Montana Water Court
PO Box 1389
Bozeman, MT 59771-1389
(406) 586-4364
1-800-624-3270
watercourt@mt.gov

IN THE WATER COURT OF THE STATE OF MONTANA
YELLOWSTONE DIVISION
CLARKS FORK YELLOWSTONE RIVER BASIN (43D)
PRELIMINARY DECREE

* *

CLAIMANT: Lewallen & Lewallen LLC	**CASE 43D-0621-R-2021** 43D 197544-00

NOTICE OF FILING OF MASTER'S REPORT

This Master's Report was filed with the Montana Water Court on the above stamped date. Please review this report carefully.

You may file a written objection to this Master's Report within **10 days** of the stamped date if you disagree or find errors with the Master's findings of fact, conclusion of law, or recommendations. Rule 23, W.R.Adj.R. If the Master's Report was mailed to you, the Montana Rules of Civil Procedure allow an additional 3 days be added to the 10-day objection period. Rule 6(d), M.R.Civ.P. If you file an objection, you must serve a copy of the objection to all parties on the service list found at the end of the Master's Report. The original objection and a certificate of mailing to all parties on the service list must be filed with the Water Court.

If you do not file a timely objection, the Water Court will conclude that you agree with the content of this Master's Report.

MASTER'S REPORT

Statement of the case

Irrigation claim 43D 197544-00 received the following issue remarks.

> THE TYPE OF HISTORICAL RIGHT AND PRIORITY DATE ARE QUESTIONABLE. DOCUMENTATION TO SUPPORT THE TYPE OF HISTORICAL RIGHT AND PRIORITY DATE WERE NOT SUBMITTED WITH THIS CLAIM.
>
> THE PRIORITY DATE MAY BE QUESTIONABLE. THIS CLAIM IS FOR A FILED APPROPRIATION ON BLUEWATER CREEK WITH A PRIORITY DATE POSTDATING CASE NO. 35, CARBON COUNTY.

Issue remarks result from Department of Natural Resources and Conservation ("DNRC") claims examination. Claims examination confirms the historical use of water right claims and identifies issues with claims. If claims examination cannot confirm some aspect of a claim, an issue remark is added to the claim.

Montana law requires the Water Court to resolve issue remarks. Information before the court resolved one of the issue remarks. However, the following issue remark was not resolved through the objection process and there was not enough information in the claim file or before the court to resolve the issue remark.

> THE TYPE OF HISTORICAL RIGHT AND PRIORITY DATE ARE QUESTIONABLE. DOCUMENTATION TO SUPPORT THE TYPE OF HISTORICAL RIGHT AND PRIORITY DATE WERE NOT SUBMITTED WITT THIS CLAIM.

Pursuant to § 85-2-248(3), MCA, the court may first contact claimants for further information to resolve an issue remark. Therefore, a deadline was set for Lewallen & Lewallen LLC to file information resolving the issue remark.

Dr. Richard Lewallen, on behalf of Lewallen & Lewallen LLC, completed the issue remark resolution process.

Issues

1. What is the historically accurate type of historical right and priority date?
2. Are the type of historical right and priority date issue remarks resolved?

Findings of fact

1. Statement of claim and Preliminary Decree abstract 43D 197544-00 identify the claim's type of historical right as "filed" and a February 20, 1950 priority date.

2. The historically accurate type of historical right for claim 43D 197544-00 is "use."

3. The historically accurate priority date for claim 43D 197544-00 is February 20, 1950.

Principles of law

1. A properly filed Statement of Claim for Existing Water Right is prima facie proof of its content. Section 85-2-227, MCA. This prima facie proof may be contradicted and overcome by other evidence that proves, by a preponderance of the evidence, that an element of the prima facie claim is incorrect. This is the burden of proof for every assertion that a claim is incorrect. Rule 19, W.R.Adj.R. A preponderance of the evidence is a "modest standard" and is evidence that demonstrates the fact to be proved is "more probable than not." *Hohenlohe v. State*, 2010 MT 203, ¶ 33, 357 Mont. 348, 240 P.3d 628.

2. The Montana Water Court is permitted to use information submitted by the Department of Natural Resources and Conservation, the statement of claim, information from approved compacts, and any other data obtained by the court to evaluate water right claims. Section 85-2-231(2), MCA.

3. When resolving issue remarks, the Montana Water Court must weigh the information resulting in the issue remark and the issue remark against the claimed water right. Section 85-2-247(2), MCA.

4. The Montana Water Court has the authority to resolve issue remarks when the claim file and information available to the court provide a sufficient basis to do so. Section 85-2-248(3), MCA.

5. Any individual with a valid appropriation not a party to a district court decree may petition the district court to make the individual a party to the decree and establish

the right in relation to the other rights in the decree. Section 89-835, RCM (1947) (repealed 1973). Failure to follow this procedure disallows an appropriator to assert a priority against any subsequent appropriator identified by the decree. Section 89-837, RCM (1947) (repealed 1973).

6. Judicial notice of facts may be taken from a source "whose accuracy cannot be reasonably questioned." Rule 201, M.R.Ev.

Analysis

Issues 1 and 2 –type of historical right, priority date; issue remark resolution

Statement of claim 43D 197544-00 identified a "filed" right with a February 20, 1950 priority date. Included with the statement of claim were an Assignment of Water and Ditch Rights for the purposes of fulfilling a Contract for Deed from Marko Rukavina and Mary Rukavina to Nelson E. Sanford and Clara Sanford, the aforementioned Contract for Deed, and a Warranty Deed from Nelson E. Sanford and Clara Sanford to Herbert S. Hulse and his wife whose first name is illegible in the deed. The Assignment of Water and Ditch Rights assigned 100.00 miner's inches (2.50 cubic feet per second (CFS)) from a well drilled for oil in the SESE of Section 4, Township 6 South, Range 24 East, Carbon County. The Warranty Deed transfers 200.00 miner's inches of the Rukavina gas well to Herbert Hulse. Statement of claim 43D 197544-00 listed Herbert S. Hulse and the Huard Morse Partnership as co-claimants. Huards and Morse transferred the place of use and appurtenant water right to Lewallen & Lewallen LLC. *See* claim file. The record suggests the statement of claim identified claim 43D 197544-00 as a filed right because the Assignment of Water and Ditch Rights, Contract for Deed, and the Warranty Deed were filed with the Clerk and Recorder's office. While helpful, these documents are not the type of filings required to identify the claim as a filed right for the purposes of the adjudication.

During claims examination, DNRC modified the source from the artesian well "Rukavin[a] #1" identified by statement of claim 43D 197544-00 to Bluewater Creek based upon the claimed point of diversion. *See* claims examination worksheet signed by

examiner Carpenter on Dec. 18, 1987, claim file.

On September 20, 2021, Dr. Richard Lewallen, on behalf of claimant Lewallen & Lewallen LLC, filed evidence. The evidence included:

- Several pages from the 1969 Groundwater Inventory for Carbon County, Montana, published by the Montana Water Resources Board.
    - The publication discusses the drilling of an oil test in 1950 in the NWSESE Sec 4, T6S, R24E, Carbon County, that resulted in an artesian flow of water used for domestic and irrigation purposes. *See* Table 10 of the publication and the entry for the Town and Marks.
    - The publication discusses a "large-yield" artesian well known as the Town and Marks well located in Township 6 South, Range 24 East, Carbon County, originally drilled as an oil exploration well. *See* p. 20.
    - The publication notes that a total of 400.00 miner's inches (10.00 CFS) of the artesian flow were claimed and filed on by the same appropriator and, "Unused water is allowed to flow into Bluewater Creek." *See* p. 20-21.
- A well record, identifying Rukavina as the landowner and the Ajax Oil Co. as the lessee, notes that on February 3, 1950, flowing water was witnessed. Rukavinas requested completion of the well as a water well - not an oil well.
- A Sundry Notices and Report of Wells received by the Oil Conservation Board and Board of Railroad Commissioners on April 8, 1950, reported that Well No. 1, located in the NWSESE of Section 4, Township 6 South, Range 24 East, Carbon County "was abandoned as an oil possibility and completed as a water well, at the request of the property owners and a copy of Release from them is herewith submitted."
- The Release, signed by the owners of the NWSESE of Section 4, Township 6 South, Range 24 East, Carbon County, Marko Rukavina and Mary Rukavina, petitioned the "honorable Board to waive the plugging of the well drilled on the above premises by Ajax Oil Company and H.O. Batzer and permit us, as owners

of the said land, to take over the said well for a water well."

- A Log of Oil or Gas Well filed with the Montana Railroad Commission on May 5, 1950. The Log includes the following entries:
    - "Company Ajax Oil Company"
    - "Lessor or Tract Rukavina"
    - "Well No. 1 Sec 4, T 6S, R 24E, County Carbon"
    - "Finished drilling February 17, 1950."

The evidence in the claim file and the evidence provided by Dr. Lewallen establishes that claimant's predecessors-in-interest developed and put the artesian well to beneficial use as a water well by the February 20, 1950 priority date identified by statement of claim 43D 197544-00. Based upon the point of diversion on Bluewater Creek identified by statement of claim 43D 197544-00, the 1.25 CFS (50.00 miner's inches) identified by statement of claim 43D 197544-00 appears to be the unused portion of the artesian well that flows into Bluewater Creek, mentioned by the 1969 Groundwater Inventory for Carbon County, Montana.

The evidence in the claim file and the evidence provided by Dr. Lewallen establishes ownership of the amount of water claimed by water right claim 43D 197544-00 from Rukavinas to Lewallen & Lewallen LLC, confirms the beneficial use of the water by the priority date identified by statement of claim 43D 197544-00, and establishes the claim as a "use" claim.

A copy of the evidence provided by Dr. Lewallen is included with this report. Both the report and the evidence will be placed in the claim file for future reference.

The issue remark concerning the priority date postdating the Bluewater Creek decree is resolved by information before the court. Any individual with a valid appropriation not a party to a district court decree may petition the district court to make the individual a party to the decree and establish the right in relation to the other rights in the decree. Section 89-835, RCM (1947) (repealed 1973). Failure to follow this procedure disallows an appropriator to assert a priority against any subsequent appropriator identified by the decree. Section 89-837, RCM (1947) (repealed 1973).

The Preliminary Decree source index for Basin 43D identifies all claims from Bluewater Creek with a priority date postdating the district court decree. All such claims are "filed" or "use" rights or are "B" late claims. None of the junior "filed" or "use" right appropriators petitioned the district court to be added to the Bluewater Creek decree. "B" late claims are subordinated to all timely filed claims.

Therefore, neither the "B" late claims nor the junior "filed" or "use" claims can assert a priority date senior to claim 43D 197544-00 based on compliance with § 89-835, RCM. The issue remark stating claim 43D 197544-00 postdates the Bluewater Creek district court decree does not raise an issue that requires resolution by the court.

Conclusions of law

The evidence provided by Dr. Lewallen on behalf of Lewallen & Lewallen LLC, overcomes, by a preponderance of evidence, the prima facie proof afforded the type of historical right identified by statement of claim 43D 197544-00 and justifies modification of the type of historical right.

The evidence in the claim file along with the evidence provided by Dr. Lewallen on behalf of Lewallen & Lewallen LLC confirms the accuracy of the prima facie proof afforded the priority date identified by statement of claim 43D 197544-00.

The type of historical right and priority date issue remarks are resolved.

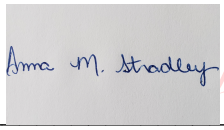
Recommendations

Based upon the foregoing, irrigation claim 43D 197544-00 should be modified as follows to accurately reflect historical use.

TYPE OF HISTORICAL RIGHT: ~~FILED~~ **USE**

The issue remarks should be removed from the claim abstract.

A Post Decree Abstract of Water Right Claim accompanies this report to confirm implementation of the recommendations in the state's centralized water right record system.



Anna M. Stradley
Senior Water Master

Service via USPS Mail

Lewallen & Lewallen LLC
4234 Audubon Way
Billings, MT 59106

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WATER COURT
ABSTRACT OF WATER RIGHT CLAIM
CLARKS FORK YELLOWSTONE RIVER
BASIN 43D

Water Right Number: **43D 197544-00** STATEMENT OF CLAIM

Version: 3 -- POST DECREE

Status: ACTIVE

Owners: LEWALLEN & LEWALLEN LLC
4234 AUDUBON WAY
BILLINGS, MT 59106

Priority Date: FEBRUARY 20, 1950

Type of Historical Right: USE

Purpose (Use): IRRIGATION

Irrigation Type: SPRINKLER/FLOOD

Flow Rate: 1.25 CFS

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

Climatic Area: 1 - HIGH

Maximum Acres: 205.75

Source Name: BLUEWATER CREEK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

ID	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1		NESWSW	5	6S	24E	CARBON

Period of Diversion: APRIL 1 TO NOVEMBER 1

Diversion Means: HEADGATE

Ditch Name: ORCHARD DITCH

Period of Use: APRIL 1 TO NOVEMBER 1

Place of Use:

ID	Acres	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1	40.15		E2E2	1	6S	23E	CARBON
2	143.00		W2	6	6S	24E	CARBON
3	22.60	1	NWNW	7	6S	24E	CARBON
Total:	205.75						

Remarks:

THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE SUPPLEMENTAL WHICH MEANS THE RIGHTS HAVE OVERLAPPING PLACES OF USE. THE RIGHTS CAN BE COMBINED TO IRRIGATE ONLY OVERLAPPING PARCELS. EACH RIGHT IS LIMITED TO THE FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT. THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE.

24697-00 24698-00 24699-00 24700-00 24701-00 197544-00
197545-00

From: RICHARD LEWALLEN rpdlew@aol.com
Subject: Case 43D-0621-R-2021
Date: Sep 15, 2021 at 5:34:33 PM
To: Mt.Water Court astradley@mt.gov

Dear Judge Stradley,

I began researching this watertight last night.My son messaged me with a reference last evening which is titled Groundwater Inventory Carbon County MT written in May,1969.This is 38 pages long and describes the geology,faults and sources of groundwater in Carbon County.It described a Town and Marks oil well that was drilled near the Bluewater Fish Hatchery In 1950 and hit high pressure artesian water that over a years period of time produces 5,840 acre feet of water. The location of the well was described and is NW SE SE 4 and 6S-24E.This water was claimed as 150 miners inches for irrigation and 250 miners inches by the same appropriation.

Today I went to the Oil and Gas Well devision In Billings and got the paperwork and logs for the well that was drilled at that location.The well was name d Rukavina Well number 1.The well was drilled to a depth of 786 feet where a heavy flow of water was encountered in the TenSleep formation.The column of water gushed 15 to 20 feet above the well head. The well was abandoned as an oil possibility and completed as a water well at the request of the property owners. I do have a copy of the letter of the property owners dated 3/21/950 requesting that the well not be plugged and to let them take over the well as a water well. The names on the letter are Mark and Mary Rukavina.While I was there I checked to see if there were any other wells drilled in that section and there were none.There was another oil well drilled on a neighboring section that was plugged and another a section or two away that was plugged. I believe the Town and Marks well described in 1969 is the Rukavina Well number 1.Water has been flowing from this well since 2/3/50.

I do have copies of the well logs.It does appear to me that there is a fairly clear chain of paperwork from the Rukavina water right to the property I own.However,that is not for me to decide and I await further instructions as to what needs to be looked into further.

Hopefully,this has been helpful and it certainly has been educational for me and the geology of the area is fascinating.

Look forward to your response.

Richard Lewallen

Case 43P-0621-R-2021

GROUNDWATER INVENTORY

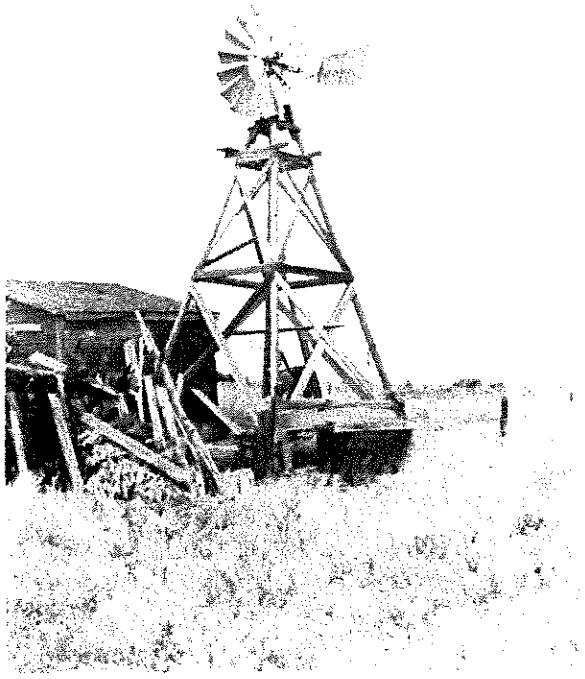
CARBON COUNTY MONTANA

STATE OF MONTANA

Published by
MONTANA WATER RESOURCES BOARD
Helena, Montana
1988

GROUNDWATER INVENTORY

CARBON COUNTY
MONTANA



MONTANA WATER RESOURCES BOARD
Helena, Montana

COMPILED AS OF JANUARY 1969
MONTANA WATER RESOURCES BOARD

of surface water. Records of wells drilled in mountain reaches of Rock Creek and other streams report yields of from 3 to 50 gpm with 13 to 24 feet of drawdown.

Pryor Uplift. The Pryor Uplift includes the mountainous region and the flanking area. The Pryor Mountains is a significant intake area, and a considerable amount of runoff finds its way into the subsurface. The large-capacity water wells in bedrock thus far have been found on the flank of the Uplift. Accounting for this are the outcrop pattern and proximity to the recharge area, enhanced permeability due to intense faulting and fracturing and weathering, and the relative shallow depths to aquifers. Alluvium on the

Figure 3.—Origin of Bluewater Springs. (Left to right, Gary Knudson, Bob Marsh, Bradley Bruce.)

flank is widespread but thin, and probably does not store much water. The alluvium-colluvium here appears to have been deposited by numerous mountain streams which are close-spaced and have not cut deeply into the underlying bedrock. The result is a thin blanket of coalescing gravels, spread over dipping bedrock formations on the flank of the Uplift. Several small springs are reported in this unconsolidated material; these are probably seeps where runoff percolates into the gravel at higher elevation and discharges in topographic depressions in which groundwater conduits have been breached by erosion. Small-yield wells might also be possible.

This area hosts large-yield springs and wells, especially in the vicinity of the Bluewater Springs in Township 6 South, Range 24 East. Springs reportedly sustain Bluewater Creek which has an average annual flow of 27.4 cfs (cubic feet per second). A flow

Figure 4.—Water of Bluewater Springs diverted for Montana Fish and Game Department fish hatchery.

of 1 cfs is equal to 448.8 gpm. The maximum reported individual spring-discharge is 3,720 gpm. Spring water is used for irrigation, livestock, and fish-rearing. Large-yield artesian wells are also known to have been developed. One such well of record (Town and Marks) in Township 6 South, Range 24 East was originally drilled as an oil exploration well and encountered an artesian flow of 330 miners inches at a depth of 786 feet (1 miners inch equals 11.25 gpm). Of this amount, 150 miners inches have been claimed for irrigation; an additional 250 miners inches of spring water have been claimed by the same ap-

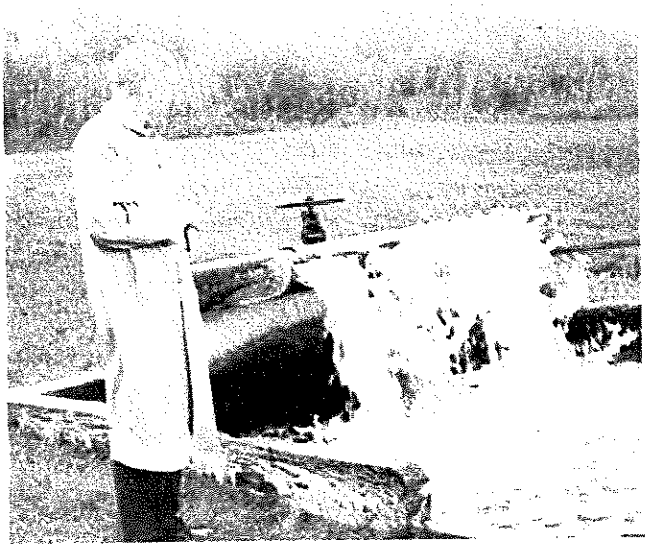


Figure 5.—Close-up of oxygenation sprinkler, Bluewater Springs Fish Hatchery.

propriation. Unused water is allowed to flow into Bluewater Creek. The Montana Fish and Game Commission has appropriated 2,534 gpm of water from the Bluewater Springs for fish-rearing and has established a fish hatchery in the area.

Northward along the flank of the Uplift, artesian flows have been encountered by oil exploration wells from Cretaceous sandstones, but none have been nearly as large as those known or suspected to be from Paleozoic rocks.

Basin Area. The Basin Area herein includes all of Carbon County between the Beartooth Plateau and the flank of the Pryor Uplift, from the Beartooth Mountain front on the southwest, to the eastern edge of the Clarks Fork valley on the northeast and the formation limit of the Fort Union on the southeast. The significant features of this area are the alluvium-filled valleys of major drainages and the gravel-capped terraces. Wells have been completed in the upper part of the Fort Union, but depth to aquifer has deterred development of deeper bedrock aquifers.

Most of the water wells completed in alluvium are located in teh Clarks Fork valley. The width of the Clarks Fork floodplain varies from 2 to 6 miles. Clusters of alluvium water-wells are also found near the juncture of Red Lodge Creek with Rock Creek, where the width of the fused floodplain has increased from less than 1 mile to more than 2 miles. The average depth of the floodplain alluvium is about 30 feet, and much of the material is sand and gravel. Reported well-yields are mostly in the range of 5 to 50 gpm, with several reported at 200 to 300 gpm and others commonly between 50 and 200. In some instances alluvial water is bypassed intentionally due to sand-flowage or unsuitable water-quality. Water-quality deterioration can occur due to the solution of minerals in nearby bedrock, particularly shale, and due to the percolation of irrigation water through chemically treated soil to the shallow water-table.

Terrace gravels are widely distributed along Rock Creek, between the eastern front of the Beartooth Mountains and the Clarks Fork River, and along the north front of the mountains. From available information, only the gravels along Rock Creek are utilized as sources of groundwater. The gravels are water-saturated at least part of the time, as indicated by the dozens of groundwater appropriations filed on springs issuing from these gravels. Wells in the gravels also yield water. Two drawbacks to utilizing this source of groundwater are the inherent condition of relatively rapid depletion due to elevation above Rock Creek and good aquifer permeability. A clean gravel bed of sufficient thickness and extent overlying a bedrock depression could support large yields; several wells report yields in excess of 1,000 gpm but most wells have small yields. The Rock Creek gravel benches are extensively irrigated and some deterioration of water-quality could be expected. A few springs are reported in other localities, but data on these areas of terrace gravels is very sparse or nonexistent.

Shallow sandstones of the Fort Union are utilized as sources of groundwater. Well-yields are small but apparently adequate in quality and quantity for stock-use. Deeper bedrock aquifers are not extensively utilized, mainly due to depth to aquifer, although oil exploration wells have indicated that water is available at depth. Depth to aquifer would be considerably less in areas of domal uplift compared to synclinal parts of the basin. Groundwater from the Madison limestones is presently being used for the secondary recovery of oil in the Elk Basin oil field straddling the State line in Range 23 East.

GROUNDWATER AVAILABILITY AND USE

Availability of groundwater implies that the resource is economically obtainable and can be produced in quantity and quality adequate for a specific need. Shallow groundwater is available in much of the county and groundwater of suitable quality and quantity is obtained from unconsolidated sands and gravels at or near the surface, and from underlying bedrock aquifers. Most of the wells in the county were drilled to provide water for domestic and livestock uses, but most of the utilized groundwater discharge is used for irrigation. Most of the wells have been drilled into unconsolidated aquifers, but most of the groundwater discharge is from bedrock. It is estimated that about 5,000 acre-feet of water are withdrawn through wells each year from unconsolidated aquifers, and about 12,000 acre-feet from bedrock (Table 5). Springs in the county are estimated to discharge an additional 20,000 to 25,000 acre-feet annually, and most of this is from bedrock. From Table 6, the estimated amount of water stored in the unconsolidated aquifers and available through wells is 37 times greater than the total annual withdrawal from these aquifers. Annual recharge to the alluvium and terrace gravels (not counting irrigation excess) is estimated to be about 44,000 acre-feet (Table 7). Recharge to alluvium and terrace gravels is greater than dis-

Figure 9.—Outlet for Town and Marks artesian well, flowing 3,700 gpm from the Tensleep. (Bob Marsh, Gary Knudson, left to right.) In the background are fields irrigated with water from this well.

detrimental effect on large yields in the Bluewater Springs area, faulting in the vicinity of Bowler Flat and Red Dome is more intense and has not been completely deciphered. In 1923 an oil exploration well in Section 20, Township 7 South, Range 24 East, in an intensely faulted area, encountered several water-flows drilling to a total depth of 1,846 feet. Water flows were reported at 270 to 273, 632 to 634, 634 to 638, 656 to 661, 695 to 696, 700 to 705, 707 to 709, and 856 to 887 feet. It is estimated that water flowed from this well at the rate of 15,000 to 20,000 barrels per day (about 550 gpm), most of it from above 1,000 feet, out of the Madison and Tensleep, and perhaps the Chugwater. Several oil exploration wells drilled about 4 miles to the northeast reported no water in a tight Tensleep section (the Madison was not reached). It is concluded that fracturing associated with faulting locally can provide permeability necessary for large-yield wells and springs, and can provide hydraulic continuity between formations. The amount of available information is not sufficient to consider this a general statement applicable to all faulted areas.

According to information compiled by the U.S. Geological Survey, fracturing of the rock section is very significant in the Bluewater Springs area and

Figure 10.—Diversion pipe, Town and Marks well.

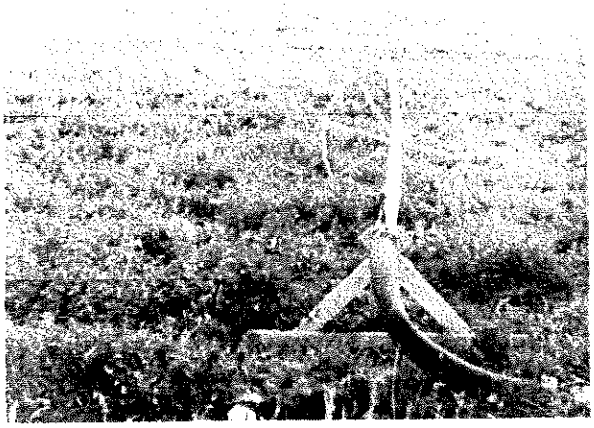


Figure 11.—Town and Marks sprinkler used to irrigate fields with Tensleep groundwater.

accounts for large-yield springs and wells. The U.S. Geological Survey also reports that water in the Chugwater formation contains 600 to 700 ppm total dissolved solids; that in the Tensleep contains 1,160 ppm, and that in the Madison probably contains 1,000 to 1,500 ppm. Wells and springs discharging groundwater from the Chugwater-Tensleep-Madison interval are enumerated in Table 10.

South of the Bowler Flat, an oil test well in Section 32, Township 8 South, Range 25 East drill-stem tested the Madison interval 2,937 to 3,029 feet, and recovered 3,015 feet of water in the pipe in one hour. Water probably would have flowed to the surface if the formation test had been of slightly longer duration.

Table 10.—Reported wells and springs utilizing groundwater from the Chugwater-Tensleep-Madison interval

Name	Location	Year	T.D. (ft.)	Use	Yield	SWL (ft.)	PWL (ft.)	Remarks
Town & Marks	NW SE SE 4 6S.-24E.	1950	789	Domestic, Irrigation	F 3,712 gpm* F 3,720 gpm**	asterisk explained p 33		Oil test drilled in 1950. Tensleep reported at 635 feet. Artesian flow to surface from 786 feet.
Bureau of Land Management	NE SW 15 9S.-26E.	1954	616	Stock, Wildlife	6 gpm	300	500	Tensleep reported at 590 feet.
Bureau of Land Management	NE NE 28 7S.-25E.	1962	283	Stock	10 gpm	221	230	Tensleep reported at 200 feet.
Bureau of Land Management	SW SW 4 8S.-25E.	1960	169	Stock	21 gpm	40	45	Embar reported at 44 feet.
Bureau of Land Management	NE NE 27 9S.-26E.	1962	1,430	Stock				Oil test turned over to BLM for water well. Tensleep reported at 1,325 feet.
Conoco	SE SE SE 33 9S.-25E.	1940		Industrial	20,580 gallons per month		3,574	Tensleep reported at 3,523 feet.
Conoco	SW SW 34 9S.-25E.	1941	3,556	Industrial	32,760 gallons per month		3,436	Tensleep reported at 3,466 feet.
Unknown	SE NW 19 8S.-25E.	1948	2,080					Oil test, left as water well by request of land owner. Tensleep reported at 1,560', Madison at 2,010 feet.
Stevens, Wm. M.	SW SW 22 7S.-24E.	1916		Stock	15 gpm			Spring near fault trace.
Stevens, Wm. M.	N½ N½ 18 7S.-24E.	1900		Stock	30 gpm			Spring near fault zone.
Clarence Parker	SE SW 24 7S.-24E.	1958	87	Stock	60 gpm			Questionable source of water.

Jack Parker	NE SE 23 7S.-24E.	1914	110	Stock	60 gpm	Questionable source of water.
Atlantic Oil Co. (may be source of Stevens "Spring")	Red Dome 20-7S.-24E.	1929	1,846		F 450± gpm	Overflow reportedly has been used several miles distant for irrigation.
Wm. M. Stevens	SE SE NW 20 7S.-24E.	1916		Stock	F 100 gpm	Data lacking; may be source of Stevens "Spring."
Jake Hahn	NW SE 10 7S.-23E.	1957	3,200	Domestic	F 1,167 gpm	Oil test; Chugwater reported at 3,155 feet.
Jake Hahn	NW NE 15 7S.-23E.	1961	2,000	Stock, Irrigation	F 2,153 gpm	Oil test; TD reported in Morrison from sample examination; water flow probably from lower formation, through fractures.
Town & Marks	3, 9 6S.-24E.	1895		Domestic, Irrigation	2,812 gpm* 43+ gpm**	Springs.
Montana Fish & Game Comm.	SW NE 9 6S.-24E.	1947		Fish-rearing	2,534 gpm* 2,506 gpm**	Bluewater Springs (one at 2,080, one at 426 gpm).
Mary E. Weaver	23, 24 8S.-25E.	1965		Stock, Irrigation	3,375 gpm	Spring; used May 1 thru October 30.
G. T. Lester	15 6S.-24E.	1897		Domestic, Stock, Irrigation	3,960± gpm* 5,099 gpm**	Three springs; locations reported by U.S.G.S. differ from appropriation locations.
Thiel	16, 22, 27 6S.-24E.			Domestic, Stock	Under 10 gpm**	Springs; no record of appropriation.

* claimed by appropriation.

** reported yield, U.S.G.S. W.S.P. 1779-J (1964).

GLOSSARY

Aquifer test—a means of evaluating an aquifer locally, under controlled conditions, by observing well-yields, drawdowns, and elapsed time intervals.

Artesian—refers to a well or water; such water is under sufficient pressure so that it rises above the top of the zone of saturation for that aquifer; the water may flow to the surface at which time it is a flowing artesian well.

Dip—is the term used by a geologist to describe the acute angle a layer of bedrock makes with the horizontal. "Vertical" is used to describe a rock-layer making a 90-degree angle with the horizontal.

Dipslope—used to describe the local topography, where the slope of the land surface approximately parallels the dip of the bedrock on which the topography has developed.

Drawdown—is the lowering of the water level or pressure head in a well due to discharge from it or from another well.

Drill-stem test—a method of evaluating reservoir characteristics of deep rock formations, and bringing fluids to the surface, during or after the drilling of a deep well.

Fluvial—refers to rivers or streams; a fluvial gravel is an accumulation of gravel deposited by running water of a river (stream, creek, etc.). These deposits are unconsolidated or only weakly cemented.

Glaciofluvial—refers to gravel or sand and silt deposited by streams flowing from melting glaciers.

Groundwater—(or ground water) is water within the zone of saturation; the Montana Groundwater Code defines groundwater as "any fresh water under the surface of the land including the water under the bed of any stream, lake, reservoir, or other body of surface water."

Hogback—a ridge resulting from erosion; a steeply dipping or vertical layer of hard bedrock which originally was deposited horizontally.

Millidarcy—the degree of permeability of an aquifer, indicating the ability of a fluid to move through pore spaces in the rock.

Permeability—refers to that character of rock, unconsolidated or bedrock, which permits water to move through connected spaces within the rock.

Static water level—the level at which water in a well is supported by hydrostatic pressure; it is measured from the surface when the well is not discharging.

Strike—describes the bearing or direction of an outcropping geologic formation; it is perpendicular to the direction of dip, and normally measured from the north compass direction.

Tectonism—refers to the structural behavior of the earth's crust; infers instability of the earth's crust.

Transmissivity—or transmissibility (coefficient of) is the rate of flow of groundwater, in gallons per day, through a one-foot width of aquifer section having a height equal to saturated aquifer thickness and under a unit hydraulic gradient of one foot per foot. "T" values, with the dimensions of gallons per day per foot, are determined from aquifer tests and are used to evaluate aquifer-potential.

Zone of Saturation—refers to rocks or that part of a rock formation, unconsolidated or bedrock, in which all openings are saturated with water. In deep aquifers, openings locally may be partially filled with hydrocarbons or inert gases.

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(Note: Reports of the U.S.D.A. Soil Conservation Service, and of Mueller Engineering of Billings, Montana, were also used as references.)

Case 43D-0621-R-2021

Well No.

22

Well Name Ajax Oil Co- Rukavina #1

Twp. 6 S.

Rge. 24 E.

Structure: Blue Creek

Sec. 4

County: Carbon

Location: NW SE SE | 990 N/S 990 W/E

State: Montana.

Surface Elevation and Formation: 4190

Landowner: Rukavina API # 25-009-05260

Lessee: Ajax Oil Co

Drilling Company: Ajax Oil Co

Representative in Charge: Wm. G Dady, Geologist, Casper Wyo

Contractor or Drillers: Benedict, Huss, Ash

Date Location: 9-27-49 App 11-3-49 FCP)

Date Spudded: 9-27-49

10-7-49 Standing 141', 140' of 12½" c/w 50 sx (FCP) LOG IN FILE

12-2-49 Standing 141 MOCT (FCP)

12-9-49 SD 220, hole full of water (FCP)

12-23-49 Standing 539, (FCP)

12-30-49 Standing 610' (FCP)

1-6-50 Standing 588' ? (FCP)

1-27-50 Standing 693, 586' of 8-5/8 w/ 75 sx. Chugwater 240, SD for weather (FCP)

2-3-50 Flowing water in Tensleep (FCP)

Completed	Total Depth	Formation
2-15-50	787	Amsden?

Oil	Gas	Water
Abd as water well		

Final Result: Abd
Left as water well

2-10-50 Drilling 760 (FCP)

2-15-50 More water, Standing 787 Amsden ? (FCP)

2-28-50 Abd as water well - tops later (HEW)

FROM SUNDRY NOTICE APP 4-8-50 FCP)
Well was abd as an oil possibility and comp as water well at the request of property owners and a copy of release from them is herewith submitted.
/s/ W.G.Dady

Sands:
635-685 Water (Tensleep)

Casing Record:
141' of 12½" w/ 50 sx
583' of 8-5/8" w/ 250 sx.

Completed as water well.

Formation tops (Per F.A.Woodard)

Chugwater	240
Embar	576
Tensleep	635
T.D.	789

Case 4SU - 0621 - R - 2022

Form 33 1b—5M—10-47.

MONTANA RECORD PUBLISHING CO. HELENA, MONTANA

RECEIVED
APR 12 1950
Railroad Commission

BOARD OF RAILROAD COMMISSIONERS OF THE STATE OF MONTANA

OIL AND GAS WELL DIVISION

Lease Rukavina

SUNDRY NOTICES AND REPORT OF WELLS

(Indicate Nature of Data by Checking)

Notice of intention to drill		Subsequent record of shooting	
Notice of intention to change plans		Record of perforating casing	
Notice of date for test of water shut-off		Notice of intention to pull or otherwise alter casing	X
Report on result of test of water shut-off		Notice of intention to abandon well	X
Notice of intention to redrill or repair well		Subsequent report of abandonment	
Notice of intention to shoot		Supplementary well history	

March 30, 1950

Following is a ~~notice of intention to do work~~ / report of work done on land ~~owned~~ / leased described as follows:

MONTANA (State) — Carbon (County) — (Wildcat) (Field)

Well No. 1 — NW¼SE¼SE¼ 4 (¼ sec.) — 6 South (Township) — 24 East (Range) — MPM (Meridian)

The well is located 200 ft. {S. / N.} of North line and 240 ft. {E. / W.} of West line of Sec. 4 SE¼SE¼

The elevation of the derrick floor above the sea level is

DETAILS OF PLAN OF WORK

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work.)

This well was abandoned as an oil possibility and completed as a water well, at the request of the property owners and a copy of Release from them is herewith submitted.

RECEIVED
APR 3 1950
OIL CONSERVATION BOARD AND BOARD OF RAILROAD COMMISSIONERS
BILLINGS

Approved April 8, 1950
[signature]
Title Chief Oil & Gas Field Supervisor
Oil and Gas Well Division

Company Ajax Oil Company
By [signature]
Title Geologist
Address Box 1101, Casper, Wyoming

NOTE—Reports on this Form to be submitted to the Supervisor for Approval.

Case 43D-0621-K-2021

Billings, Montana
March 21, 1950

Board of Railroad Commissioners
of the State of Montana
Helena, Montana

Gentlemen:

The undersigned, owners of the NW¼SE¼SE¼ of Section 4, Township 6 South, Range 24 East, do hereby petition your honorable Board to waive the plugging of the well drilled on the above premises by Ajax Oil Company and H. O. Batzer and permit us, as owners of the said land, to take over the said well for a water well; and

We do also petition you to release Ajax Oil Company, H. O. Batzer, Clark Drilling Company, Wilcox Company, W. J. Witherspoon, Jr., Darwin H. Jepson, Farrell W. Woodard and D. H. McCauley from all liability for the said well, all in accordance with the attached release.

Yours very truly,

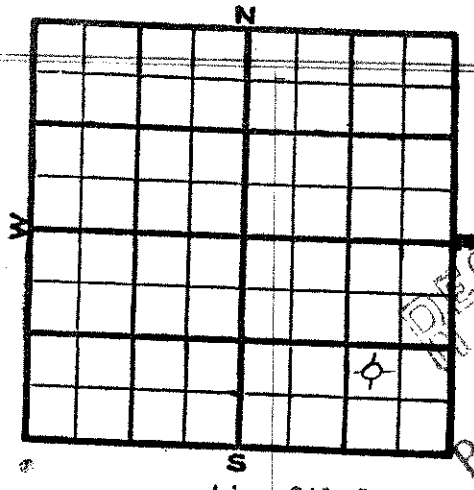
s/ Marko Rukavina

s/ Mary Rukavina
Her mark X

Witness to Mark of Mary Rukavina: s/ E. B. Yerrcie

Case 43 D-0621 - R-2021

LOCATE WELL CORRECTLY



This Log To Be Rendered in Triplicate

Form 297 10,000 8-46

Lease Rukavina

BOARD OF RAILROAD COMMISSIONERS OF THE STATE OF MONTANA

Austin B. Middleton, Chairman

Horace F. Casey, Commissioner Paul T. Smith, Commissioner

OIL AND GAS WELL DIVISION

RECEIVED MAY 5 - 1950 Railroad Commission

LOG OF OIL OR GAS WELL

Company Ajax Oil Company Address P.O.Box 1101, Casper, Wyoming

Lessor or Tract Rukavina Field Blue Trap State MONTANA

Well No. 1 Sec. 4 T. 6S. R. 24E. Meridian County Carbon

Location 990 app. ft. { N. / S. } of South Line and 990 ft. { W. / E. } East Line of Sec. Elevation 4190 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed W. H. Daly

Title Geologist

Date May 1, 1950 Address Box 1101, Casper, Wyoming

The summary on this page is for the condition of the well at above date.

Commenced drilling September 27, 19 49 Finished drilling February 17, 19 50

Oil or Gas Sands or Zones (Denote Gas by G)

No. 1, from to

No. 2, from to

No. 3, from to

No. 4, from to

No. 5, from to

Important Water Sands

No. 1, from 635 to 685 plus (Tensleep)

No. 2, from to

No. 3, from to

No. 4, from to

No. 5, from to

RECEIVED MAY 1 - 1950 OIL CONSERVATION BOARD AND BOARD OF RAILROAD COMMISSIONERS BILLINGS

CASING RECORD

Size Casing	Weight per Foot	Threads Per Inch	Make	Amount	Kind of Shoe	Cut & Pulled From	From	To	Purpose
12 1/2	52	8	Youngstown	141	Texas				Surface
8-5/8	36	8r	Spang	583					

CASING OR TOOLS LOST OR SIDETRACKED

From to Description

From to Description

From to Description

MUDDING AND CEMENTING RECORD

Casing Size	Where Set	Number Sacks of Cement	Methods Used	Mud Gravity	Amount of Mud Used
12 1/2	141	50	Hall. Displacement		
8-5/8	583	250	" "		

No. 4, from ..... to Case 789 No. 4, from 1 2021 to .....

No. 5, from ..... to ..... No. 5, from ..... MAY to 6 - 1950 .....

OIL CONSERVATION BOARD AND BOARD OF RAILROAD COMMISSIONERS BILLINGS

CASING RECORD

Size Casing	Weight per Foot	Threads Per Inch	Make	Amount	Kind of Shoe	Cut & Pulled From	From	To	Purpose
12½	52	8	Youngstown	141	Texas				Surface
8-5/8	36	8r	Spang	583					

CASING OR TOOLS LOST OR SIDETRACKED

From ..... to ..... Description .....

From ..... to ..... Description .....

From ..... to ..... Description .....

FOLD MARK

MUDDING AND CEMENTING RECORD

Casing Size	Where Set	Number Sacks of Cement	Methods Used	Mud Gravity	Amount of Mud Used
12½	141	50	Hall. Displacement		
8-5/8	583	250	" "		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth Set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell Used	Explosive Used	Quantity	Date	Depth Shot	Depth Cleaned Out

TOOLS USED

Rotary tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to 789 feet, and from ..... feet to ..... feet

DATES

..... , 19..... Put to producing Completed as water well , 19.....

The production for the first 24 hours was ..... barrels of fluid of which ..... % was oil; ..... % emulsion; ..... % water; and ..... % sediment.

If gas well, cu. ft. per 24 hours ..... Rock pressure, lbs. per sq. in. .....

Gallons gasoline per 1,000 cu. ft. of gas .....

EMPLOYEES

..... , Driller. F.O. Benedict , Driller

Lee Huss , Driller. R.E. Ash , Driller

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "side-tracked" or left in the well, give size and location. If the well has been dynamited, give date, size, position, and number of shots. If plug or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

Case 430-021-K-2021

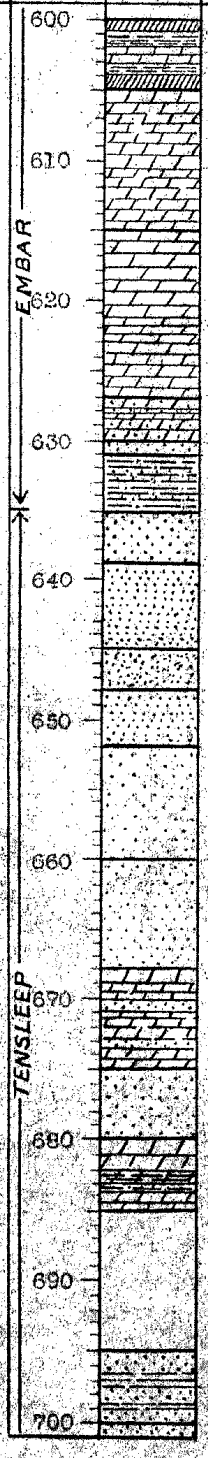
NAME: RUKAVINA NO. 1

STATE: MONTANA LOCATION: NW¼SE¼ Sec 4 T. 6 S. - R. 24E DRILLED BY: AJAX OIL

COUNTY: CARBON ELEVATION: 4190 ± DATE: JANUARY 1950

NOTES

1. On January 13 the hole was cased and cemented-in at 583' and was filled with water to hold cement.
2. On January 19 the plug was drilled out. Water was left in the hole and drilling resumed.
3. From 583' to 642' water was not bailed out. The water surface fluctuated between 20' and 50' from the top of the casing. There was no apparent inflow of water into the hole.
4. At 631' a small show of oil and gas-cut water came up with the bailer. There may have been some bubbling in the hole.
5. At 642' the hole started to make gas and oil-cut water which rose to the top of the casing. An vigorous effervescing spray rose 6" or more above the top of the water. Following bailings the water rose in the casing at a rate of about 20' in twenty minutes. The oil shows were slight and lasted about two hours. The gas continued to bubble for about 12 hours.
6. At 685' the hole started to make stagnant, black sulphur water which flowed about ½" over the top of the casing. There was no appreciable increase in flow to 786'.
7. At 786' a heavy flow of water was encountered and was forced 15' or 20' above the top of the hole. Fragments of dolomite, which were heavily coated with tar residue, were carried to the surface.



CLASSIFICATION

600'- 605' Anhydrite, dolomite and shale. Colors white, gray and red.

605'- 615' Gray, cherty dolomite.

615'- 627' Gray dolomite. Some tar residues.

627'- 630' Light gray dolomite with sand grains. Some tar residue.

630'- 631' Gray sand. Oil and gas show.

631'- 635' Red shale and gray sand. Brown stains-black tar res.

635'- 639' Red and gray sand. Stained and saturated with brown oil.

639'- 645' Pinkish-gray sand, medium- to fine-grained. Clusters of sand grains held together by oil.

645'- 648' Fine, light-gray sand. Some asphaltic residue.

648'- 652' Fine to medium-grained, brownish-gray sand. Sand clusters held together by asphaltic residue.

652'- 660' Buff to brown sand. Stained with brown oil. Clusters of sand held together by asphaltic residue.

660'- 668' Medium- to fine-grained, buff sand. Some tar residue. Clusters of sand grains held together by iron oxide.

668'- 675' Gray dolomite and sand. Some tar residue.

675'- 680' Fine to medium-grained, buff sand. Some tar residue.

680'- 685' Gray dolomite and chert. Some green shale.

685'- 695' No sample. (Probably sand).

695'- 700' Fine-grained gray sand and green shale.

RECEIVED
APR 6 1950
OIL CONSERVATION BOARD AND BOARD OF RAILROAD COMMISSIONERS
BILLINGS