DEQ
Montana Department
of Environmental Quality

May 16, 2024

CRAIG MILAM
KING RANCH SUBDIVISION
PO BOX 118
FRENCHTOWN, MT 59834

MISSOULA COUNTY

RE: Sanitary Survey- KING RANCH SUBDIVISION PWSID#MT0004158

Dear Mr. Milam:

I would like to thank you and Chuck Weihe for assisting me with the sanitary survey that I conducted at the King Ranch Subdivision Public Water Supply (PWS) on May 3, 2024 on behalf of the Montana Department of Environmental Quality (DEQ). In accordance with the Administrative Rules of Montana (ARM) section 17.38.231, the system management is responsible for seeing that a survey takes place once every three years and that it is performed by the DEQ or an agent approved by the DEQ.

The purpose of a sanitary survey is to help ensure that the PWS systems provide a safe and adequate water supply to the public, and to provide an opportunity for water suppliers to discuss technical and regulatory issues with DEQ staff. During a typical survey, the DEQ reviews the eight elements of a PWS that are numbered below under the heading of PWS System Descriptions. The following is a summary of your system as it appeared during this survey; any deficiencies that were observed or discussed are listed after the system descriptions.

INTRODUCTION

King Ranch Subdivision public water system, located along Wild Goose Lane and St. Andrews Place west of Frenchtown at the King Ranch Golf Course, consists of two wells with a common header, a pressure control assembly, and the distribution system. The system is at full build out with 28 connections serving about 70 residents. Information about the water system, including water testing results, can be found on the HOA website: KingRanchHOA.org.

There are 3 phases to the subdivision, with only phases 2 & 3 connected to one another; these two make up the PWS. Phase 1 is across the street and slightly further west. Because phase 1 has so few homes (8 connections) and its distribution system is not connected to the other phases, it is not part of the PWS. However, Phase 1 has separate water sampling done, with the operator clear that these samples (good or bad) may not be attributed to the King Ranch Subdivision PWS.

PWS FACILITY DESCRIPTIONS

1. Water Source (WL002, WL003): Well 1 05-08-96 E is located west of and closest to the pump house. A well log was located on the Ground Water Information (GWIC) web site (GWIC #155829) and shows the well was drilled by rotary method on 5/8/1996 by Jerome's Drilling, Inc. The annular space is grouted with bentonite to an unspecified depth (continuous feed). The log shows a static water level of 14

feet and a total depth of 186 feet. The 6 inch steel casing goes to 186 feet and has an unknown mechanism for water collection. The geologic source for the well is given as 112ALVM – Alluvium (Pleistocene). The well has a proper vent and sanitary sealing well cap. The submersible 5 hp Gould's well pump is controlled by a pressure switch inside the pump house.

Well 2 05-09-96 W is located west of and furthest from the pump house. A well log was located on the Ground Water Information (GWIC) web site (GWIC #155830) and shows the well was drilled by rotary method on 5/9/1996 by Jerome's Drilling, Inc. The annular space is grouted with bentonite to an unspecified depth (continuous feed). The log shows a static water level of 12 feet and a total depth of 184 feet. The 6 inch steel casing goes to 184 feet and has an open bottom for water collection. The geologic source for the well is given as 112ALVM – Alluvium (Pleistocene). The well has a proper vent and sanitary sealing well cap. The submersible 5 hp CentriPro well pump is controlled by a pressure switch inside the pump house.

The wells share a common header in the pump house and operate on a lead/lag, with the lead switching back and forth with each kick on. The control system was replaced last year. A single sample tap in the pump house can be used for raw water or entry point samples. Raw water samples would require the desired well pump to be on during sample collection from this tap. It is also worth noting that both wells have a relatively shallow static water level, and the system is currently not required to disinfect. Should the system start having bacti issues, full time disinfection may be required.

2. Treatment: King Ranch Subdivision does not provide any treatment at this time.

3. Distribution System (DS001): Reportedly, the distribution system primarily consists of 4 inch PVC piping, with galvanized pipe in the pump house. The distribution line leaves the pump house, hits a T, and branches off with a line to the East and one to the West, serving phases 2 & 3 of the subdivision. Each of the dead ends has a blow off, although there is no flushing program. The irrigation needs of the subdivision were originally to be supplied by the irrigation ditch, but for some unknown reason, the drinking water system has ended up being the supply. This has lead to occasional low pressure incidents during the months of highest demand. The subdivision HOA has addressed this by asking residents to stagger their watering times so they're not all going at once.

4. Finished Water Storage: King Ranch Subdivision does not have any storage facilities at this time.

5. Pumps/Pump Facilities and Controls (PC001): The pressure control assembly consists of eight (8) captive air tanks, all Well-X-Trol brand, located in the pump house. Each tank is valved, but they do not have individual drain spigots. Four of the tanks appeared to be in good working condition, but the other four were marked with an "x" as they're believed to be waterlogged (no water spurted out of those tested) and are to be replaced shortly with new tanks currently on order.

6. Monitoring/Reporting/Data Verification: Per the SDWIS database, the system has not incurred any violations in at least the past two years. Monitoring and reporting appear adequate.

7. Management and Operation: The system appears to be well managed and maintained.

8. Operator Compliance with State Regulations: System appears to be in compliance. The system has used the services of certified operator Chuck Weihe (#5806) now for many years.

Wastewater: Onsite septic systems.

Database Changes Made: None.

Water System Facilities (WSF) Table and Flow

Flow ↓	WSF ID	WSF Name	Description
	WL002	WELL 1 05-08-96 E GWIC 155829	Closest to pump house
	WL003	WELL 2 05-09-96 W GWIC 155830	Furthest from pump house
	CH001	COMMON HEADER	Inside pump house
	PC001	PRESSURE CONTROL ASSEMBLY 1	8 Well-X-Trol tanks (4 to be replaced as soon as the new tanks arrive)
	DS001	DISTRIBUTION SYSTEM	Residential

{Flow} →
WL002 & WL003 → CH001 → PC001 → DS001

Significant Deficiencies and Immediate Action Required:
Significant deficiencies may include, but are not limited to, defects in design, operation, or maintenance or a failure or malfunction of the sources, treatment, storage, or distribution system that the State determines to be causing or has the potential for causing the introduction of contamination into the water delivered to consumers.

No significant deficiencies were noted.

Other System Deficiencies or Issues:

1) Recommend securing a back up generator. The loss of power, and therefore water, for an extended period of time could cause considerable inconvenience to the consumers.

Items in the findings section above but not listed as significant sanitary deficiencies should be promptly addressed. While these items do not meet the EPA definition of significant deficiencies they are issues that should be corrected to minimize the potential for contamination to the system and to safely and effectively operate the system.

If you have any questions, comments, or corrections regarding this report, please feel free to contact me at 541-9015.

Sincerely,

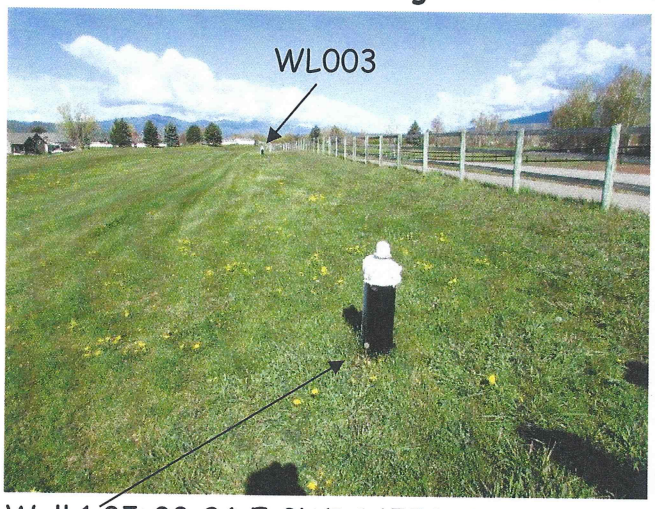
Sandy Arnold

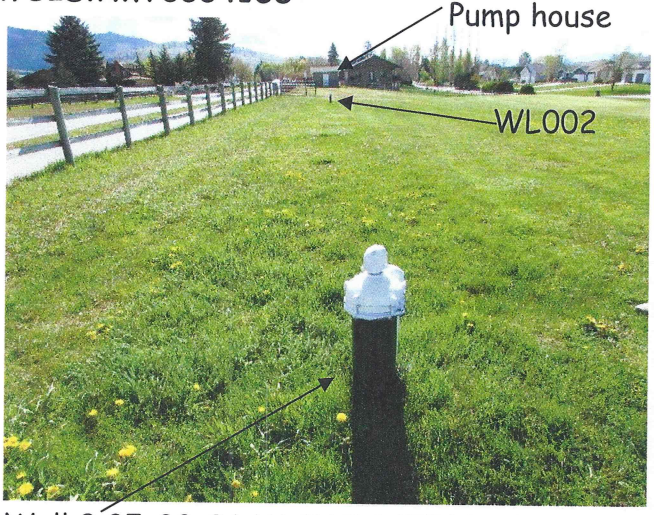
Sandy Arnold
Environmental Science Specialist
MT DEQ, Missoula Regional Office
sarnold@mt.gov

Attachments: Sanitary Survey Form
Montana Well Log Reports (2)
System Photos / Map

Cc: Missoula County Sanitarian w/o attachments
Sanitary Survey File (Helena)

Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158





Well 1 05-08-96 E GWIC 155829 (WL002)

Well 2 05-09-96 W GWIC 155830 (WL003)

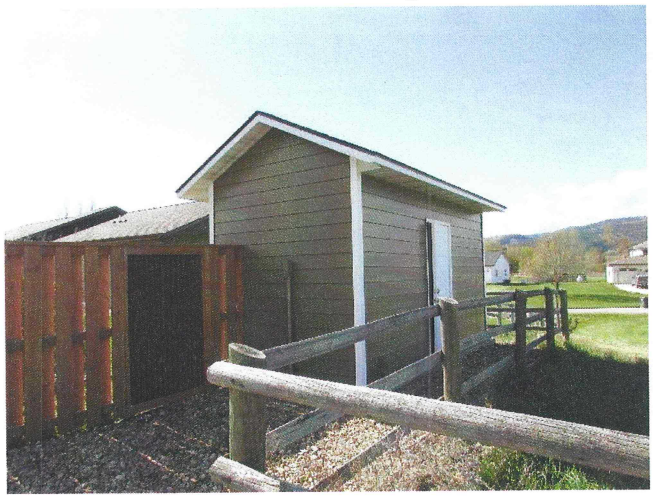
WL002

WL003

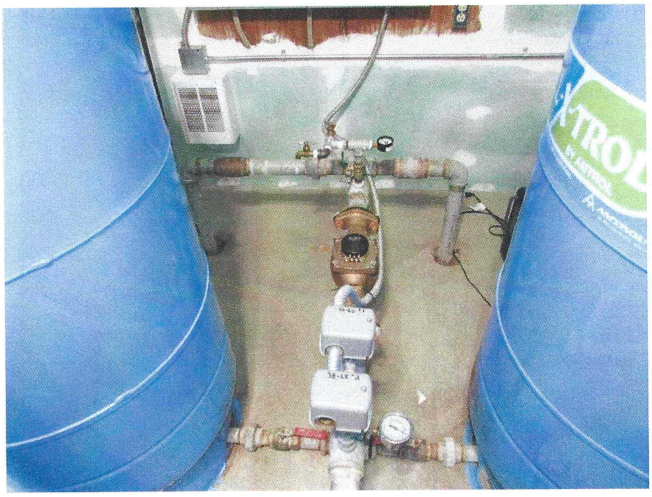
The well caps were painted to reduce golf cards from colliding with the wells

Site visit 5/3/2024

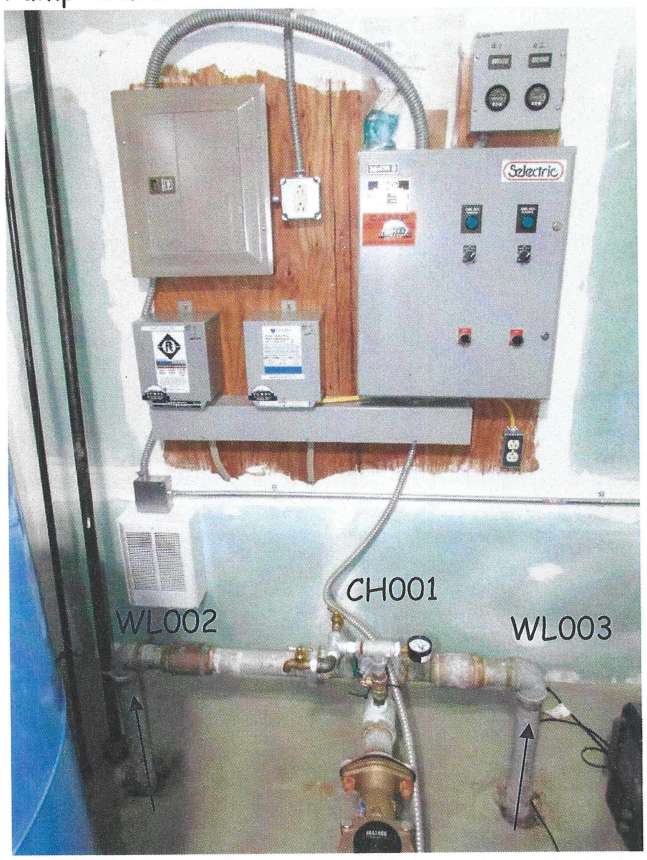
Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158



Pump house



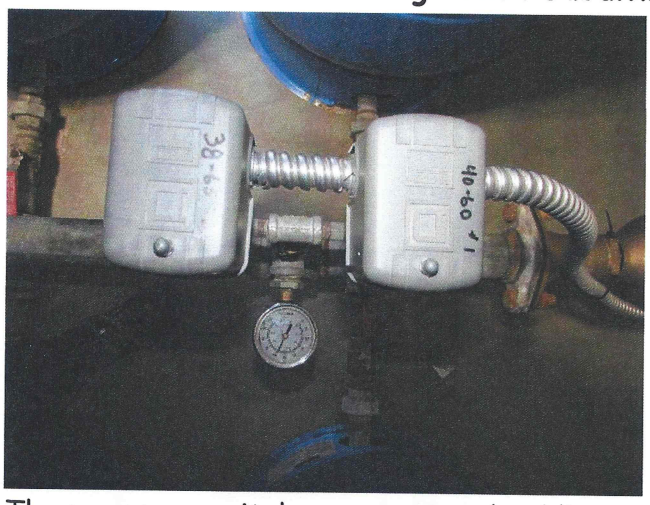
Pressure Control Assembly 1 (PC001) – two pressure switches and 8 Well-X-trol captive air tanks.



Common Header (CH001) for the wells in the pump house.
Well pump control boxes and master controller

Out to distribution

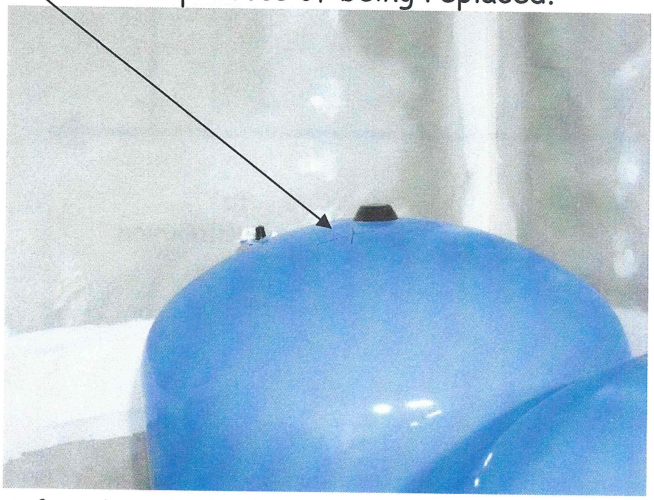
Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158



The pressure switches are set to lead/lag pressures of 40 – 60 and 38 – 65 psi.

The blow off is capped on the outside of the building.

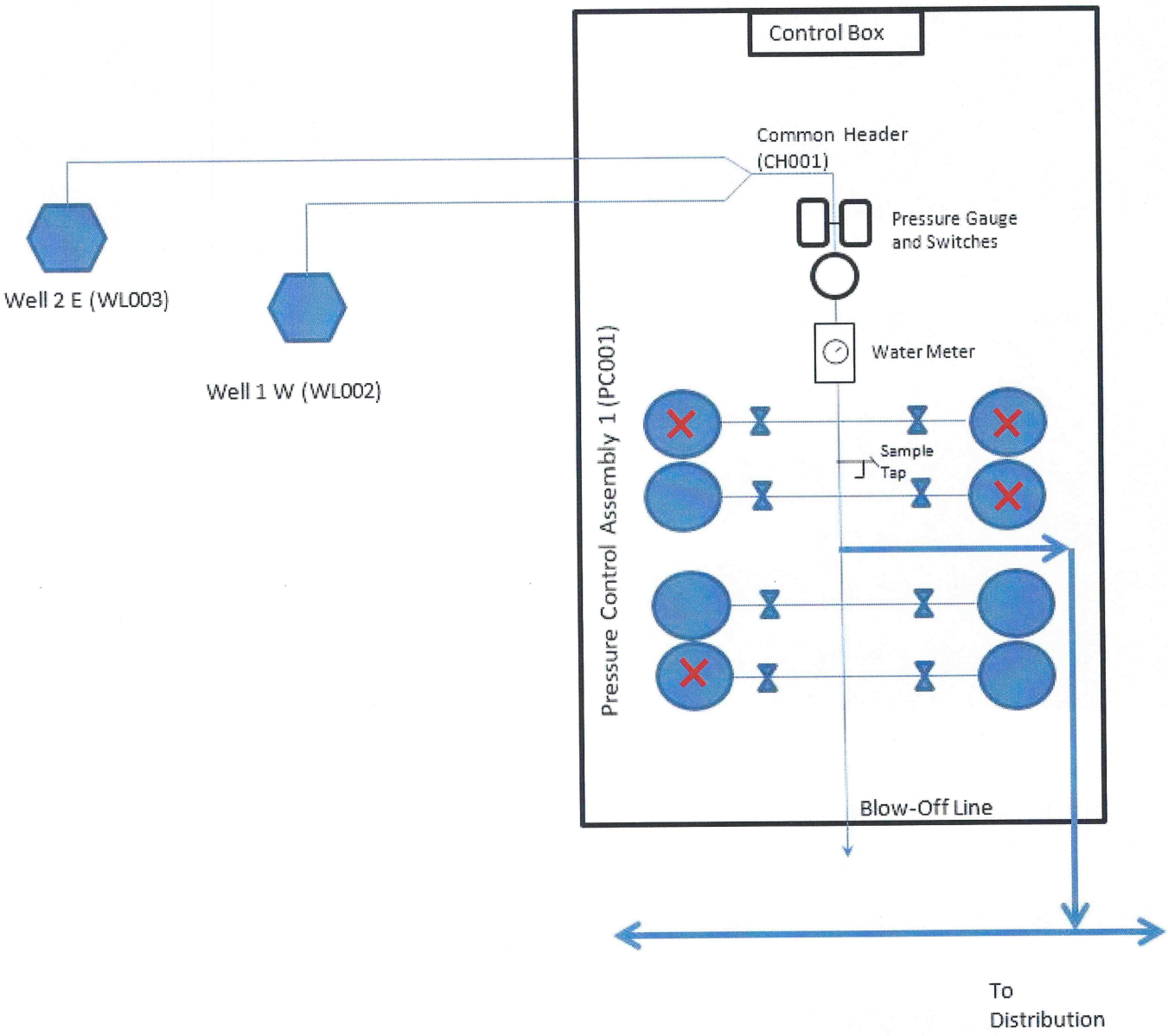
Note the "x" on these tanks showing that they're believed to be waterlogged. They were in the process of being replaced.



A fourth tank also has an "x" (see schematic).

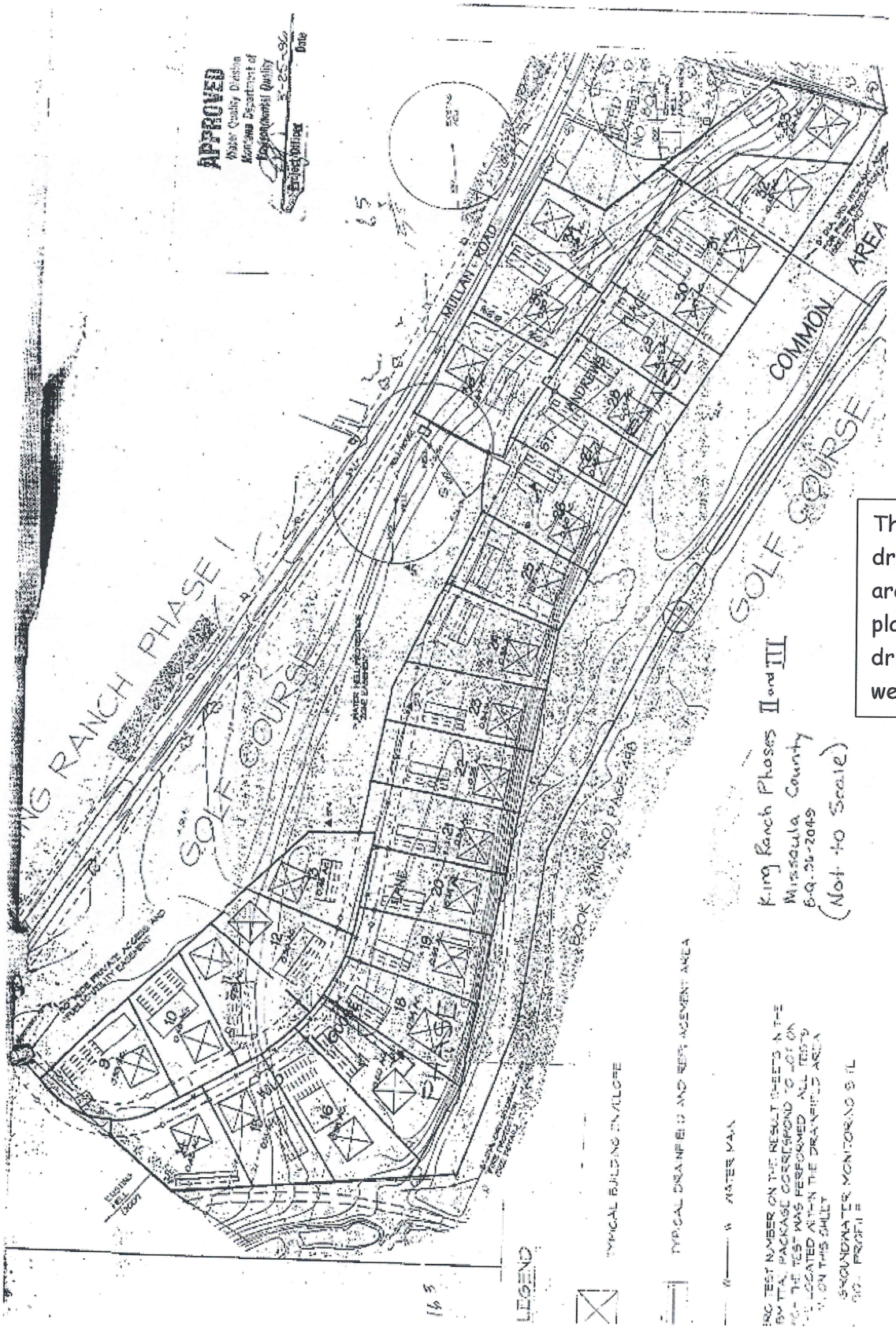
Site visit 5/3/2024

Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158



✕ Waterlogged tanks in the process of being replaced

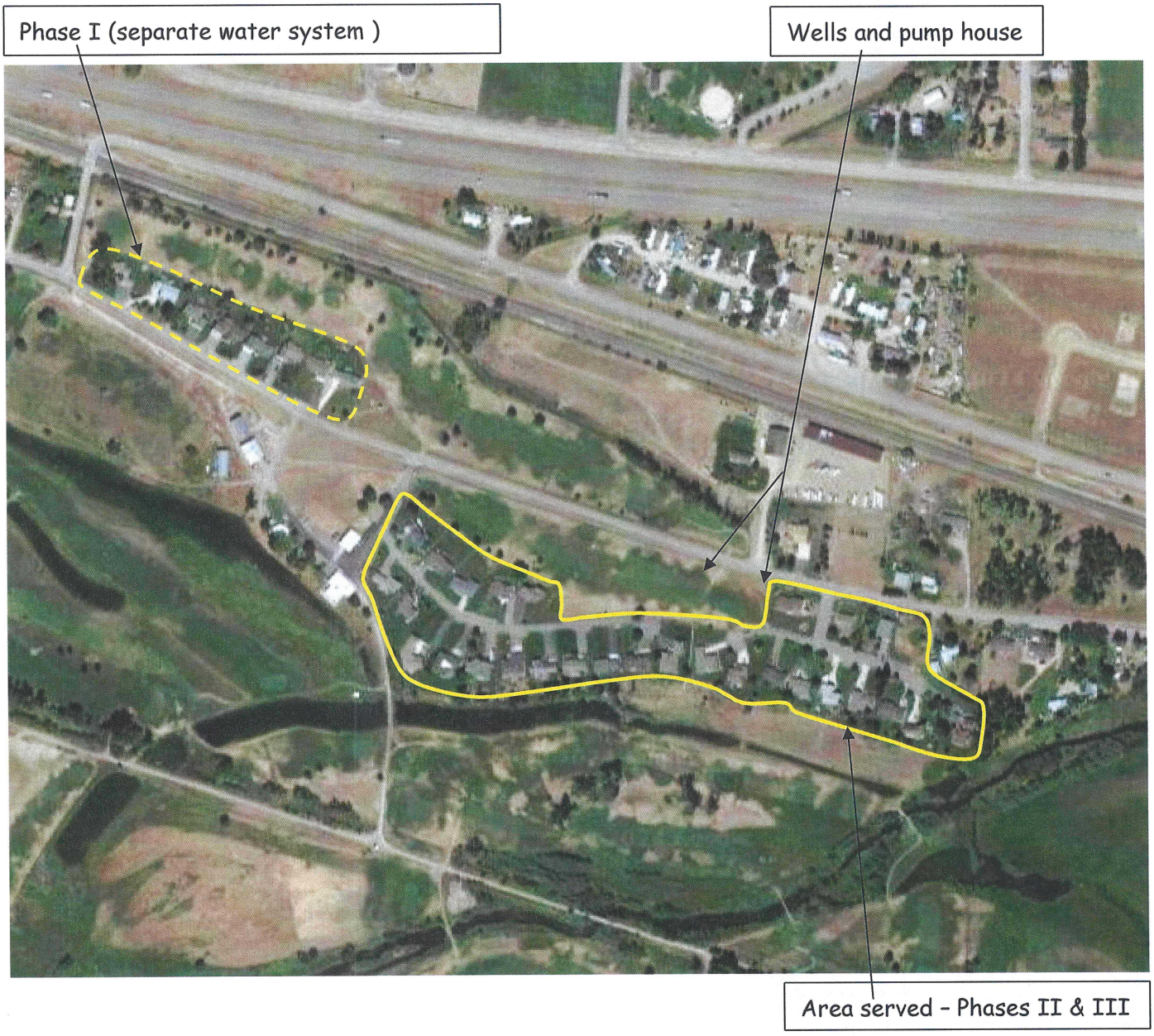
Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158



The wells were not drilled where they are shown on this plat map, but instead drilled a bit further west.

Site visit 5/3/2024

Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158



Sanitary Survey Pictures
King Ranch Subdivision PWSID#MT0004158

Site visit 5/3/2024

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (8/28/2008 8:37:10 AM)

Site Name: KING RANCH
GWIC Id: 155829

Section 1: Well Owner(s)

1) KING RANCH (MAIL)
PO BOX 408
FRENCHTOWN MT 59834 [05/08/1996]

Section 2: Location

Township	Range	Section	Quarter Sections
15N	21W	34	SE¼ NW¼

County / **Geocode**

MISSOULA

Latitude	Longitude	Geomethod	Datum
47.017671	114.242993	TRS-SEC	NAD83

Ground Surface Altitude **Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Wednesday, May 08, 1996

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	186	6				STEEL

There are no completion records assigned to this well.

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0	BENTONITE	

Section 7: Well Test Data

Total Depth: 186
Static Water Level: 14
Water Temperature:

Air Test *

100 gpm with drill stem set at _ feet for 2 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

JEROME'S DRILLING FILE NO: 6425

Section 9: Well Log

Geologic Source

112ALVM - ALLUVIUM (PLEISTOCENE)

From	To	Description
0	2	SOIL
2	32	SAND GRAVEL
32	168	SAND CLAY LAYERS
168	190	SAND GRAVEL
190	193	SHALE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: JEROMES DRILLING CO

License No:	WWC-249
Date Completed:	5/8/1996

04

15N21W34 BD

117388

FORM NO. 603 (R 6-94)

WELL LOG REPORT

File No. 3783 6425

State law requires that the Bureau's copy be filed by the water well driller within 60 days after completion of the well.

1. **WELL OWNER**
Name King Ranch

2. **CURRENT MAILING ADDRESS**
P.O. Box 408 Fresnotown, Mt.59834

3. **WELL LOCATION**
___ ¼ SE ¼ NW ¼ Section 34
Township 15n N/S Range 21w E/W County Mela
Govt Lot ___, or Lot ___ Block ___
Subdivision Name ___
Tract Number ___

4. **PROPOSED USE:** Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify ___

5. **TYPE OF WORK:**
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☒
Reconditioned ☐ Rotary ☒ Jetted ☐

6. **DIMENSIONS:** Diameter of Hole
Dia. ___ in. from ___ ft. to ___ ft.
Dia. ___ in. from ___ ft. to ___ ft.
Dia. ___ in. from ___ ft. to ___ ft.

7. **CONSTRUCTION DETAILS:**
Casing: Steel Dia. 6" from +2 ft. to 186 ft.
Threaded ☐ Welded ☒ Dia. ___ from ___ ft. to ___ ft.
Type A53B Wall Thickness .250
Casing: Plastic Dia. ___ from ___ ft. to ___ ft.
Weight ___ Dia. ___ from ___ ft. to ___ ft.
PERFORATIONS: Yes ☐ No ☒
Type of perforator used ___
Size of perforations ___ in. by ___ in.
___ perforations from ___ ft. to ___ ft.
___ perforations from ___ ft. to ___ ft.
___ perforations from ___ ft. to ___ ft.
SCREENS: Yes ☐ No ☒
Manufacturer's Name ___
Type ___ Model No. ___
Dia. ___ Slot size ___ from ___ ft. to ___ ft.
Dia. ___ Slot size ___ from ___ ft. to ___ ft.
GRAVEL PACKED: Yes ☐ No ☒ Size of gravel ___
Gravel placed from ___ ft. to ___ ft.
GROUTED: To what depth? ___ ft.
Material used in grouting Bentonite. Sealed as required by rule #36-21-654.

8. **WELL HEAD COMPLETION:**
Pitless Adapter ☐ Yes ☒ No

9. **PUMP** (if installed)
Manufacturer's name ___
Type ___ Model No. ___ HP ___

10. **WELL TEST DATA**
The information requested in this section is required for all wells. All depth measurements shall be from the top of the well casing.
All wells under 100 gpm must be tested for a minimum of one hour and provide the following information:
a) Air X Pump ___ Bailer ___
b) Static water level immediately before testing 14 ft. If flowing; closed-in pressure ___ psi ___ gpm
Flow controlled by: ___ valve, ___ reducers, ___ other, (specify) ___
c) Depth at which pump is set for test ___
d) The pumping rate: 100 gpm.
e) Pumping water level ___ ft. at ___ hrs. after pumping began.
f) Duration of test: Pumping time 2 hrs.
g) Recovery time 2:30 hrs.
h) Recovery water level 19 ft. at 1 hrs. after pumping stopped.

Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form.

NOTE: All wells shall be equipped with an access port ½ inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports.

11. **WAS WELL PLUGGED OR ABANDONED?** ___ Yes X No
If yes, how? ___

12. **WELL LOG** PD

Depth (ft.) From	To	Formation
0	2	Soil
2	26	sand,gravel
26	32	sand,gravel
32	168	sand,clay layers
168	190	sand,gravel
190	193	shale

ATTACH ADDITIONAL SHEETS IF NECESSARY

13. **YELLOWSTONE CLOSURE AREA: WATER TEMPERATURE** ___

14. **DATE COMPLETED** 5-8-96

15. **DRILLER/CONTRACTOR'S CERTIFICATION**
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.

5-10-96
Date

Jerome's Drilling Co; Inc.
Firm Name

P O Box 4845, Missoula, MT 59806
Address

Signature License No. 249

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE P.O. BOX 202301 HELENA, MONTANA 59620 - 2301 444-6810

DNRC

M: 155829

DEPARTMENT—BUREAU COPY

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

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Plot this site in Google Maps
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Site Name: KING RANCH
GWIC Id: 155830

Section 1: Well Owner(s)

1) KING RANCH (MAIL)
PO BOX 408
FRENCHTOWN MT 59834 [05/09/1996]

Section 2: Location

Township	Range	Section	Quarter Sections
15N	21W	34	SE¼ NW¼

County
MISSOULA

Geocode

Latitude	Longitude	Geomethod	Datum
47.017671	114.242993	TRS-SEC	NAD83

Ground Surface Altitude **Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, May 09, 1996

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	184	6				STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
184	184	6			OPEN BOTTOM *

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0	BENTONITE	

Section 7: Well Test Data

Total Depth: 184
Static Water Level: 12
Water Temperature:

Air Test *

100 gpm with drill stem set at _ feet for 2 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

JEROME'S DRILLING FILE NO: 6426

Section 9: Well Log

Geologic Source

112ALVM - ALLUVIUM (PLEISTOCENE)

From	To	Description
0	2	SOIL
2	32	SAND GRAVEL
32	166	SAND CLAY LAYERS
166	184	SAND GRAVEL

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: JEROMES DRILLING CO

License No:	WWC-249
Date Completed:	5/9/1996

04

15N21W 34 BD

FORM NO. 603 (R 6-94)

WELL LOG REPORT

File No. 6426 117389

State law requires that the Bureau's copy be filed by the water well driller within 60 days after completion of the well.

1. WELL OWNER
Name King Ranch

2. CURRENT MAILING ADDRESS
P.O. Box 408 Frenchtown, Mt. 59834

3. WELL LOCATION
¼ SE ¼ NW ¼ Section 34
Township 15n N/S Range 21w E/W County Mela
Govt Lot _____, or Lot _____, Block _____
Subdivision Name _____
Tract Number _____

4. PROPOSED USE: Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify _____

5. TYPE OF WORK:
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

6. DIMENSIONS: Diameter of Hole
Dia. _____ in. from _____ ft. to _____ ft.
Dia. _____ in. from _____ ft. to _____ ft.
Dia. _____ in. from _____ ft. to _____ ft.

7. CONSTRUCTION DETAILS:
Casing; Steel Dia. 6" from +2 ft. to 184 ft.
Threaded ☐ Welded ☒ Dia. _____ from _____ ft. to _____ ft.
Type A53B Wall Thickness .250
Casing; Plastic Dia. _____ from _____ ft. to _____ ft.
Weight _____ Dia. _____ from _____ ft. to _____ ft.
PERFORATIONS: Yes ☐ No ☒
Type of perforator used _____
Size of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

SCREENS: Yes ☐ No ☒
Manufacturer's Name _____
Type _____ Model No. _____
Dia. _____ Slot size _____ from _____ ft. to _____ ft.
Dia. _____ Slot size _____ from _____ ft. to _____ ft.

GRAVEL PACKED: Yes ☐ No ☒ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

GROUTED: To what depth? _____ ft.
Material used in grouting Bentonite. Sealed as required by rule #36-21-854.

8. WELL HEAD COMPLETION:
Pitless Adapter ☐ Yes ☒ No

9. PUMP (if installed)
Manufacturer's name _____
Type _____ Model No. _____ HP _____

10. WELL TEST DATA
The information requested in this section is required for all wells. All depth measurements shall be from the top of the well casing.
All wells under 100 gpm must be tested for a minimum of one hour and provide the following information:
a) Air X Pump _____ Bailer _____
b) Static water level immediately before testing 12 ft. If flowing, closed-in pressure _____ psi. _____ gpm.
Flow controlled by: _____ valve, _____ reducers, _____ other, (specify) _____
c) Depth at which pump is set for test _____
d) The pumping rate: 100 gpm.
e) Pumping water level _____ ft. at _____ hrs. after pumping began.
f) Duration of test: Pumping time 2 hrs.
g) Recovery time 150 hrs.
h) Recovery water level 17 ft. at 1 hrs. after pumping stopped.

Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form.

NOTE: All wells shall be equipped with an access port ½ inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports.

11. WAS WELL PLUGGED OR ABANDONED? Yes ☒ No
If yes, how? _____

12. WELL LOG

Depth (ft.) From	To	Formation
0	2	soil
2	29	sand, gravel
29	32	sand, gravel
32	166	sand, clay layers
166	184	sand, gravel

PD

ATTACH ADDITIONAL SHEETS IF NECESSARY

13. YELLOWSTONE CLOSURE AREA: WATER TEMPERATURE _____

14. DATE COMPLETED 5-9-96

15. DRILLER/CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.

5-10-96
Date

Jerome's Drilling Co; Inc.
Firm Name

P O Box 4845, Missoula, MT 59806
Address

Signature _____ 249
License No.

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE P.O. BOX 202301 HELENA, MONTANA 59620 - 2301 444-6610

DNRC

M:155830

DEPARTMENT—BUREAU COPY