
21	1.00	0.70	0.70	1.58	1.11	7.0%
20	1.00	0.70	0.70	2.13	1.49	9.4%
19	1.00	0.65	0.65	2.32	1.51	9.5%
18	1.00	0.70	0.70	2.61	1.83	11.5%
17	1.00	0.70	0.70	1.89	1.32	8.4%
16	1.00	0.80	0.80	1.81	1.45	9.2%
15	1.00	0.70	0.70	1.66	1.16	7.3%
14	1.00	0.67	0.67	1.55	1.04	6.6%
13	1.00	0.50	0.50	1.84	0.92	5.8%
12	1.00	0.55	0.55	1.59	0.87	5.5%
11	1.00	0.25	0.25	0.57	0.14	0.9%
10	1.00	0.55	0.55	1.12	0.62	3.9%
9	1.00	0.30	0.30	1.09	0.33	2.1%
8	1.00	0.30	0.30	0.56	0.17	1.1%
7	1.00	0.30	0.30	0.33	0.10	0.6%
6	1.00	0.15	0.15	0.02	0.00	0.0%
5	1.10	0.10	0.11	0.07	0.01	0.0%
3.8	REW	0				

[1] Note that the calculated width in this table is determined by the mid-section method, per Turnipseed and Sauer (2010) - calculated as ½ the distance from the previous vertical measurement + ½ the distance to the next vertical measurement

Total Flow:	15.8	cfs
Measurement Accuracy:	Fair	
	+/- 8%	
Upper Confidence Band	17.1	cfs
Lower Confidence Band	14.6	cfs



IV. Conclusions

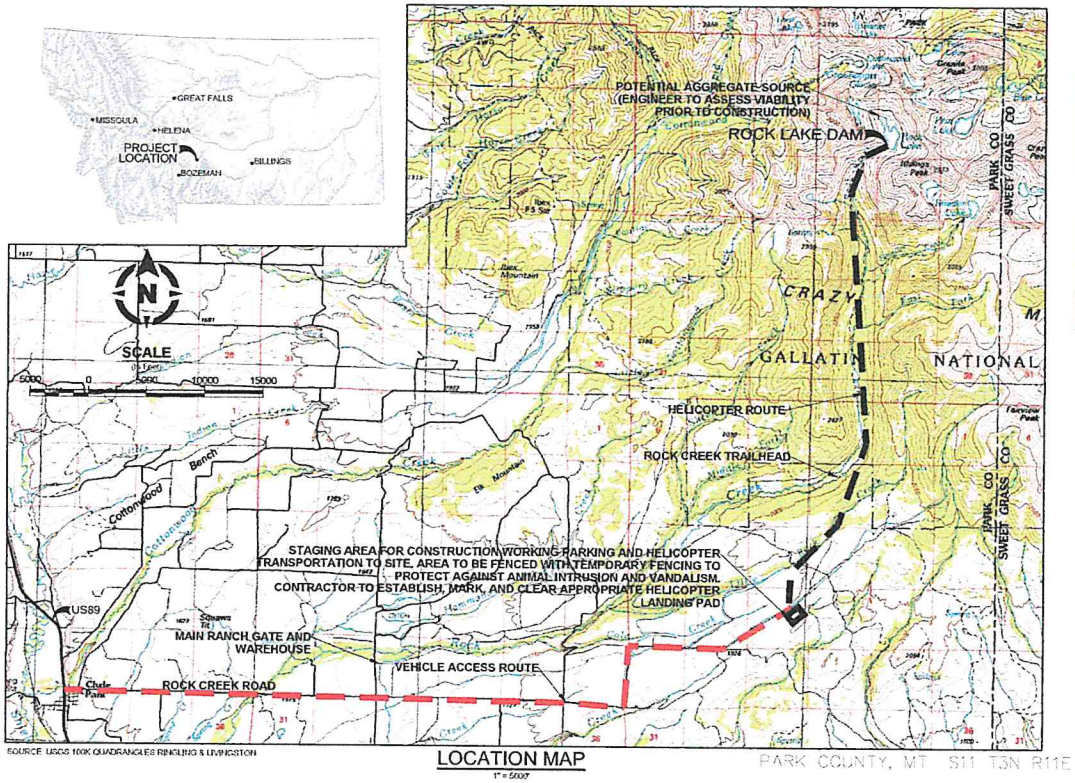
1 Total Measured Flow is 15.8 cfs.

Exhibit 11.g.3

Exhibit 11.g.3

EXHIBIT 5 - PROJECT DOCUMENTS

THE CLUB AT CRAZY MOUNTAIN RANCH
ROCK LAKE DAM MONITORING
AUGUST, 2024

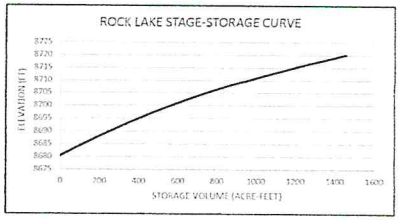


SOURCE: USGS 100K QUADRANGLES RINGLING & LIVINGSTON

LOCATION MAP
1" = 5000'

PARK COUNTY, MT S11 T3N R11E

PLAN
NO SCALE



1 DETAIL
SCALE: NTS
STAGE-STORAGE CURVE

SHEET NO.	SHEET TITLE
1	TITLE, LOCATION, AND SHEET INDEX
2	ROCK LAKE MONITORING OVERALL PLAN
3	GATEHOUSE MODIFICATIONS
4	DETAILS
5	PHOTOGRAPHIC SITE PLAN

OWNER CONTACT:
CMR RANCH OWNER LLC
JP DELAURIER
PO BOX 37
CLYDE PARK, MT 59018
(406) 823-9105

ENGINEER:
HYDROMETRICS, INC.
3020 BOZEMAN AVENUE
HELENA, MT. 59601

CONTACT:
KARL KINGERY, P.E.
(406) 443-4150
CELL: (406) 461-2757

COORDINATE SYSTEM

HORIZONTAL DATUM
NORTH AMERICAN DATUM OF 1983 (NAD 83). MODIFIED MONTANA STATE PLANE GRID NORTH

VERTICAL DATUM
LOCAL COORDINATE SYSTEM 61.72 FEET BELOW NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (GEOID 12A)

CONTROL POINT
CP1 (SE&A AC)
NORTH LATITUDE: 46.0186288
WEST LONGITUDE: 110.3313026
NORTHING: 645961.80
EASTING 1757404.49
ELEVATION 8734.04

NOTES:
1. THE LOCAL DATUM USED BY HYDROMETRICS, INC IN THE 2013 ROCK LAKE DAM CONSTRUCTION DOCUMENTS AND SHOWN ON THIS DRAWING REFERENCES AN AS-BUILT TOP OF DAM ELEVATION OF 8726.27', A SURVEY PERFORMED BY STAHLY ON OCTOBER 07, 2022 AND TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) LISTS THE SAME LOCATION AND ELEVATION AS 8731.99'; THEREFORE THERE IS A +61.72' CHANGE IN ELEVATION REQUIRED TO CONVERT ELEVATIONS REFERENCING THE 2013 LOCAL DATUM TO NAVD 88.
2. ELEVATIONS SHOWN ON THIS SHEET REFERENCE THE LOCAL DATUM USED IN THE 2013 ROCK LAKE DAM CONSTRUCTION DOCUMENTS. TOPOGRAPHY GATHERED BY STAHLY ON 10/07/22 AND ADJUSTED BY -61.72' TO MATCH LOCAL DATUM.
3. STORAGE-GATE-DISCHARGE RELATIONSHIP SHALL BE DEVELOPED AFTER INSTALLATION OF THE MONITORING SYSTEM. FLUME DISCHARGE RELATIONSHIP SHALL BE CALIBRATED BASED ON VOLUME CHANGE IN RESERVOIR.
4. ELEVATIONS SHOWN ON DRAWING SHALL BE CONFIRMED PRIOR TO CONSTRUCTION.
5. ROCK LAKE STAGE STORAGE CURVE BASED ON OCTOBER 07, 2022 SURVEY OF LAKE BY STAHLY. LAKE ELEVATION WAS AT 8681.45' ON DATE OF SURVEY.

NO	BY	DATE	DESCRIPTION

REVISIONS

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Project No. 23007
DRAWN BY AL 8/19/24
CHECKED BY KMK 08/17/2024
APPROVED BY
SCALE: AS NOTED

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

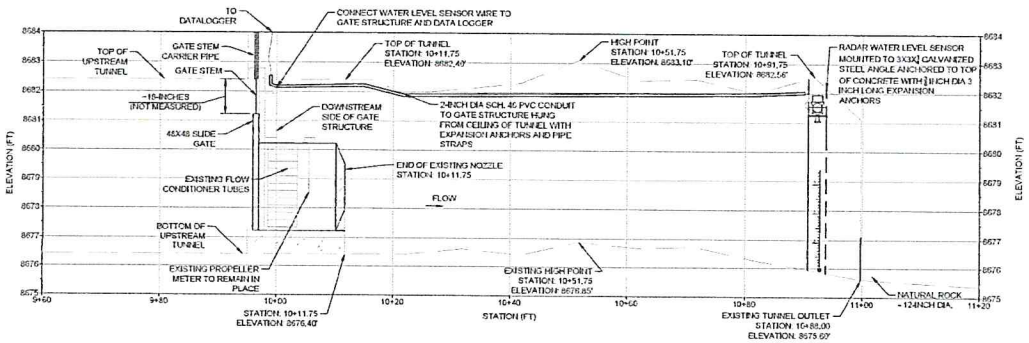
CLUB AT CRAZY MOUNTAIN RANCH - ROCK LAKE MONITORING

TITLE, LOCATION, AND SHEET INDEX

DRAWING FILE NUMBER
2300701H003
AUTOCAD 2024 DRAWING (DWG)

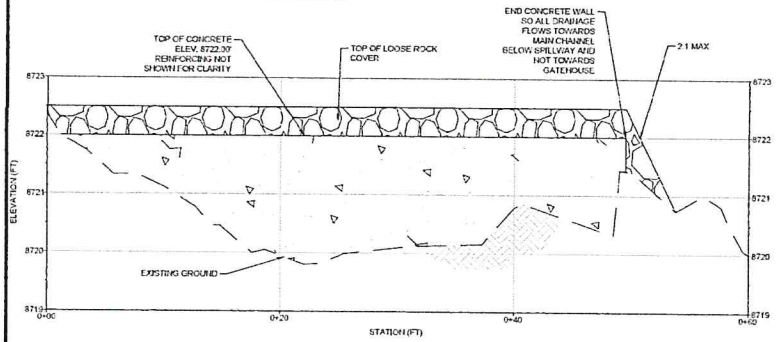
SHEET NUMBER 1

REV

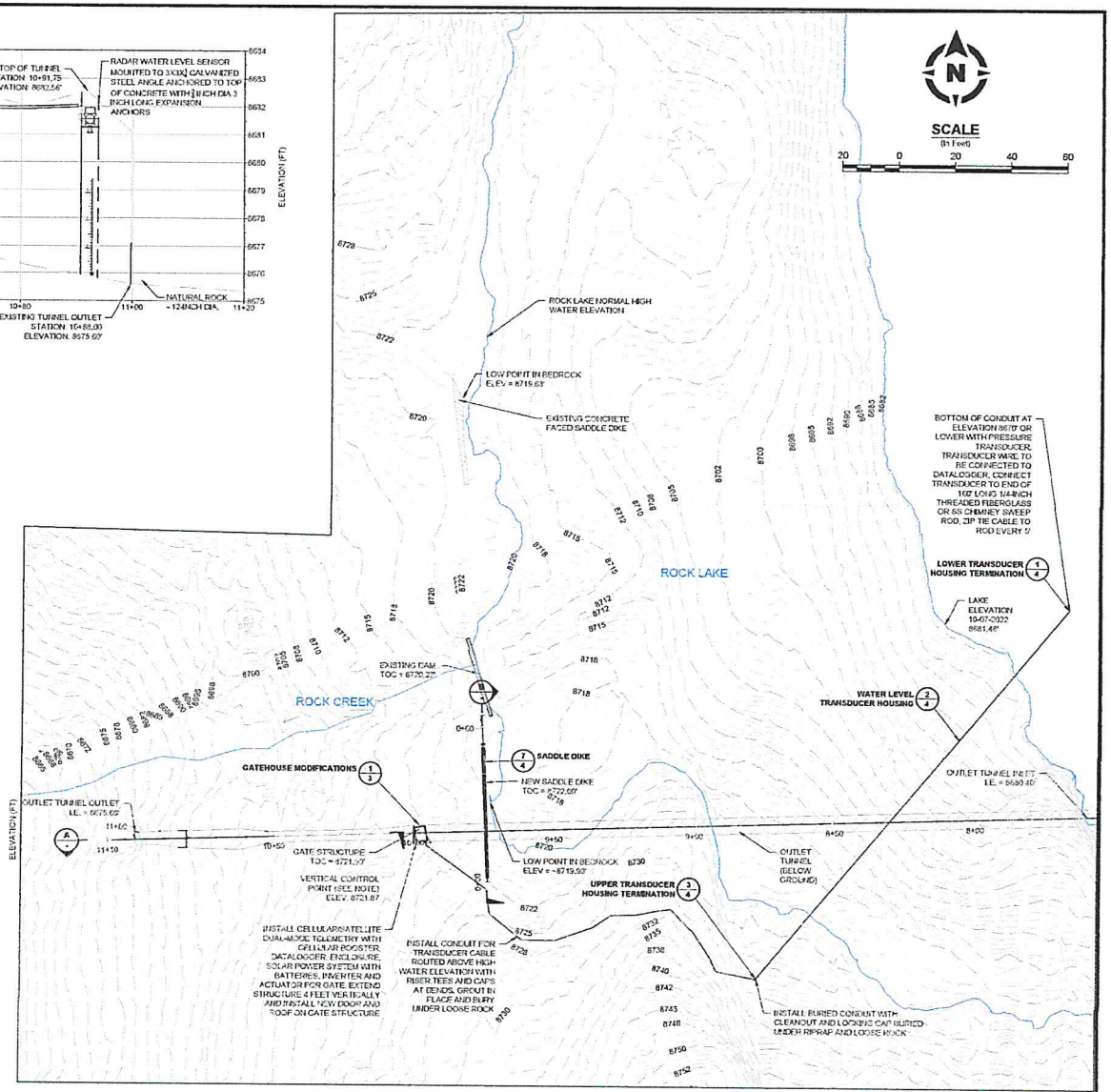


A SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

1 DETAIL
SCALE: 1" = 5'
MEASURING FLUME



B SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



REVISIONS	NO	BY	DATE	DESCRIPTION

REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

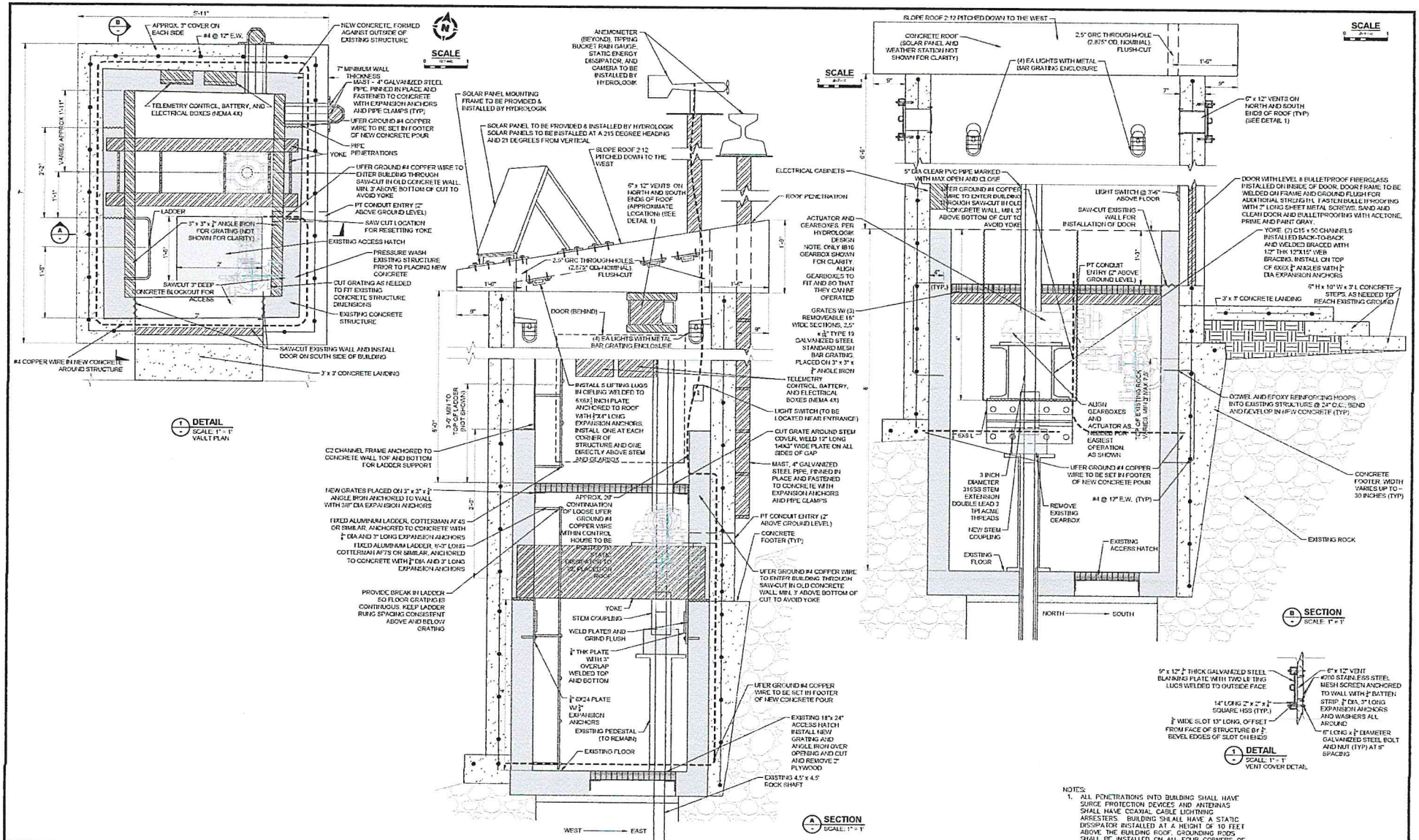
Project No.: 23007
DRAWN BY: RMK 8/17/24
CHECKED BY:
APPROVED BY:
SCALE: AS NOTED

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

CLUB AT CRAZY MOUNTAIN RANCH - ROCK LAKE MONITORING

ROCK LAKE MONITORING OVERALL PLAN

DRAWING FILE NUMBER: 2300701H001
AUTOCAD 2004 DRAWING (DWG)
SHEET NUMBER: 2
REV: Δ



REVISIONS	NO	BY	DATE	DESCRIPTION

REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Project No.:	23007
DRAWN BY	AL
CHECKED BY	
APPROVED BY	
SCALE:	AS NOTED

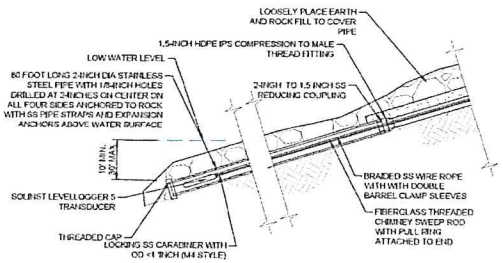
E:\Users\ol\Dropbox\hydro-togo-png.png

Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

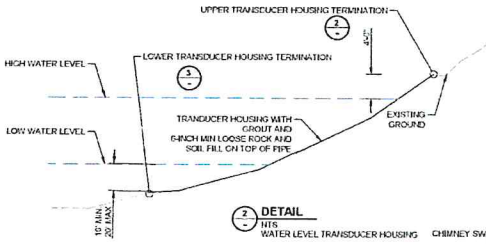
CLUB AT CRAZY MOUNTAIN RANCH - ROCK LAKE MONITORING

GATEHOUSE MODIFICATIONS

DRAWING FILE NUMBER: 2300701H004
AUTOCAD 2004 DRAWING (DWG)
SHEET NUMBER: 3
REV: A

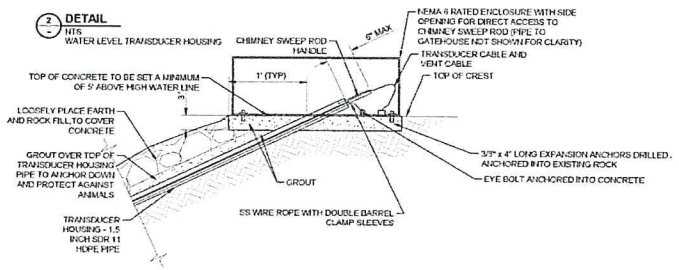


1 DETAIL
NTS
LOWER TRANSDUCER HOUSING TERMINATION



NOTES:
1. WATER LEVEL SHALL BE SURVEYED AT THE TIME OF INSTALLATION OF THE PRESSURE TRANSDUCER. A RECORD SHALL BE MADE IN THE RECORD DRAWINGS OF THE WATER LEVEL PRESENT AT THE TIME OF THE PRESSURE TRANSDUCER INSTALLATION.

2 DETAIL
NTS
WATER LEVEL TRANSDUCER HOUSING



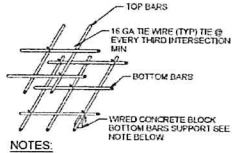
3 DETAIL
NTS
UPPER TRANSDUCER HOUSING TERMINATION

LENGTH*			
BAR SIZE	HOOK (X)	LAP (L)	EMBEDMENT (L)
#4	8"	18" (24")	14" (19")

* USE LENGTH IN PARENTHESIS FOR WALL HORIZONTAL REBARS AND SLAB BARS WITH 12" OR MORE OF FRESH CONCRETE UNDERNEATH.

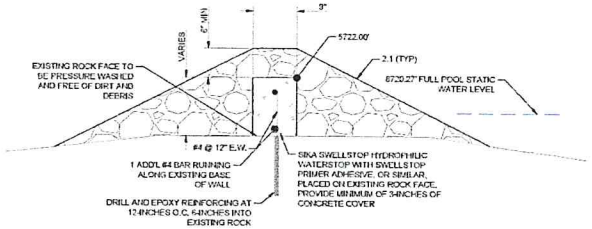
NOTES:
1. USE LENGTHS IN THESE TABLES UNLESS OTHERWISE INDICATED ON DESIGN DRAWINGS.
2. TABLES ARE FOR CONCRETE WITH A COMPRESSIVE STRENGTH f'c OF 4,000 P.S.I. AND GRADE 60 REINFORCING STEEL (Fy = 60,000 P.S.I.) ONLY.
3. IF REINFORCING STEEL IS EPOXY COATED, MULTIPLY THE LAB AND EMBEDMENT LENGTHS BY 1.5.
4. TO SPLICE BARS OF DIFFERENT SIZES, USE A LAP LENGTH EQUAL TO THE LARGER OF THE EMBEDMENT LENGTH OF THE LARGER BAR AND THE LAP LENGTH OF THE SMALLER BAR.
5. EXTEND DOWEL BARS AN EMBEDMENT LENGTH INTO THE SECOND MEMBER OR ACROSS THE CONSTRUCTION JOINT UNLESS IT IS SHOWN TO SPLICE WITH ANOTHER BARS OR EXTEND TO THE FAR SIDE OF THE MEMBER AND END WITH A STANDARD HOOK.

4 DETAIL
NTS
REINFORCING TERMINATION LENGTHS

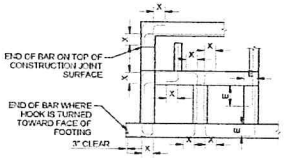


NOTES:
1. METAL BAR SUPPORTS, IF USED IN SLABS NOT ON GROUND, SHALL NOT MAKE CONTACT WITH FORMS

5 DETAIL
NTS
TYPICAL REINFORCING LAYOUT



7 DETAIL
NTS
SADDLE DIKE



6 DETAIL
NTS
TYPICAL REINFORCING AT CORNERS

REVISIONS	NO	BY	DATE	DESCRIPTION

REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Project No.: 23007			
DRAWN BY	RKK	5/17/24	
CHECKED BY			
APPROVED BY			
SCALE AS NOTED			

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

CLUB AT CRAZY MOUNTAIN RANCH - ROCK LAKE MONITORING

DETAILS

DRAWING FILE NUMBER: 2300701H002
AUTOCAD 2004 DRAWING (DWG)
SHEET NUMBER: 4
REV

ROCK LAKE DAM

SITE PHOTO
NO SCALE

LEGEND
P4 PHOTO NUMBER & DIRECTION

P1 EXISTING DAM

P2 EXISTING DAM AND GATEHOUSE (BACKGROUND)

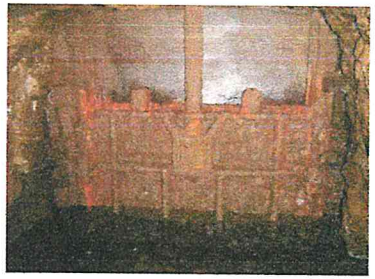
P3 EXISTING GATEHOUSE INTERIOR AND GEARBOX

P4 EXISTING SHAFT BELOW GAEHOUSE

P5 EXISTING TUNNEL OUTLET

P6 EXISTING TUNNEL CONSTRICTION

P7 EXISTING OUTLET PIPE



P8 EXISTING GATE (FROM UPSTREAM SIDE)

REVISIONS	NO	BY	DATE	DESCRIPTION

REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Project No.: 23007
DRAWN BY: AL
CHECKED BY:
APPROVED BY:
SCALE: AS NOTED

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4152

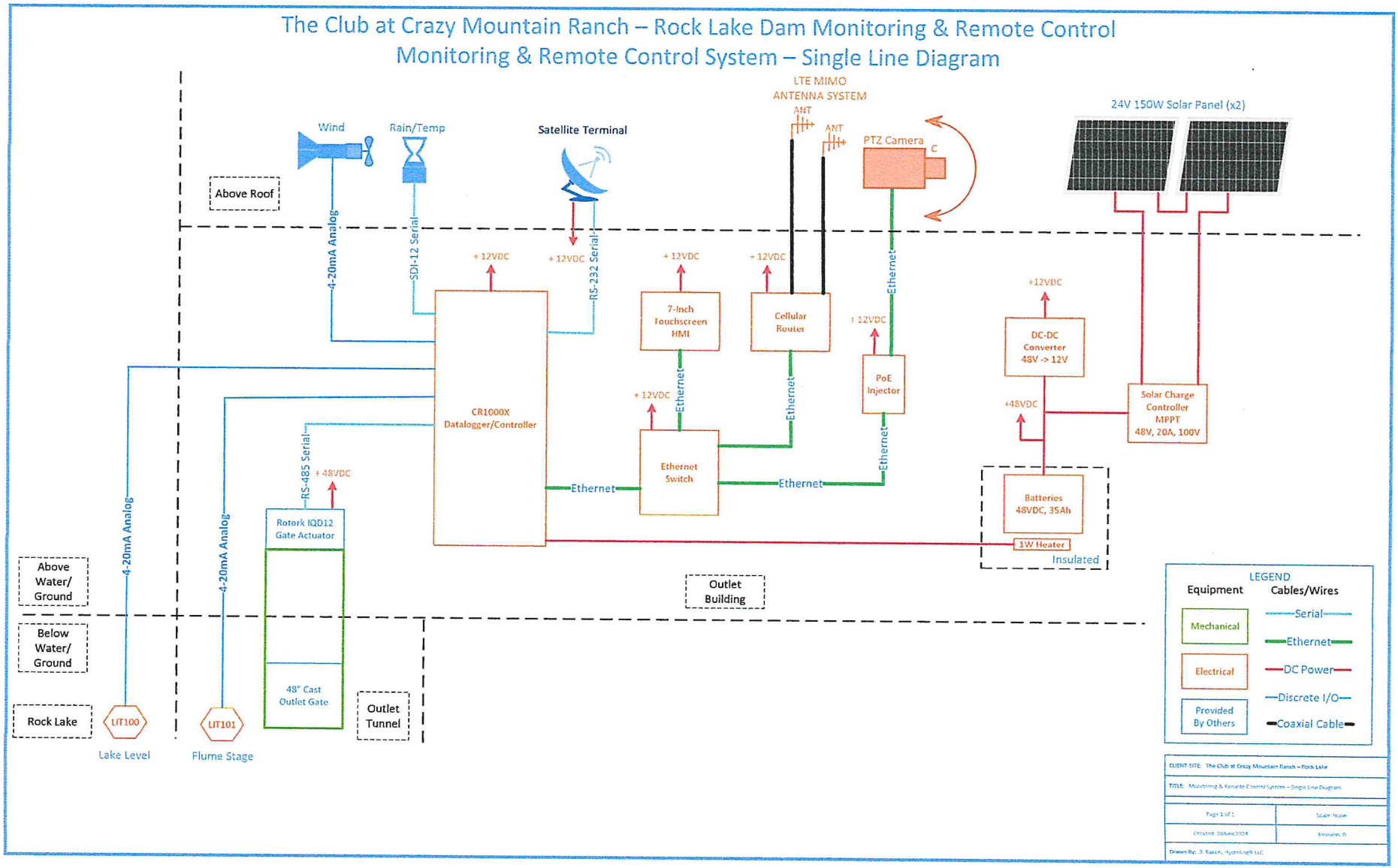
CLUB AT CRAZY MOUNTAIN RANCH - ROCK LAKE MONITORING

PHOTOGRAPHIC SITE PLAN

DRAWING FILE NUMBER: 2300701H003
AUTOCAD 2004 DRAWING (DWG)
SHEET NUMBER: 5
REV: △

The Club at Crazy Mountain Ranch – Rock Lake Dam Monitoring & Remote Control

Monitoring & Remote Control System – Single Line Diagram



CLIENT-SITE: The Club at Crazy Mountain Ranch – Rock Lake	
TITLE: Monitoring & Remote Control System – Single Line Diagram	
Page 1 of 1	Scale: None
Created: 28June2024	Revision: 0
Drawn By: J. Bacon, HydroLogik LLC	

Exhibit 11.g.4

Exhibit 11.g.4

CMR Ranch Owner, LLC
43A 40463 00 – Rock Lake Control Building Photos

Figure 1: Exterior of new control building at Rock Lake Dam, NESWSW Section 11, T3N R11E.

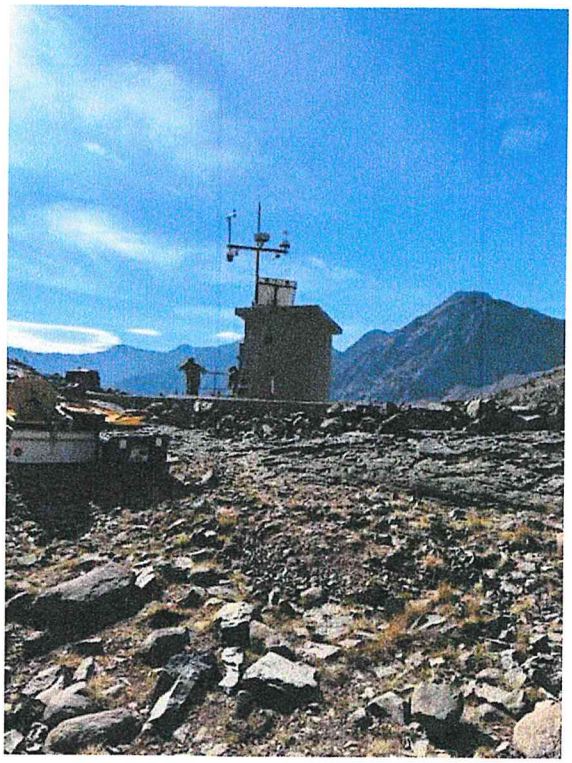


Figure 2: Exterior of new control building at Rock Lake Dam, NESWSW Section 11, T3N R11E.

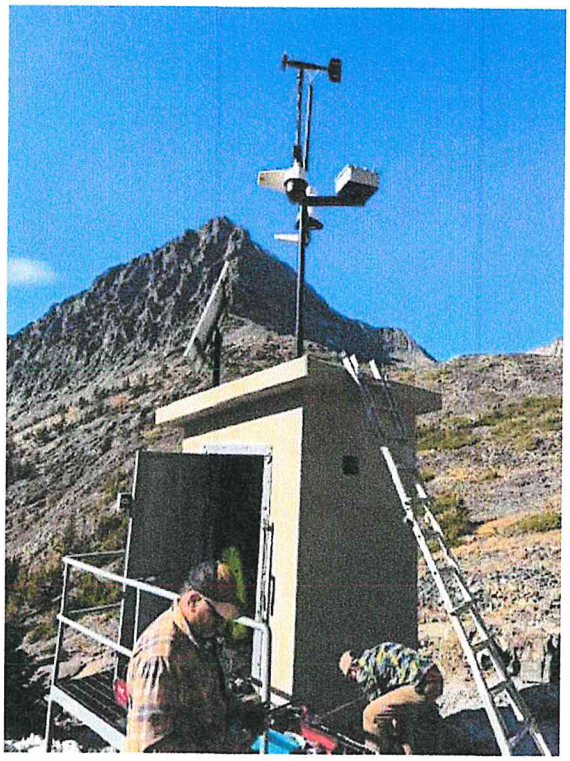


Figure 3: Exterior of new control building at Rock Lake Dam, NESWSW Section 11, T3N R11E.

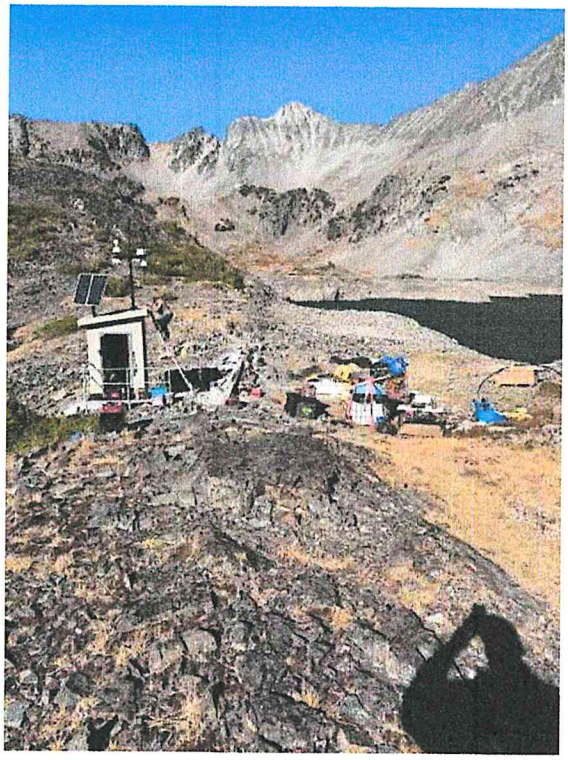


Figure 4: Staff gage in tunnel outlet at Rock Lake Dam, NESWSW Section 11, T3N R11E.

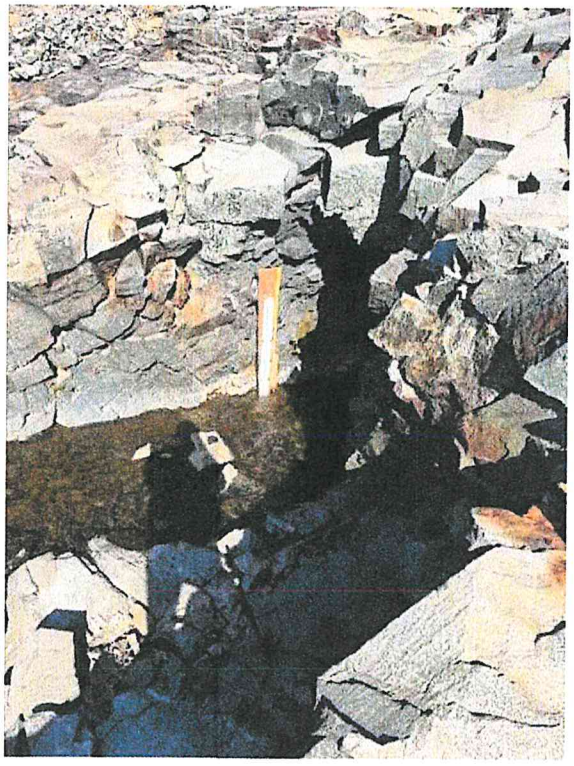
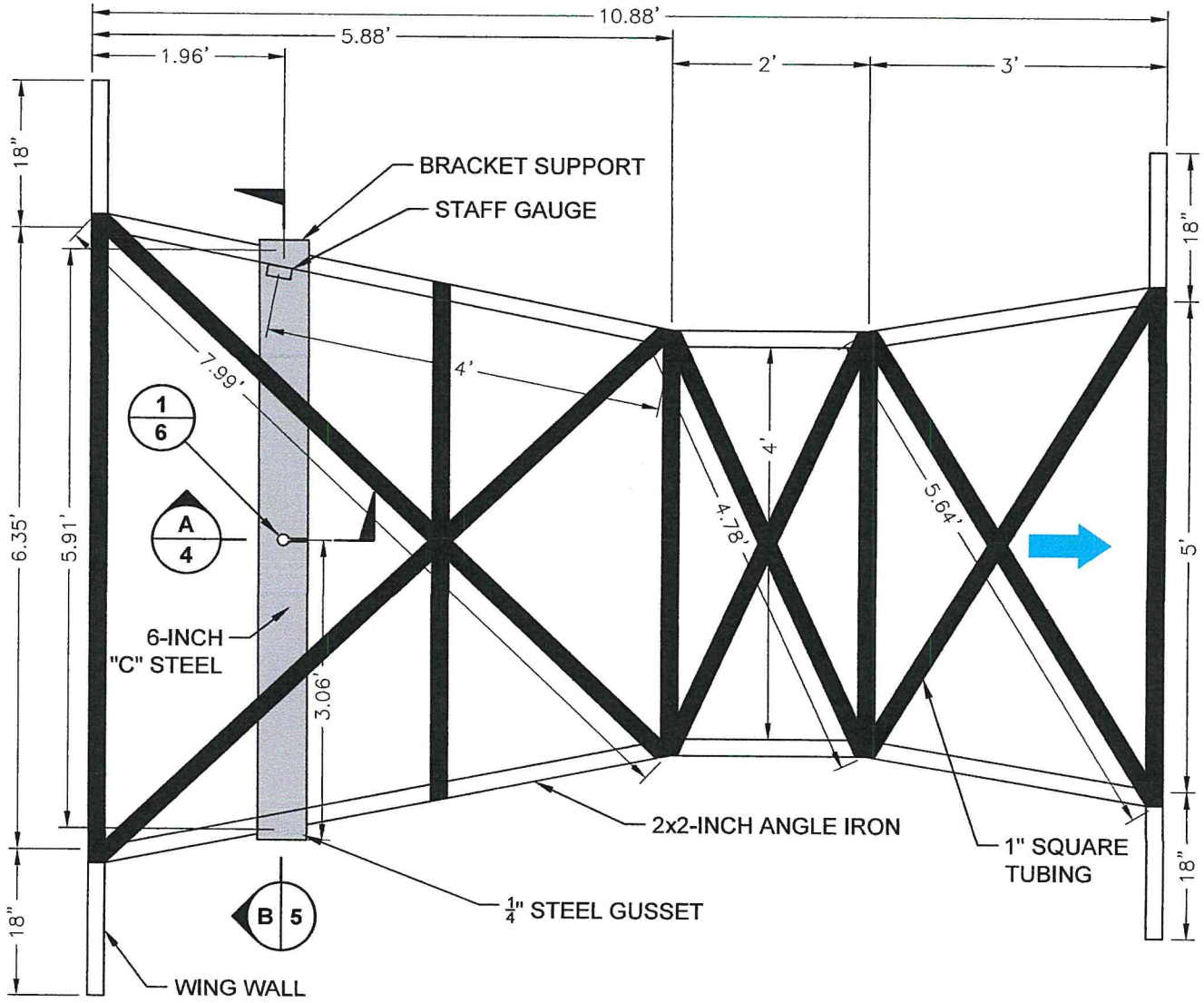


Figure 5: Interior of new control building at Rock Lake Dam, NESWSW Section 11, T3N R11E.

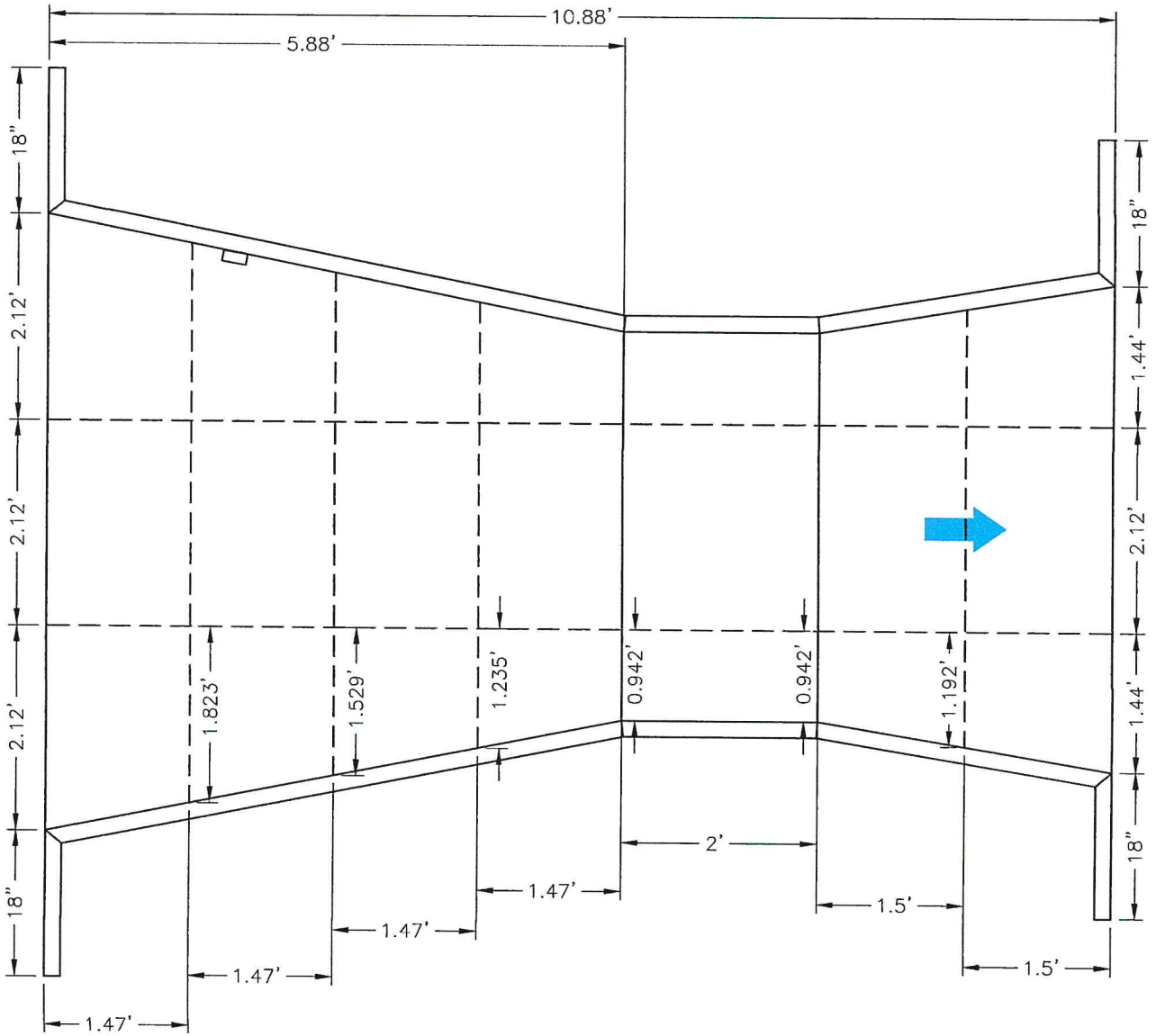
Exhibit 11.g.5

Exhibit 11.g.5



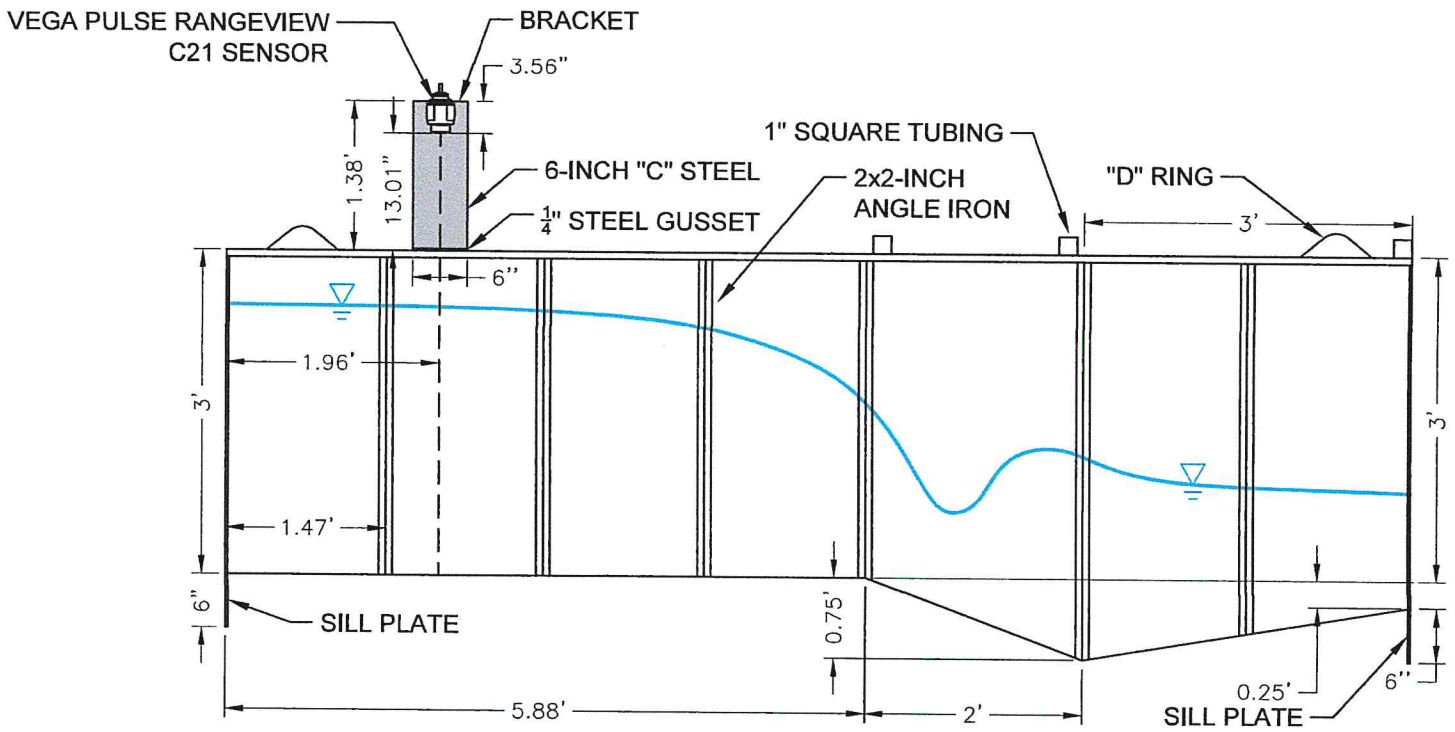
CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	TOP SUPPORTS FOR 4-FOOT PARSHALL FLUME	FIGURE 1

Hydrometrics, Inc.



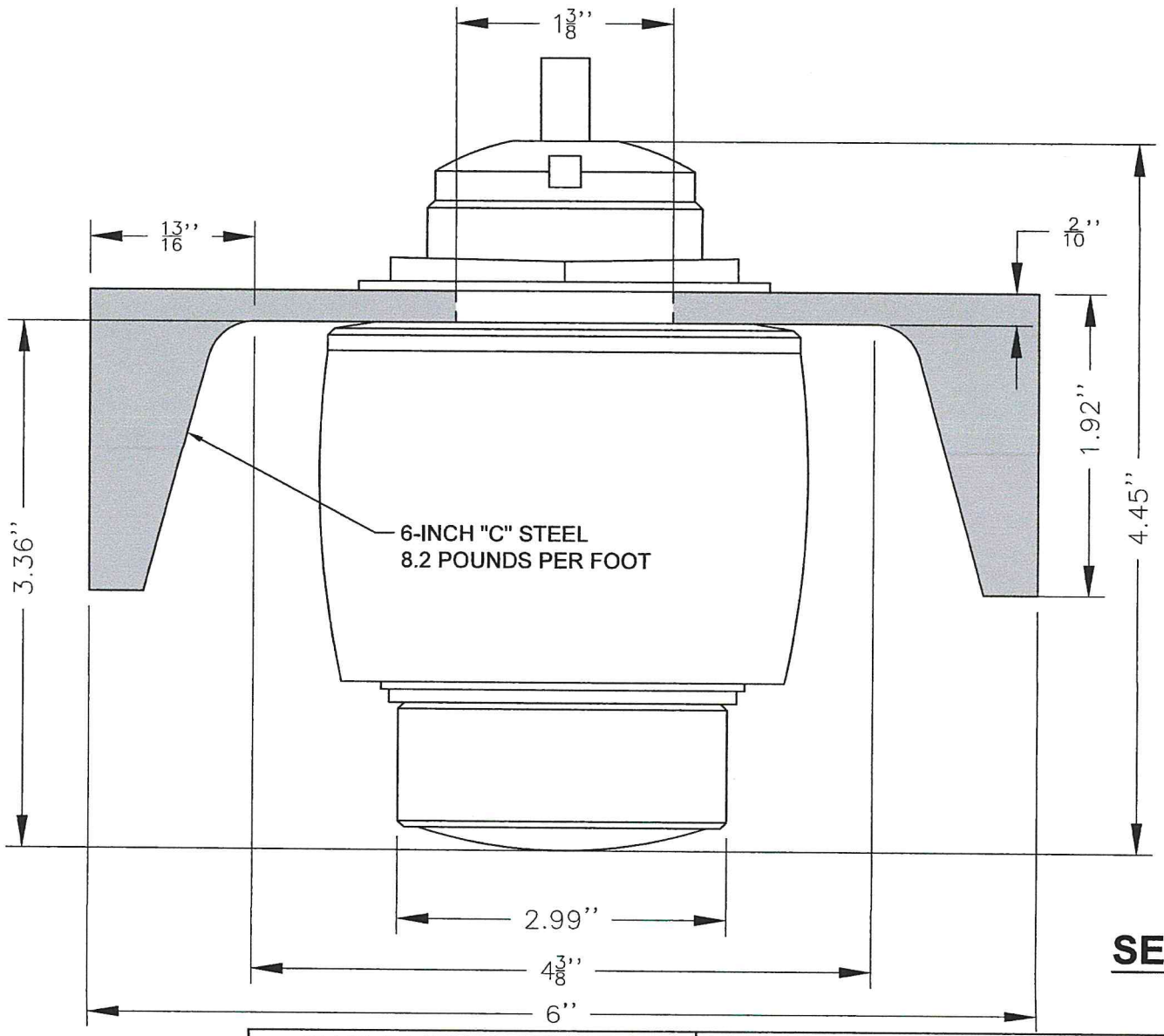
CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	BOTTOM SUPPORTS FOR 4-FOOT PARSHALL FLUME	FIGURE 2

Hydrometrics, Inc.



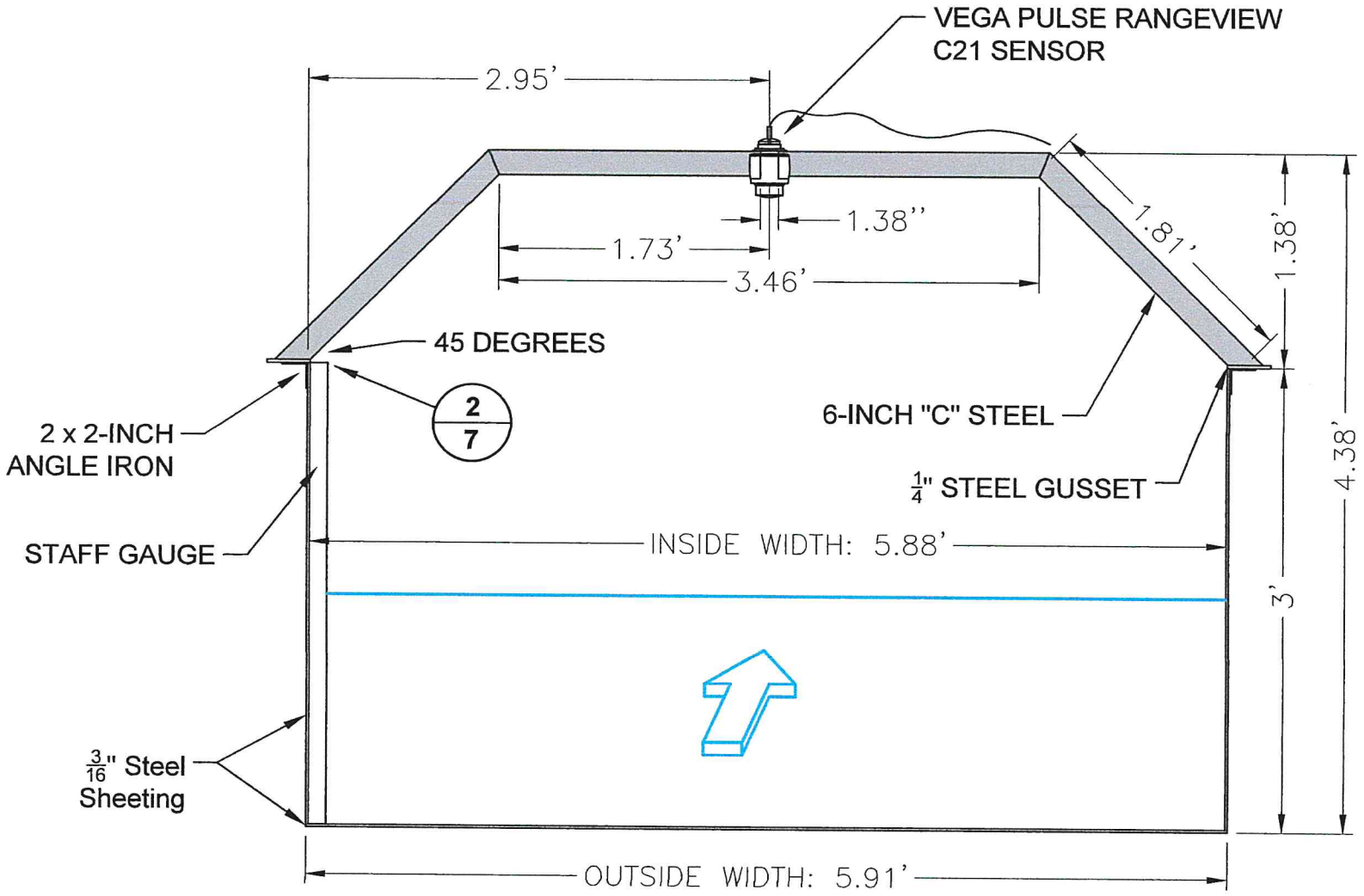
CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	SENSOR LOCATION - FLUME PROFILE	FIGURE 3

Hydrometrics, Inc.



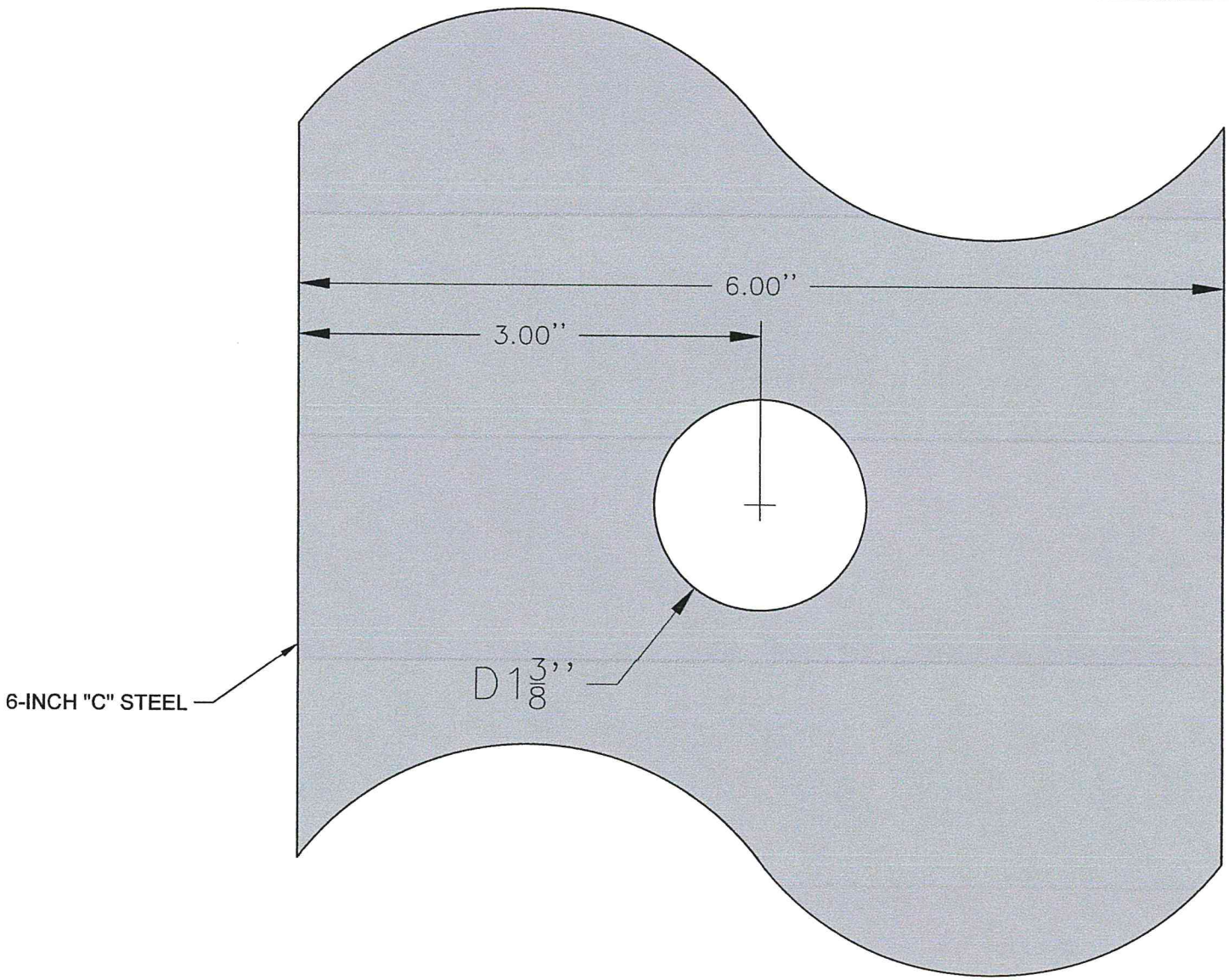
SECTION A
1"=1"

CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	SENSOR BRACKET DETAIL	FIGURE 4



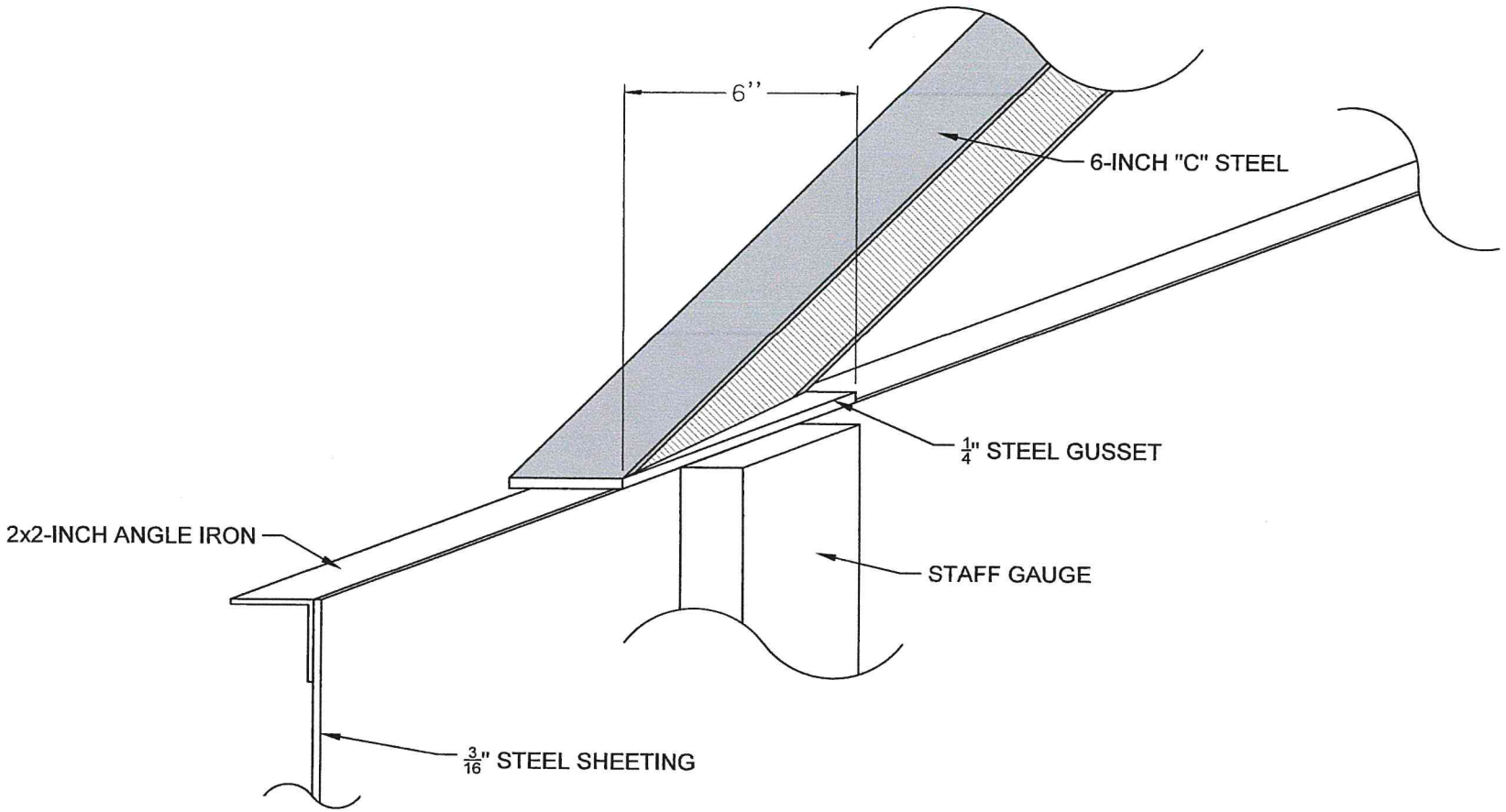
SECTION B
1"=1'

CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	SENSOR MOUNT DETAIL	FIGURE 5



1/6 **DETAIL**
1"=1"

CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	BRACKET HOLE DETAIL	FIGURE 6



2/7 **DETAIL**
1"=4"

CLUB AT CRAZY MOUNTAIN RANCH - CRISWELL DITCH 10/07/2025	GUSSET DETAIL	FIGURE 7

Exhibit 11.g.6

Exhibit 11.g.6

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Consulting Scientists and Engineers

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Fax: (406) 443-4155
www.hydrometrics.com

VIA E-MAIL

December 9, 2025

JP DeLaurier
Director of Facilities
The Club at Crazy Mountain Ranch
PO Box 37
Clyde Park, MT 59018
jpdelaurier@CrazyMountainRanch.com

Subject: Scope of Work and Cost Estimate for Planning, Installation and Validation of Rainbow Lake Telemetry Monitoring Equipment

Dear Mr. DeLaurier:

Hydrometrics, Inc. (Hydrometrics) is pleased to have the opportunity to submit the following proposal to assist the Club at Crazy Mountain Ranch (CCMR) with the design, installation and verification of water measurement and telemetry equipment to monitor the inflows and outflows from Rainbow Lake.

PROJECT NEED

The inflows and outflows from Rainbow Lake are not currently monitored and the measurement devices are in need of repair. Repairing and monitoring these inflows and outflows is directly relevant to understanding how CCMR uses and stores water in Rainbow Lake.

PROJECT OBJECTIVE

Water levels will be measured at three locations to determine the inflow into the lake, outflow from the lake, and water level in the lake. These locations will be the following:

1. An existing concrete weir on Hammond Creek, which flows into Rainbow Lake.
    a. A steel plate will be installed on the upstream side of this concrete weir.
    b. A radar water level sensor will be installed on this weir to measure the water level, and associated discharge into the lake.
2. An existing Parshall flume on the downstream side of the dam.
    a. This flume will measure the discharge from the dam outlet, if opened.
    b. A radar water level sensor will be installed on the existing flume to measure water level and subsequent discharge from the lake.
3. A new pressure transducer installed in the lake at the location of the pumphouse.
    a. This pressure transducer will measure the water level in the lake.
    b. This lake level will be associated with a rating curve for the Rainbow Lake spillway, so that the discharge from the lake via the spillway channel can be determined.

All sites will communicate with each other via radio. The pumphouse / lake transducer site will serve as the central communication hub. We intend for there to be only one datalogger for the system, and a website will be established to display the information gathered. The pumphouse / lake transducer site will be powered by the onsite electrical system and will be hard wired into the internet at the pumphouse. The two remote sites (weir and flume) will be solar powered and will communicate with the pumphouse / lake transducer site via radio.

SCOPE OF WORK

Task 1: Project Design and Planning

Objectives

Hydrometrics will plan the project, design the size/shape of the weirs, masts, and other equipment needed for the installation.

Scope

Hydrometrics will design the system described above and establish preliminary rating curves for each site.

Basis of Estimate

- CCMR staff will obtain the stream permitting 318, 404, and 310 permits necessary for this work to occur.
- The website will not be integrated into the ranch's SCADA system. This can be performed for an additional fee if needed.

Task 2: Project Construction

Objectives

Hydrometrics will construct this system and verify that it is operational.

Scope

Hydrometrics will install and troubleshoot the project components described in this proposal.

Basis of Estimate

- The ranch's excavator and earthwork equipment will be available for the cleaning and re-construction of the stream around the Hammond Creek (inflow weir) site. Hydrometrics staff will be on-site and available during this work.

- Hydrometrics staff will have access to the pumphouse and ability to plug equipment into the pumphouse's 120V AC power outlet and internet ethernet cable inside of the pumphouse. Any reconfiguration of wiring for power outlets or internet shall be conducted by CCMR.
- Hydrometrics will core through the pumphouse wall in order to install the pressure transducer. It is assumed that a radio mast and antenna can be installed to the outside of the building.
- Hydrometrics will install a steel weir plate on the upstream side of the Hammond Creek (inflow weir). Hydrometrics will provide that weir plate and will obtain ranch approval prior to starting.
- The pressure transducer will be housed in a 1.5-inch diameter stainless steel conduit installed in the lake. That transducer will be covered with rock to approximately 3 feet below the normal water line in the lake. If the ranch would like to lower the lake, that rock armoring can be installed to a lower level. The pipe will not be grouted in place. We anticipate that the pipe can be "pushed" into the lake, or dropped through the ice. Some minor shovel work may be needed along the bank in order to establish a consistent grade for the pipe.
- Hydrometrics will provide a repair to the concrete around the existing Parshall Flume downstream of the Rainbow Lake Outlet pipe. We envision that placing concrete beneath the existing flume will be sufficient to address the ability for the flume to accurately measure discharge of water from the dam.
- Hydrometrics will perform a repair on the dam's outlet structure, upstream from the flume. Some cracking has been observed in this flume. We currently envision that grinding out the cracks and repairing those cracks with a repair compound will be adequate to perform a repair.
    - If removal and reconstruction of the outlet structure, jacking of the outlet structure, or repair of the outlet structure around the pipe connection is necessary, we will coordinate with the ranch regarding the level of effort and overall repair scope needed to perform that repair work..
- Construction will be completed before April 1, 2026.
    - We anticipate performing this work in February and March. Cold weather concreting and grouting, along with snow removal at the project sites will likely be needed. Hydrometrics will provide this work. It is assumed that the ranch will assist Hydrometrics with plowing out an access route to each work site if needed.
- Lodging during construction will be provided by the ranch.

Task 3: Flow Validation, Technical Report, As-Built Drawings and O&M Manual

Objective and Scope

Hydrometrics will verify that the constructed system's flow rate measurements at each site match and follow the anticipated rating curves that were established during the design, or will adjust those rating curves if necessary.

Scope

- Hydrometrics will validate the flow rates through and over the Hammond Creek weir using a siphon and a flow meter.
    - This will be performed in two phases.
        - The first phase will be a low flow rating curve validation to establish that the low flows over the weir match the theoretical rating curve. This will be performed at the time of installation.
        - The second phase will be a high flow rating curve validation during spring runoff. This will likely need to occur during late April to early June, depending on Runoff conditions.
- Hydrometrics will validate the flow rates through the dam outlet using a separate Parshall flume temporarily installed in the creek below the Parshall flume.
- Hydrometrics will validate the spillway discharge curve by observing and analyzing the data gathered from the upstream weir flow measurements.

Basis of Estimate

- Hydrometrics will be able to adjust the flow rate out of Rainbow Lake through the outlet on a short term basis for testing.
- We assume 1 day of field work for each site will be needed to validate the flow rates at each site (3 days total).

Deliverables

- Technical report summarizing the findings of the investigation and of the construction stamped by an engineer.
- Stamped As-built Drawings of the constructed system.
- Operations and Maintenance Manual including construction photos documenting the system and its installation.

SCHEDULE

Start Date: 01/01/2026
Task 1 Complete: 02/01/2026
Task 2: 02/1/2026 - 04/01/2026
Task 3: 04/01/2026 - 06/15/2026

COST ESTIMATE

Professional fees will be determined on a time-and-materials basis. We estimate that our fees for the services described above will be as summarized below. A detailed Cost Estimate is attached to this letter, detailing the time and materials required to complete the Scope of Work. The professional fees have been determined using the cost of previous projects as a guide. Our fees will be billed as incurred and will not exceed [redacted] without written authorization.

Task 1 – Project Design and Planning	[redacted]
Task 2 – Project Construction	[redacted]
Task 3 – Flow Validation, Technical Report, As-Built Drawings and O&M Manual	[redacted]
Total:	[redacted]

Hydrometrics appreciates the opportunity to provide this proposal and we look forward to working with you. We have attached our standard Professional Services Agreement (PSA) for which this proposal shall be incorporated as Exhibit A. If you wish to accept this proposal, please sign, and return the PSA. If you have any questions, please do not hesitate to contact me at (406) 443-4150 x1123 or via email at kkingery@hydrometrics.com.

Sincerely,

Karl Kingery, P.E., CFM
Water Resources Engineer

Attachments: Detailed Cost Estimate
Hydrometrics' Professional Services Agreement
Description of Equipment Provided by Hydrologik

Exhibit 11.g.7

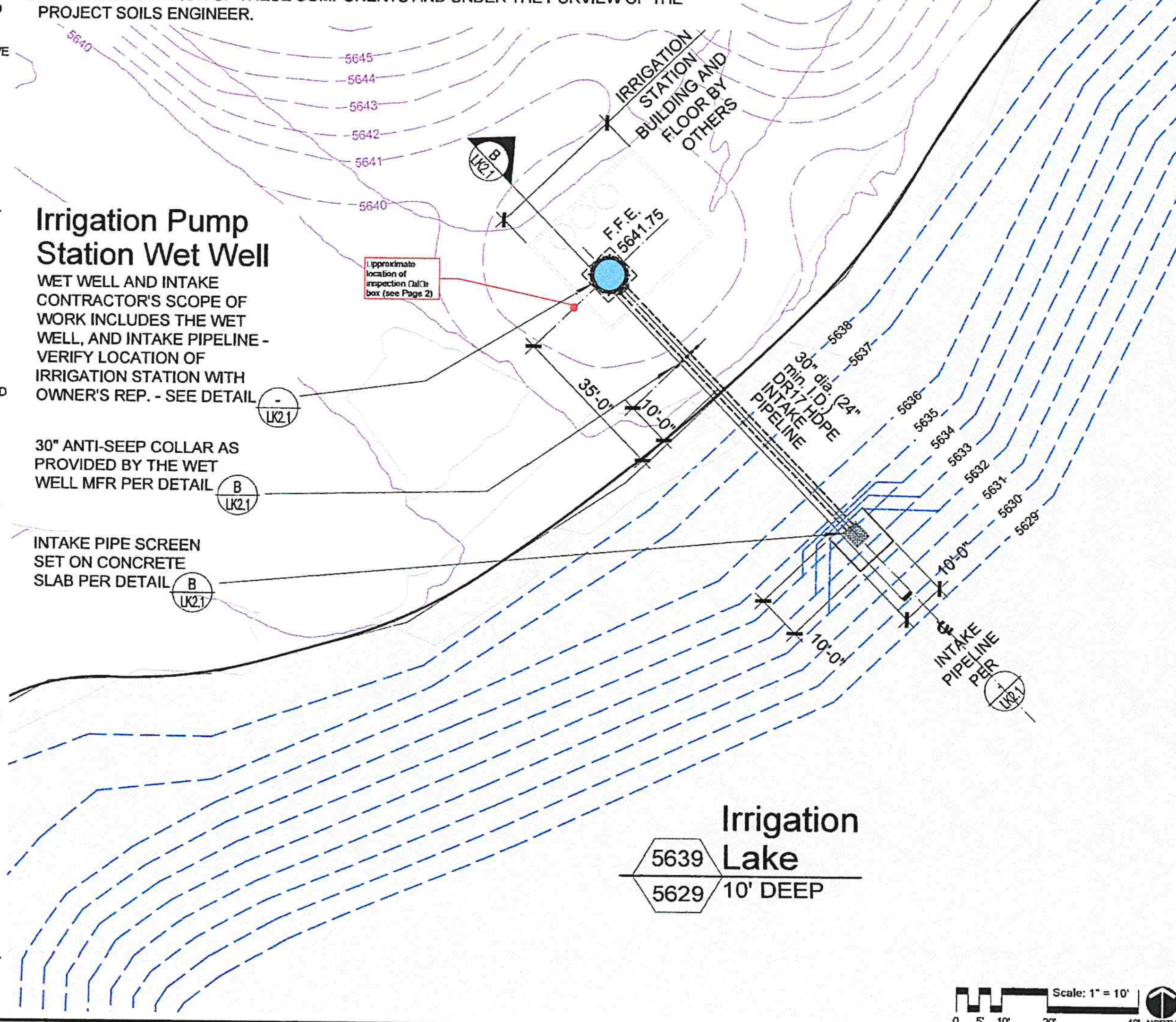
Exhibit 11.g.7

WET WELL & INTAKE GENERAL NOTES:

1. THESE DRAWINGS ARE INTENDED FOR WET WELL AND INTAKE PIPE CONSTRUCTION USE ONLY. SEE DRAWINGS BY RESPECTIVE DESIGNERS FOR OTHER ASPECTS OF CONSTRUCTION.
2. IT IS THE INTENT OF THESE DRAWINGS AND THIS DESIGN THAT THE WORK REPRESENTED HERE BE COMPLETED BY A LICENSED CONTRACTOR WITH EXPERIENCE AND QUALIFICATIONS SPECIFIC TO THIS WORK.
3. THE WET WELL AND INTAKE PIPE CONTRACTORS PRICING SHALL INCLUDE ALL MATERIALS, EQUIPMENT, ACCESSORIES, ETC. REQUIRED TO PRODUCE A COMPLETE AND WORKABLE WET WELL AND INTAKE SYSTEM TO INDUSTRY STANDARDS.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS PRIOR TO STARTING WORK. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCY IN THE DRAWINGS OR SITE CONDITIONS SO THAT PROPER CLARIFICATIONS CAN BE MADE BEFORE CONSTRUCTION BEGINS.
5. IN ADDITION TO EXAMINING THESE PLANS, THE CONTRACTOR IS EXPECTED TO HAVE VISITED AND INSPECTED THE SITE IN ORDER TO DETERMINE THE GRADES AND TRUE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. SHOULD ANY OMISSIONS, CONFLICTS, OR AMBIGUITIES IN THE DRAWINGS BE DISCOVERED DURING THE EXAMINATION OF THE DRAWINGS OR UPON VISITING THE SITE, THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.
6. CONSTRUCTION ACCESS: THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE SHALL REVIEW THE SITE PRIOR TO CONSTRUCTION TO ESTABLISH AN ACCESS ROUTE IN AND OUT OF THE WET WELL AND INTAKE PIPE CONSTRUCTION AREA. THE CONTRACTOR SHALL PROVIDE STAKES OUTLINING THE ACCESS ROUTE AND SHALL AT ALL TIMES KEEP CONSTRUCTION EQUIPMENT, PERSONNEL, AND VEHICLES WITHIN THE LIMITS OF THIS ROUTE. REPAIRS TO THESE FACILITIES WITHIN THE LIMITS OF THE CONSTRUCTION ACCESS ROUTE SHALL BE MADE BY THE OWNER'S REPRESENTATIVE. ALL REPAIRS OUTSIDE THESE LIMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. LAKE BOTTOM RE-GRADING AND WET WELL & INTAKE PIPE BACKFILL:
   A. ALL WORK SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE (I.B.C.) AND ALL LOCAL CODES AND ORDINANCES. AN EFFORT HAS BEEN MADE TO DEFINE THE LOCATION OF UNDERGROUND FACILITIES WITHIN THE WORK AREA (THESE PLANS AND THE PLANS OF OTHER DISCIPLINES ON THIS PROJECT). THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR LOCATION, OR HAVING LOCATED, ALL UNDERGROUND UTILITIES AND RELATED FACILITIES AND FOR PROTECTING SAME DURING THE COURSE OF CONSTRUCTION.
   B. ALL AREAS TO RECEIVE FILL SHALL BE CLEARED OF ALL BRUSH AND OTHER OBJECTIONABLE DEBRIS, INCLUDING EXISTING SOD AND OTHER ORGANIC MATERIALS, SCARIFIED TO A DEPTH OF 300mm (12") AND WATERED AND COMPACTED TO 90% RELATIVE DENSITY IN LAKE AREAS AND 95% IN THE AREA OF THE IRRIGATION STATION BUILDING PER THE REQUIREMENTS OF A.S.T.M. DESIGNATION D-1557-65T, OR AS APPROVED BY THE ENGINEER. THE FILL MATERIAL SHALL BE PLACED IN COMPACTED LAYERS AND FILLED AND COMPACTED AT OPTIMUM MOISTURE CONTENT BY AN APPROVED METHOD.
   C. ALL UNSUITABLE SOIL, ORGANIC MATERIALS, ASPHALT, CONCRETE RUBBISH, DEBRIS, ETC. RESULTING FROM GRADING OR DEMOLITION OPERATIONS SHALL BE REMOVED FROM THE JOB SITE, TRANSPORTED TO A SUITABLE LOCATION AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS.
   D. THE CONTRACTOR SHALL EMPLOY ALL LABOR, EQUIPMENT, AND METHODS REQUIRED TO PREVENT HIS OPERATIONS FROM PRODUCING DUST IN AMOUNTS DAMAGING TO PROPERTY, CULTIVATED VEGETATION, AND DOMESTIC ANIMALS OR CAUSING A NUISANCE TO PERSONS OCCUPYING BUILDINGS IN THE VICINITY OF THE JOBSITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY THE DUST RESULTING FROM HIS OPERATIONS. DUST ABATEMENT MEASURES SHALL BE CONTINUED UNTIL AFTER THE COMPLETION OF THE CONTRACTOR'S WORK.
   E. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR PROTECTION OF PUBLIC AND PRIVATE PROPERTY ADJACENT TO THE SITE AND THAT HE SHALL, AT HIS EXPENSE, REPAIR OR REPLACE TO ORIGINAL CONDITION, ALL EXISTING IMPROVEMENTS WITHIN OR REMOVED AS A RESULT OF HIS OPERATIONS.
   F. THE CONTRACTOR SHALL MAINTAIN CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL CHANGES WHICH DEVIATE FROM THE CONSTRUCTION AS PROPOSED BY THESE PLANS FOR THE PURPOSE OF PROVIDING THE ENGINEER WITH A BASIS FOR RECORD DRAWINGS. NO CHANGES SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER'S REPRESENTATIVE AND THE ENGINEER. IN THE EVENT THAT THE CONTRACTOR NOTICES IRREGULARITIES IN THE LINE OR GRADE, HE SHALL BRING IT TO THE IMMEDIATE ATTENTION OF THE ENGINEER AND THE OWNER'S REPRESENTATIVE FOR A PROPER RESOLUTION. IF HE FAILS TO DO SO, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ERROR IN THE GRADE AND THE NECESSARY RECONSTRUCTION TO CORRECT SUCH ERROR.
   G. THE CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE CONDITION OF THE JOB SITE AREA DURING THE COURSE OF CONSTRUCTION FOR THE PROJECT INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY AND THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
   H. NEITHER THE OWNER, NOR THE ENGINEER, WILL ENFORCE SAFETY MEASURES FOR REGULATIONS AS THEY PERTAIN TO THE CONTRACTOR, THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS. THE CONTRACTOR SHALL PROVIDE TO THE OWNER, PRIOR TO THE START OF WORK, WORKER'S COMPENSATION INSURANCE, PRODUCTS AND COMPLETED OPERATIONS AND COMPREHENSIVE LIABILITY INSURANCE CERTIFICATES.

Wet Well and Intake Pipe Excavation and Backfill:

1. THE OWNER SHALL LOWER THE WATER LEVEL OF THE EXISTING LAKE TO ALLOW FOR EXCAVATION FOR THE WET WELL AND INTAKE PIPE.
2. EXISTING LAKE CLAY LINER MATERIAL SHALL BE REMOVED FROM THE EXCAVATION SITE, STOCKPILED, ALLOWED TO DRY OUT AND PROTECTED AGAINST DAMAGE DURING THE COURSE OF THE WET WELL AND INTAKE PIPE WORK.
3. OTHER EXCAVATED SOIL SHALL BE EXCAVATED, ALLOWED TO DRY, AND STOCKPILED ON SITE FOR USE AS BACKFILL AFTER INSTALLATION OF THESE COMPONENTS.
4. CAREFUL INSTALLATION OF THE BACKFILL SOIL, COMPACTED PER GENERAL NOTES, AND CAREFUL INSTALLATION OF ANY CLAY LAKE LINER MATERIAL SHALL OCCUR AFTER INSTALLATION OF THESE COMPONENTS AND UNDER THE PURVIEW OF THE PROJECT SOILS ENGINEER.



Irrigation Wet Well & Intake Construction Drawings for . . . :
Crazy Mountain Ranch
104 Hammond Creek Rd, Clyde Park, MT
Irrigation Station Intake Plan View

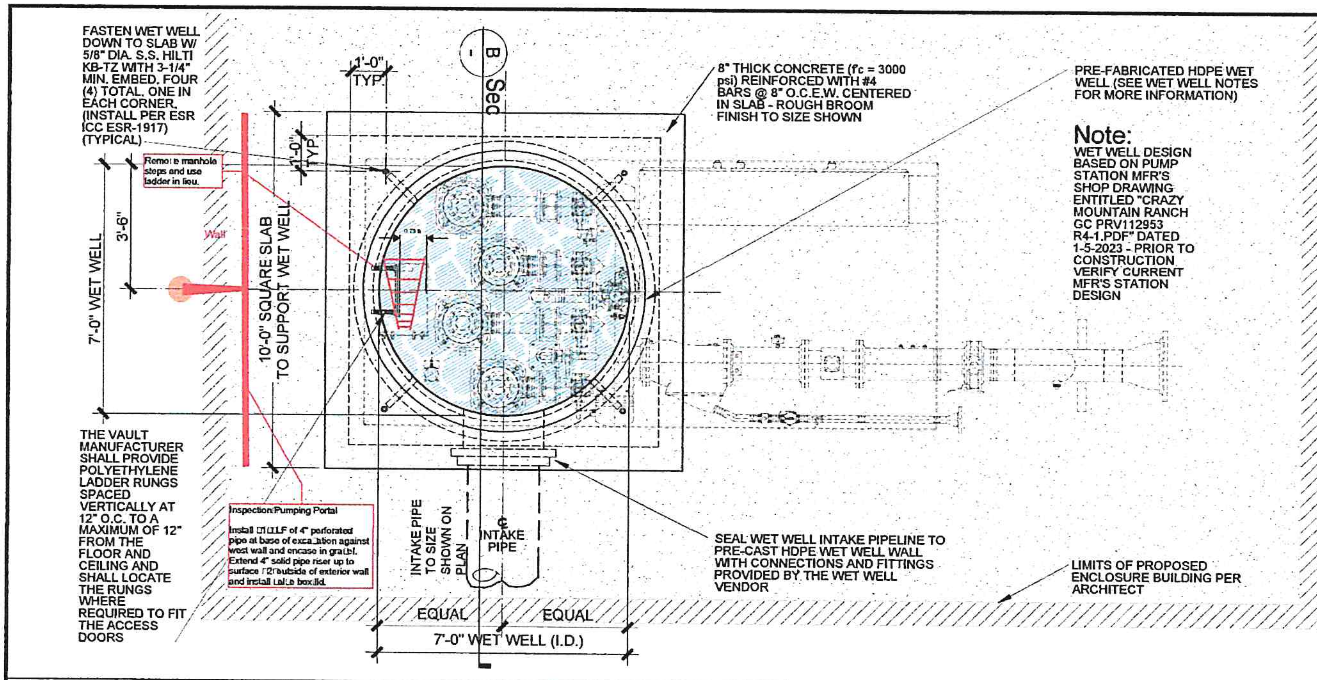
DESIGN BY: R. McGuire, P.E.
DRAFTED BY: RAM / APM
DATE: 02-24-2023

NO.	DATE	REVISIONS	BY
	2-24-2023	100% CD's ISSUED FOR BIDDING	RAM

WATERSCAPERS
Decorative and Recreational Water Feature Engineering
2120 Megan Creek Dr. Little Elm, TX 75068
714-321-2330 lakemaker@aol.com
714-356-1400 lakemaker18@yahoo.com

ONCORE
Jim Barger

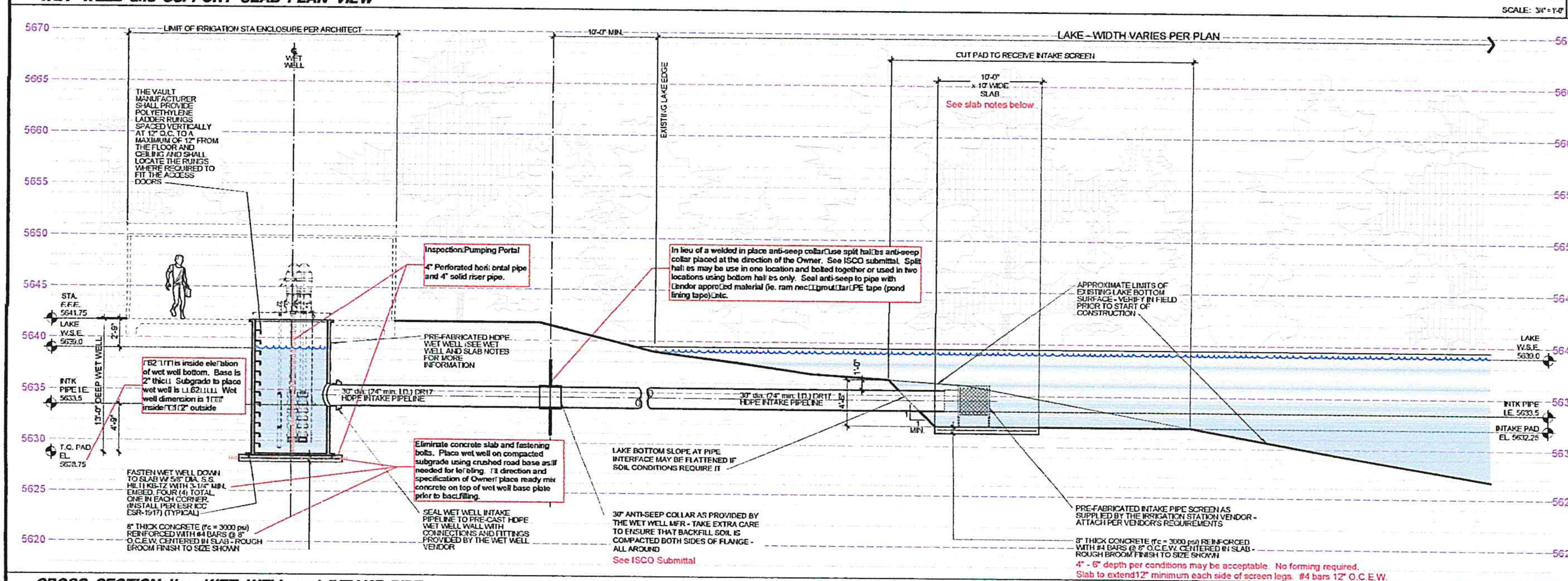
SHEET LK1.1 OF 2


FASTEN WET WELL DOWN TO SLAB W/ 5/8" DIA. S.S. HILTI KB-TZ WITH 3-1/4" MIN. EMBED. FOUR (4) TOTAL, ONE IN EACH CORNER. (INSTALL PER ESR ICC ESR-1917) (TYPICAL)
1'-0" TYP.
8" THICK CONCRETE (f'c = 3000 psi) REINFORCED WITH #4 BARS @ 8" O.C.E.W. CENTERED IN SLAB - ROUGH BROOM FINISH TO SIZE SHOWN
PRE-FABRICATED HDPE WET WELL (SEE WET WELL NOTES FOR MORE INFORMATION)
Note:
WET WELL DESIGN BASED ON PUMP STATION MFR'S SHOP DRAWING ENTITLED "CRAZY MOUNTAIN RANCH GC PRV112953 R4-1.PDF" DATED 1-5-2023 - PRIOR TO CONSTRUCTION VERIFY CURRENT MFR'S STATION DESIGN
Remove manhole steps and use ladder in lieu.
Wall
3'-6"
7'-0" WET WELL
10'-0" SQUARE SLAB TO SUPPORT WET WELL
1'-0" TYP.
THE VAULT MANUFACTURER SHALL PROVIDE POLYETHYLENE LADDER RUNGS SPACED VERTICALLY AT 12" O.C. TO A MAXIMUM OF 12" FROM THE FLOOR AND CEILING AND SHALL LOCATE THE RUNGS WHERE REQUIRED TO FIT THE ACCESS DOORS
Inspection/Pumping Portal
Install 10 LF of 4" perforated pipe at base of excavation against west wall and encase in gravel. Extend 4" solid pipe riser up to surface 12" outside of exterior wall and install valve box lid.
INTAKE PIPE TO SIZE SHOWN ON PLAN
INTAKE PIPE
SEAL WET WELL INTAKE PIPELINE TO PRE-CAST HDPE WET WELL WALL WITH CONNECTIONS AND FITTINGS PROVIDED BY THE WET WELL VENDOR
LIMITS OF PROPOSED ENCLOSURE BUILDING PER ARCHITECT
EQUAL
EQUAL
7'-0" WET WELL (I.D.)

Wet Well Notes:

1. THE IRRIGATION PUMP STATION WET WELL SHALL BE PRE-FABRICATED HDPE PER "ISCO" OR WET WELL ENGINEER APPROVED EQUAL AND SHALL INCLUDE:
   - A. MANUFACTURER PREPARED SHOP DRAWINGS AND STRUCTURAL CALC'S FOR SUBMITTAL TO AND APPROVAL BY THE WATER FEATURE ENGINEER AND BY THE LOCAL BUILDING AUTHORITY FOR THE ISSUANCE OF A BUILDING PERMIT. THE CALC'S AND SHOP DRAWINGS SHALL BE PREPARED AND PRESENTED IN A FORM ACCEPTABLE TO THE LOCAL GOVERNING AGENCIES AND SHALL BE SEALED BY A REGISTERED ENGINEER LICENSED IN THIS STATE. THE CONTRACTOR SHALL SUPPLY SUBMITTALS FROM THE WET WELL VENDOR TO THE OWNER. THE OWNER SHALL SUBMIT THIS INFORMATION TO THE BUILDING AUTHORITY FOR ALL APPLICABLE AND REQUIRED PERMITS.
   - B. HOLES WHERE SHOWN TO RECEIVE PIPES, CONDUITS, ETC. WITH CONNECTIONS AS PROVIDED BY THE WET WELL VENDOR.
   - C. OTHER ACCESSORIES AND COMPONENTS WHICH COMBINE TO MAKE A FULLY FUNCTIONAL WET WELL AND INTAKE SYSTEM.
2. THE IRRIGATION STATION COMPONENTS SHOWN ON THIS PLAN ARE OF A GENERAL CONFIGURATION. SEE MANUFACTURER'S SHOP DRAWINGS FOR PRECISE CONFIGURATION AND DIMENSIONS.
3. THE CONCRETE BASE SLAB (ROOM FLOOR) DIMENSIONS SHOWN HERE SHALL BE VERIFIED WITH THE ARCHITECTURAL BUILDING PLANS.
4. ALL CAST-IN-PLACE CONCRETE SHOWN ON THIS SHEET SHALL BE OF TYPE 1 OR 2 PORTLAND CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS.
5. ALL REINFOR'G BARS SHALL BE GRADE 60 DEFORMED BARS.
6. AT THE TIME OF THIS WET WELL AND INTAKE DESIGN, THE DESIGN OF AN ENCLOSURE BUILDING HAS NOT BEEN COMPLETED BY THE ARCHITECT. WITH REGARD TO THIS, THE FOLLOWING ARE REQUIREMENTS OF THE BUILDING ARCHITECT AND THE WET WELL AND INTAKE CONTRACTOR:
   - A. THE BUILDING IRRIGATION PUMP ROOM SHALL HAVE CERTAIN MINIMUM SPACE REQUIREMENTS AS DETERMINED BY THE IRRIGATION STATION EQUIPMENT MANUFACTURER AND THE NATIONAL ELECTRIC CODE. THE BUILDING ARCHITECT SHALL BE RESPONSIBLE FOR ADHERING TO ALL REQUIRED LOCAL CODES AND ORDINANCES IN THE BUILDING DESIGN.
   - B. THE IRRIGATION STATION EQUIPMENT MANUFACTURER REQUIRES THAT CERTAIN MINIMUM VENTILATION STANDARDS BE MET IN ORDER TO INSURE PROPER OPERATION OF THE EQUIPMENT. IN ADDITION TO VENTILATION REQUIREMENTS FOR A TYPICAL BUILDING MECHANICAL ROOM, THE BUILDING ARCHITECT SHALL PROVIDE VENTILATION FLOW RATES SET BY THE IRRIGATION STATION EQUIPMENT MANUFACTURER.
   - C. FLOOR DRAINAGE IN THE EQUIPMENT ROOM SHALL BE DESIGNED BY THE BUILDING ARCHITECT. THE DRAINAGE SHALL ALLOW FOR FLOOR WASHDOWN BY USE OF A GARDEN HOSE AND MAY BE DRAINED INTO THE WET WELL WITH PRIOR COORDINATION WITH THE LAKE ENGINEER.

WET WELL and SUPPORT SLAB PLAN VIEW SCALE: 3/4" = 1'-0" **A**


LIMIT OF IRRIGATION STA ENCLOSURE PER ARCHITECT
10'-0" MIN.
LAKE - WIDTH VARIES PER PLAN
EXISTING LAKE EDGE
CUT PAD TO RECEIVE INTAKE SCREEN
10'-0" x 10' WIDE SLAB
See slab notes below
WET WELL
STA. F.F.E. 5641.75
LAKE W.S.E. 5639.0
INTK PIPE I.E. 5633.5
T.O. PAD EL. 5628.75
Inspection/Pumping Portal
4" Perforated horizontal pipe and 4" solid riser pipe.
In lieu of a welded in place anti-seep collar, use split halves anti-seep collar placed at the direction of the Owner. See ISCO submittal. Split halves may be use in one location and bolted together or used in two locations using bottom halves only. Seal anti-seep to pipe with vendor approved material (ie. ram neck, grout, tar, PE tape (pond lining tape) etc.
PRE-FABRICATED HDPE WET WELL (SEE WET WELL AND SLAB NOTES FOR MORE INFORMATION
30" dia. (24" min. I.D.) DR17 HDPE INTAKE PIPELINE
APPROXIMATE LIMITS OF EXISTING LAKE BOTTOM SURFACE - VERIFY IN FIELD PRIOR TO START OF CONSTRUCTION
LAKE W.S.E. 5639.0
INTK PIPE I.E. 5633.5
INTAKE PAD EL. 5632.25
Eliminate concrete slab and fastening bolts. Place wet well on compacted subgrade using crushed road base as if needed for leveling. At direction and specification of Owner place ready mix concrete on top of wet well base plate prior to backfilling.
LAKE BOTTOM SLOPE AT PIPE INTERFACE MAY BE FLATTENED IF SOIL CONDITIONS REQUIRE IT
FASTEN WET WELL DOWN TO SLAB W/ 5/8" DIA. S.S. HILTI KB-TZ WITH 3-1/4" MIN. EMBED. FOUR (4) TOTAL, ONE IN EACH CORNER. (INSTALL PER ESR ICC ESR-1917) (TYPICAL)
8" THICK CONCRETE (f'c = 3000 psi) REINFORCED WITH #4 BARS @ 8" O.C.E.W. CENTERED IN SLAB - ROUGH BROOM FINISH TO SIZE SHOWN
SEAL WET WELL INTAKE PIPELINE TO PRE-CAST HDPE WET WELL WALL WITH CONNECTIONS AND FITTINGS PROVIDED BY THE WET WELL VENDOR
30" ANTI-SEEP COLLAR AS PROVIDED BY THE WET WELL MFR - TAKE EXTRA CARE TO ENSURE THAT BACKFILL SOIL IS COMPACTED BOTH SIDES OF FLANGE - ALL AROUND
See ISCO Submittal
PRE-FABRICATED INTAKE PIPE SCREEN AS SUPPLIED BY THE IRRIGATION STATION VENDOR - ATTACH PER VENDOR'S REQUIREMENTS
8" THICK CONCRETE (f'c = 3000 psi) REINFORCED WITH #4 BARS @ 8" O.C.E.W. CENTERED IN SLAB - ROUGH BROOM FINISH TO SIZE SHOWN
4" - 6" depth per conditions may be acceptable. No forming required. Slab to extend 12" minimum each side of screen legs. #4 bars 12" O.C.E.W.
THE VAULT MANUFACTURER SHALL PROVIDE POLYETHYLENE LADDER RUNGS SPACED VERTICALLY AT 12" O.C. TO A MAXIMUM OF 12" FROM THE FLOOR AND CEILING AND SHALL LOCATE THE RUNGS WHERE REQUIRED TO FIT THE ACCESS DOORS
5670
5665
5660
5655
5650
5645
5640
5635
5630
5625
5620
2'-9"
13'-0" DEEP WET WELL
4'-9"
1'-5"
4'-9"
MIN.

CROSS SECTION thru WET WELL and INTAKE PIPE SCALE: 1/4" = 1'-0" **B**

Irrigation Wet Well & Intake Construction Drawings for . . .
Crazy Mountain Ranch
104 Hammond Creek Rd, Clyde Park, MT
Irrigation Station Wet Well & Intake Pipe Details

WATERSCAPERS
Decorative and Recreational Water Feature Engineering
2120 Megan Creek Dr. Little Elm, TX 75068
714-321-2330 lakemaker@aol.com
714-356-1200 lakemaker13@yahoo.com

ONCORE
Jim Barger
402 416 7200 • jim@ONCORE.com
PO Box 6806 • 4728 Prescott Avenue
Lincoln, Nebraska 68506

DESGN BY: R. McGuire, P.E.
DRAFTED BY: RAM / APM
DATE: 02-24-2023

NO.	DATE	REVISIONS	BY
	2-24-2023	100% CD's ISSUED FOR BIDDING	RAM

SHEET **LK2.1** OF 2

General Correspondence:

General Correspondence

Outlook

[EXTERNAL] RE: CMR Temporary Lease Map Question

From stephenson dmsnaturalresources.com <stephenson@dmsnaturalresources.com>
Date Mon 2/2/2026 8:56 AM
To Reynolds, Lyra <Lyra.Reynolds@mt.gov>
Cc Strasheim, Kerri <kstrasheim@mt.gov>; Peter Scott <peter@scott-law.com>; jbothwick@crossharborcapital.com <jbothwick@crossharborcapital.com>

Lyra

Per our call this morning, I located the public notice on DNRC's website this morning. I took the liberty of reviewing the notice. There are two typos in the Public Notice:

1. 43A 30173614 for 43A 40646-00: First paragraph *"THE WATER RIGHT WAS HISTORICALLY DIVERTED FROM APRIL 1 TO NOVEMBER 15 UP TO A MAXIMUM VOLUME OF 579.88 AF."* Should say: *"THE WATER RIGHT WAS HISTORICALLY DIVERTED FROM **January 1 to December 31** UP TO A MAXIMUM VOLUME OF 579.88 AF."*
    a. The period of diversion is year-round since this claim has storage. The period of use is April 1 to Nov 15.

2. All three applications, under proposed change: *"THE APPLICANT WILL CEASE IRRIGATION ON ALL HISTORICAL ACRES DURING ANY YEAR WHEN LEASED WATER IS USED."* Should say – add in the yellow text: *"THE APPLICANT WILL CEASE IRRIGATION ON ALL HISTORICAL ACRES **of the place of use of the leased water rights** DURING ANY YEAR WHEN LEASED WATER IS USED."*

On our call you said you didn't know if DNRC can correct typos in the public notice, but you would confirm with the central office how to correct the notice. Please let us know. Thanks

Sincerely,

Deborah Stephenson
DMS Natural Resources, LLC
602 S. Ferguson Ave., Suite 2
Bozeman, MT 59718
Office: 406-582-4988
Cell: 406-600-1422
stephenson@dmsnaturalresources.com
www.dmsnaturalresources.com [dmsnaturalresources.com]

From: Reynolds, Lyra <Lyra.Reynolds@mt.gov>
Sent: Wednesday, January 28, 2026 9:10 AM
To: stephenson dmsnaturalresources.com [dmsnaturalresources.com] <stephenson@dmsnaturalresources.com>

Cc: Strasheim, Kerri <kstrasheim@mt.gov>; Peter Scott <peter@scott-law.com>; jbothwick@crossharborcapital.com
Subject: Re: CMR Temporary Lease Map Question

Hi Deb-

I got your voicemail from this morning. Getting back to you on these items!

Thank you for the KMZ, this is immensely helpful.

For the public notice of a temporary lease questions- The notice will not be published in the newspaper. A public notice document will be sent to the parties the DNRC identifies for public notice. The public notice document that will be mailed is similar to that of a 606 Change or 600 Permit Application notice document found on our website. The temporary lease notice document will also be put on the DNRC's website under the Application Status and Environmental Assessments page. The Applicant will receive a copy of the notice when the notice is mailed to all parties identified for public notice.

The temporary lease notice will be sent only once per lease. The notice document is mailed 10 days after the receipt of the Temporary Lease Application (with the day the application was received being day 0). The notice document outlines the proposed temporary lease and states when the objection deadline is. The notice document will clearly state that the objection deadline is only if the DNRC authorizes the lease. The objection period will not begin until a lease has been authorized, with the objection deadline being 30 days after a lease is authorized. If the lease is authorized, the DNRC will also place the application file on the website. Objections must be filed on a Form 611.

I have attached our guidance document that was created for the Form 650.

Thank you for your patience. Please let me know if you have any other questions.
-Lyra

Lyra Reynolds (they/them/she/her) | Hydrologist/Specialist
Bozeman Water Resources Office
Montana Department of Natural Resources and Conservation
2273 Boot Hill Court, Suite 110; Bozeman, MT 59715
DESK: 406-556-4500 **EMAIL**: lyra.reynolds@mt.gov
Website | **Facebook [facebook.com]** [facebook.com]| [twitter.com]**X [twitter.com](T [twitter.com]witter [twitter.com])** | **Instagram [instagram.com]**
How did we do? Let us know here: [forms.office.com]Feedback Survey [forms.office.com]

From: stephenson dmsnaturalresources.com [dmsnaturalresources.com] <stephenson@dmsnaturalresources.com>
Sent: Tuesday, January 27, 2026 8:54 AM
To: Reynolds, Lyra <Lyra.Reynolds@mt.gov>
Cc: Strasheim, Kerri <kstrasheim@mt.gov>; Peter Scott <peter@scott-law.com>; jbothwick@crossharborcapital.com <jbothwick@crossharborcapital.com>
Subject: [EXTERNAL] RE: CMR Temporary Lease Map Question

Lyra

Thanks for your time on the phone this morning. In follow up of our call, the temporary change acres are a smaller footprint than the "regular" change applications because the "regular" change applications reflect full build out. I have attached a KMZ of the temporary change acres. As noted in the narrative and on the maps attached to the temporary change, the acres on the map/KMZ are 85 acres. There will be an additional 10 acres of native grass/seeding irrigation around the course that is not specified to an exact location so not shown on the map/KMZ. The total acres irrigated in the temporary change is 95 acres (85 + 10) as noted in the application.

On our call I asked how, and when, the application will be noticed – in paper, direct mailing, website, etc… You indicated you are not sure because this is a new process for DNRC. I requested that you follow up with the central office and then kindly let me know the exact process for the notice. When will it be noticed, will it be mailed directly, in paper, on DNRC website, or all of the above? Will there be two public notices? One at the ten-day point, and then another notice once the application is authorized? Or only one notice that is within 10 days of receipt of the applications? Then the objection deadline is 30 days from the day of authorization of the application.

On our call you mentioned a few times that you have been reviewing the processing manual for temporary changes. Would you please send me a copy of the processing manual?

Thank you.

Sincerely,

Deborah Stephenson
DMS Natural Resources, LLC
602 S. Ferguson Ave., Suite 2
Bozeman, MT 59718
Office: 406-582-4988
Cell: 406-600-1422
stephenson@dmsnaturalresources.com
www.dmsnaturalresources.com [dmsnaturalresources.com]

From: Reynolds, Lyra <Lyra.Reynolds@mt.gov>
Sent: Monday, January 26, 2026 2:14 PM
To: stephenson dmsnaturalresources.com [dmsnaturalresources.com] <stephenson@dmsnaturalresources.com>
Cc: Strasheim, Kerri <kstrasheim@mt.gov>
Subject: CMR Temporary Lease Map Question

Hi Deb-

I am putting together the Public Notice for the CMR Temporary Leases as required and I have a quick question about the map and acreage.

The maps submitted for the Temporary Leases show a different area of golf course irrigated than the golf course for the Change Applications. I see that only 95 acres of the course are proposed to be irrigated by the leased water, so I am hoping that will help explain the difference. The biggest difference I can tell is in NENENE Section 14, T2N, R10E. I have attached the Proposed use map for Change Application 43A 30170989 and the temporary lease map that I am using as references with the areas I see the difference circled in red. Could you provide

some additional information to help clarify why the differences between the Change Application golf course and temporary lease golf course exist?

Would you also be able to send the shapefile for the golf course as proposed in the temporary lease? I want to make sure the public notice map properly reflects the proposed POU.

Thanks!
-Lyra

Lyra Reynolds (they/them/she/her) | Hydrologist/Specialist
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Montana Department of Natural Resources and Conservation
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How did we do? Let us know here: [forms.office.com]Feedback Survey [forms.office.com]