

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-23037

Exam Date: 11/29/10

1. Current Owner: EMMETT SCHOOL DISTRICT #221
601 E 3RD ST
EMMETT ID 83617
(208)365-6301
2. Accompanied by: Phone Interview with Mike Fisher with the school district's maintenance office
Phone No: 365-8648
Address: 722 Wardell Emmett 83617 the school's address is: Shadow Butte School 3900 W Idaho Blvd
3. **SOURCE**
GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 65-13886 and surface water from Emmett Irrigation District (the surface water is not used and hasn't been used for the past 11 years)
2. Other water rights with the same point of diversion: 65-13886

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SW1/4SW1/4 Sec. 34, Twp 07N, Rge 02W, B.M. GEM County

Method of Determination: Field examination for 65-13886 and phone interview

2.

<u>PLACE OF USE:</u>		IRRIGATION																<u>Totals</u>
Twp	Rge Sec	NE				NW				SW				SE				
		<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
07N	02W 34											8.0						8.0

Total Acres: 8

Method of Determination:

3. ☐ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
☐ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
☐ Aerial Photo Attached (required for irrigation of 10+ acres).
☐ Photo of Diversion and System Attached

4.

<u>Well or Diversion ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge Size</u>
D0009711	Franklin	7.5	8007 8-18-00-20	Franklin	Model 5MC-110-7 w/ 4" discharge

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
NA						

2. Measurements: No flow measurement was possible at the time of the exam in 2002. I confirmed during the phone interview that the system has not changed since the 2002 field exam. The flow in the domestic/irrigation well was calculated using a pump curve and theoretical calculation. Both of these match suggesting that the estimates are accurate.

E. FLOW CALCULATIONS

___x___ Additional Computation Sheets Attached

Measured Method:

Domestic use = 0.21 cfs (see attached calculations in flow analysis created by Dan Nelson)

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 8 \times 4.5 = 36 \text{ afa}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.16 \text{ cfs} \times 260 \times 1.9835 = 85.5 \text{ afa}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 36 \text{ afa}$$

2. Volume Calculations for Other Uses: NONE

G. NARRATIVE/REMARKS/COMMENTS: Note that a field examination did not require a site visit as the department was out there in 2002. The system has not changed since the last site visit and I was able to create this field exam based on information from the field exam for 65-13886 and the phone conversation with Mike Fisher. Mike confirmed the acreage of 8 acres and that there are 32 zones that cover the acreage. The zones all have Rainbirds, which vary depending on location, and the zones run an average of 20-25 minutes each. Irrigation takes place at the evening when no one uses the fields.

Here is a break-down of the 32 zones:

Number of Zones	Line Capacity in GPM	Number of Rainbirds	Sprinkler Capacity in GPM	Total Output in GPM
1	16	5	1.5	7.5
1	24	5	1.5	7.5
1	39	5	1.5	7.5
1	57	10	8	80
1	58	10	8	80
1	59	10	8	80
1	76	10	8	80
2	45	5	1.5	15
2	43	5	1.5	15
2	52	10	8	160
2	56	10	8	160
2	77	10	8	160
4	86	10	8	320
10	78	10	8	800
31* note that two zones are combined	1,999 gpm	~155	---	1972.5 gpm (this averages 64 gpm per zone or 0.14 cfs with a maximum output of 80 gpm or 0.18 cfs)

(these figures were provided by Mike Fisher in phone interview 11/30/10)

The larger Rainbirds are Falcon 6504 and contain nozzle #8 B81600-08. From the previous field exam, you see that the well's discharge pressure is ~60 psi. According to the attached performance chart for this nozzle, you can expect 8.2 gpm. Since the zones are run one at a time, I can get an idea of the maximum diversion rate by looking at the zone with the largest capacity. The zone with a line capacity of 86 gpm with 10 Rainbirds at ~8 gpm, the total is 80 gpm or 0.18 cfs. The capacity of the system appears to be capable of the maximum diversion rate permitted by the permit of 0.16 cfs.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION	03/01 to 11/15	0.160 CFS	36 af
	<u>Totals:</u>	0.160 CFS	36 afa

2. Recommended Amendments

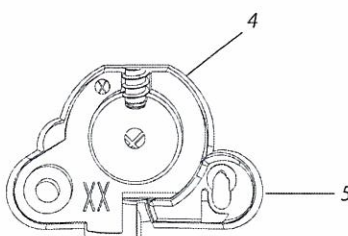
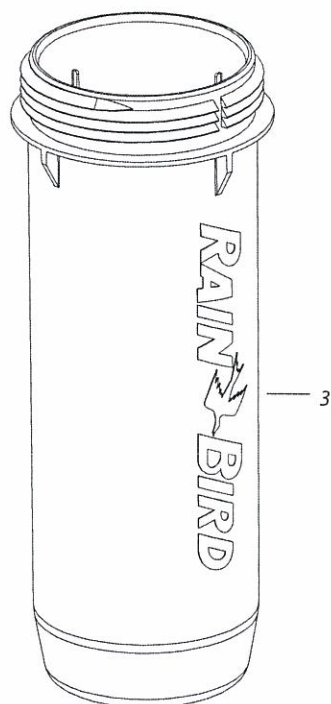
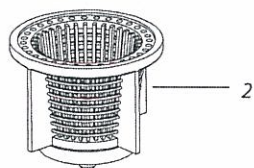
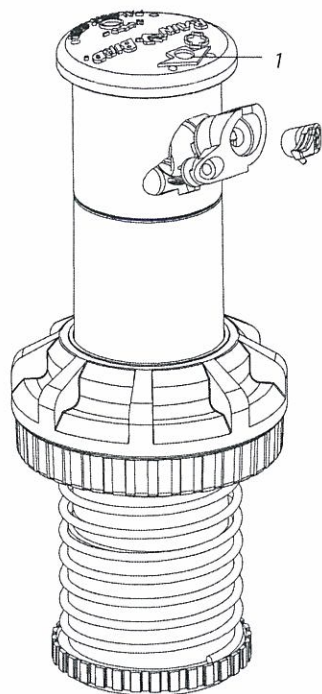
☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

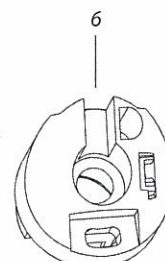
I. AUTHENTICATION

Field Examiner's Name Cherie Adilla Date 11-30-10

Reviewer _____ Date _____



Falcon 6504
Rain Curtain™ Nozzles
(rotors built 09/27/99 and after)



Falcon "Original"
Rain Curtain Nozzles
(rotors built prior to 09/27/99)

Falcon 6504 Rain Curtain Nozzles (rotors built 09/27/99 and after)

Ref.	Part Description	Qty	Part Number
INTERNAL COMPONENTS			
1	Radius Adjustment Screw	1	(231491-S)
2	Filter Screen w/SAM Assy	1	209702
CASE			
3	Case - NPT	1	(231420-01)
3	Case - BSP	1	(231420-02)
NOZZLES			
4	Nozzle - #4 (Black)	1	B81600-04
4	Nozzle - #6 (Lt Blue)	1	B81600-06
4	Nozzle - #8 (Dk Green)	1	B81600-08
4	Nozzle - #10 (Gray)	1	B81600-10
4	Nozzle - #12 (Beige)	1	B81600-12
4	Nozzle - #14 (Lt Green)	1	B81600-14
4	Nozzle - #16 (Dk Brown)	1	B81600-16
4	Nozzle - #18 (Dk Blue)	1	B81600-18
5	Third Port Nozzle	1	231777

Falcon "Original" Rain Curtain Nozzles (rotors built prior to 09/27/99)

Ref.	Part Description	Qty	Part Number
INTERNAL COMPONENTS			
1	Radius Adjustment Screw	1	208751
2	Filter Screen w/SAM Assy	1	209702
CASE			
3	Case - NPT	1	(231420-01)
3	Case - BSP	1	(231420-02)
NOZZLES			
6	Nozzle - #4 (Black)	1	B00500-04
6	Nozzle - #6 (Lt Blue)	1	B00500-06
6	Nozzle - #8 (Dk Green)	1	B00500-08
6	Nozzle - #10 (Gray)	1	B00500-10
6	Nozzle - #12 (Beige)	1	B00500-12
6	Nozzle - #14 (Lt Green)	1	B00500-14
6	Nozzle - #16 (Dk Brown)	1	B00500-16
6	Nozzle - #18 (Dk Blue)	1	B00500-18

Note: Part numbers enclosed in brackets () are not available individually, but may be sold in assemblies or kits.

*Use with Rain Bird 7005 and Falcon Rotors.

Rain Bird #8 Nozzle Performance Chart

© Rain Bird

Rotor

Rain Bird Falcon Rotors

Rain Bird High Speed Falcon Rotors

Rain Bird 7005 Rotors

Pressure PSI	Radius ft.	Flow GPM	Precipitation In/h	Precipitation In/h
40	49	6.6	0.53	0.61
50	51	7.4	0.55	0.63
60	51	8.2	0.61	0.70
70	51	8.9	0.66	0.76
80	53	9.4	0.64	0.74
40	47	6.6	0.58	0.66
50	49	7.5	0.60	0.69
60	47	8.3	0.72	0.84
70	49	9.0	0.72	0.83
80	51	9.7	0.72	0.83
50	49	6.6	0.53	0.61
60	49	8.4	0.67	0.78
70	49	9.0	0.72	0.83
80	49	9.8	0.79	0.91

Precipitation Rates based on half-circle operation.

■ Square spacing based on 50% diameter of throw.

▲ Triangular spacing based on 50% diameter of throw.

FIELD EXAM FOR 63-13886 CONDUCTED BY DAN NELSON
CONDUCTED 6/13/2002
(USING THIS FIELD EXAM TO SUPPLEMENT FIELD EXAM FOR 63-23037)

RECEIVED

MAR - 7 2006

Permit No: 65-13886

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STATE OF IDAHO DEPARTMENT OF WATER RESOURCES
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-13886

Exam Date: 6/13/2002

1. Current Owner: EMMETT SCHOOL DISTRICT #221
601 E 3RD ST
EMMETT ID 83617
(208)365-6301
2. Accompanied by: Mike Fisher
Phone No(208) 365-2022, Cell (208) 365-8648, Fax (208) 365-7804
Address: 722 S Wardwell, Emmett ID 83617
Relationship to Permit Holder: Maintenance Supervisor

3. SOURCE TRIBUTARY
GROUND WATER N/A

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Emmett Irrigation District
2. Other water rights with the same point of diversion: NONE

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER SW1/4SW1/4SW1/4 Sec. 34, Twp 07N, Rge 02W, B.M.
GEM County
GROUND WATER SW1/4SW1/4SW1/4 Sec. 34, Twp 07N, Rge 02W, B.M.
GEM County

Method of Determination: Visual Inspection, and use of 2004 aerial photography

2.

PLACE OF USE: DOMESTIC

Twp	Rge	Sec	NE	NW	SW	SE	Totals
07N	02W	34	NE	NW	SW	SE	
					X		

PLACE OF USE: FIRE PROTECTION

Twp	Rge	Sec	NE	NW	SW	SE	Totals
07N	02W	34	NE	NW	SW	SE	
					X		

Method of Determination: Visual Inspection, and use of 2004 aerial photography

same PD used in 65-23037

SCANNED

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

YES Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

YES Aerial Photo Attached (required for irrigation of 10+ acres).

YES Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
CP Domestic Well + Irrigation	Franklin	7.5 Hp	8007 8-18-00-20	Franklin	model 5MC-110-7 4 inch discharge
Fire Well	US Motors	250 Hp	H0250V2511	Floway	41114-1-1

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement

<u>Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
N/A						

2. Measurements:

No flow measurements were possible at the time of the exam, because the systems were field examined during the summer months and were not being operated at full capacity. The fire well had a pump test done on it and I performed a theoretical calculation. Both of these calculations were very similar, so they are assumed accurate. The flow in the domestic well was calculated using a pump curve and theoretical calculation. Both of these match exactly, also suggesting they were fairly accurate.

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E. FLOW CALCULATIONSYES Additional Computation Sheets Attached

Measured Method:

Domestic use = 0.21 cfs (see attached sheets for calculations)

Fire Protection use = 3.34 cfs (see attached sheets for calculations)

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

Domestic use volume = 6.3 afa (see attached sheets for calculations)

G. NARRATIVE/REMARKS/COMMENTS

The water for this permit is diverted from two wells in the SWSWSW T7N R2W S34 near the southwest corner of the school. The first well is designated as the domestic well. This well has a 7½ Hp submersible pump that is located just north of the well house. The water is pumped from the well to the well house where it is treated and sent to the school for the use of the students and teachers.

This permit was amended to add this well after proof was due. Part of my exam was to determine if this well was in use as of 8/31/2000. This well was originally drilled as a monitoring well, and was actually used during the construction of the school. Stevens and Sons completed the well on 8/30/1999, and the chemistry tests for DEQ were completed on 8/24/2000. I have spoken with Rob Whitney concerning this well, and he has looked at the diagrams submitted as proof the well was completed before the proof due date of 8/31/2000. Mr. Whitney informed me that the well was constructed using cement grout, which suggests it was constructed in accordance with Public Drinking Water Standards. Normally monitoring wells do not have cement grout, so appears as though the intent all along was to use this well for the domestic use. Therefore, I have determined that this well can be included in the licensing of this permit, since it was constructed and tested almost a year before proof was due.

The second well is the Fire Well. This well is located in the well house. It has a 250 Hp pump that is connected to the fire suppression system for the school. This well is connected to the Domestic well for backup purposes, but it would be extremely inefficient to use this large well for such a small use. The well is designed to run at fairly high pressure, 105 psi, so the pressure and flow have to be restricted and reduced to use it in the domestic system. Therefore, this well was designed mainly for fire suppression purposes.

The school is also using these wells to irrigate the school grounds. The ditches that supplied the Emmett Irrigation District water have long been destroyed, and they would need to attain easements and other approvals to get that water back to the property. This permit doesn't have an irrigation component, so I have worked with the school to file a new application for the irrigation use. This application has been received by the Western Region office, and has been put into the processing hopper. There are other overlapping water rights for domestic purposes in this area, but they are all from other water systems.

It was difficult to find records to properly determine the volume needed for the domestic portion of this recommendation. The only accurate information that I could find was the student enrollment and teacher lists from the 2004-2005 year. This information shows that there were 409 students and 39 teachers for a total of 448 occupants. The school has a gym and showers for their Physical Education program, so I used 25 gallons per day per occupant listed in the Field Examiner's Handbook. Using this amount the volume recommendation would be 6.3 afa or 11,200 gallons per day for 183 days. The school has the capability to handle up to 650 occupants, therefore, it may be necessary for the school to monitor their water use to ensure they don't exceed this volume amount.

Have conditions of permit approval been met? X Yes ___ No

SCANNED

only using
the
"domestic"
well
CP

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DOMESTIC	01/01 to 12/31	0.210 CFS	6.30 AF
FIRE PROTECTION	01/01 to 12/31	3.340 CFS	
	<u>Totals:</u>	3.550 CFS	6.30 AF

2. Recommended Amendments

___Change P.D. as reflected above ___Add P.D. as reflected above ___None

___Change P.U. as reflected above ___Add P.U. as reflected above ___Other

I. AUTHENTICATION

DANIEL A. NELSON – SENIOR AGENT

Field Examiner's Name

Daniel A. Nelson Date 3-2-2006

Reviewer _____

Date _____

SEAL

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Idaho Department of Water Resources
Estimated Pumping Rate Computer

CREATED 1/6/2000

Flow Analysis Performed by:

Dan Nelson

Date:

3/1/2006

Page 1 of 1

Record ID 65-13886		Measured Flow:	
Water Right No. 65-13886		Designed Flow: 0.21 cfs <--Max	
Name Emmett School District		HP/Eff Flow: 0.21 cfs	
pod Domestic Well		Sprinkler Flow:	
year:		Pivot/System Flow:	
Flow Measurement: gpm =			
Curve/Pump Design: 95 gpm = 0.21 cfs			
Horsepower / Efficiency Method			
Horsepower	7.5 hp		
PWL	84 ft		
Disch Psi	58.9 psi		
PUMP Eff Estimate	0.70 %		
TDH	220 ft		
OHP	5.25 hp		
Flow	94 gpm =	0.21 cfs	
System Method:			
No Lines		Nozzle Equation: $Q=C*A*\sqrt{2*g*h} / \sqrt{1-r^4}$	
Birds per line		C=	1.00 Nozzle coefficient; typical 0.97 to 1.00
Ttl no nozzles	0	r=	0.0000 ft Nozzle radius
Nozzle size	in	A=	0.00000 ft^2 Nozzle area
Nozzle pressure	psi	h=	0 ft Head
Flow per nozzle	0.00 gpm	g=	32.2 ft/sec^2 Gravitational constant
Sprinkler Flow	0 gpm	Q=	0.000 cfs Flow per nozzle
Percent Leaks	%	=	0.000 gpm Flow per nozzle
Total Flow	0 gpm =		
Pivot / System rating	gpm =		

Comments / Data Supplied:

The data supplied by the school shows this pump as diverting approximately 90 gpm. However, the pump curve supplied shows the diversion rate at approximately 95 gpm. The theoretical calculation also shows the diversion rate at close to 94 gpm. Therefore, I am recommending this permit for 0.21 cfs for the domestic portion of the right. This well is used exclusively for the domestic use, even though the fire well is connected to the same system, it is only used in cases of emergency. Therefore, it makes more sense to recommend the domestic use for the capacity of the domestic well only or 0.21 cfs. The permit requested 0.22 cfs, but I don't feel this pump is capable of producing that amount of water. I am confident that 0.21 cfs is the proper rate of diversion for this use. The TDH of 220 feet was calculated using the owner's design numbers and the well log. The well log shows a water pumping level of 84 feet after 7 hours of operation at 400 gpm. By subtracting the well log pumping level from the TDH supplied in the paperwork, this leaves a pressure of 58.9. I would have estimated the pressure between 40 and 60 psi, so these numbers sound reasonable.

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CROWN

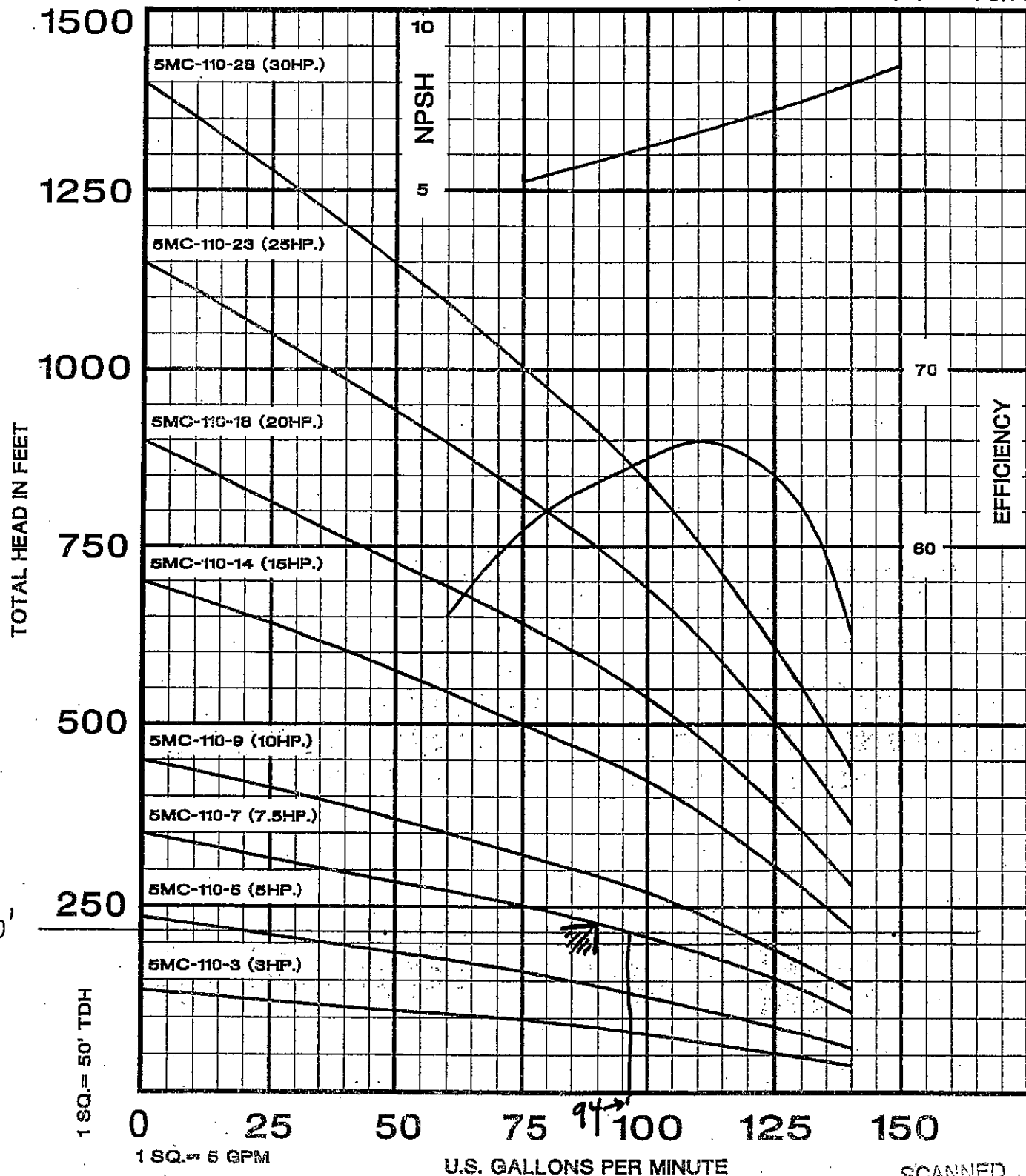
5MC-110

1/98

MODEL 5MC-110

PERFORMANCE CHARACTERISTICS

MINIMUM WELL SIZE 6" *90 GPM @ 220' TDH 1 STAGE*



CROWN PUMP CORPORATION, HIGHWAY 18 & BIVAR, DE LEON, TEXAS

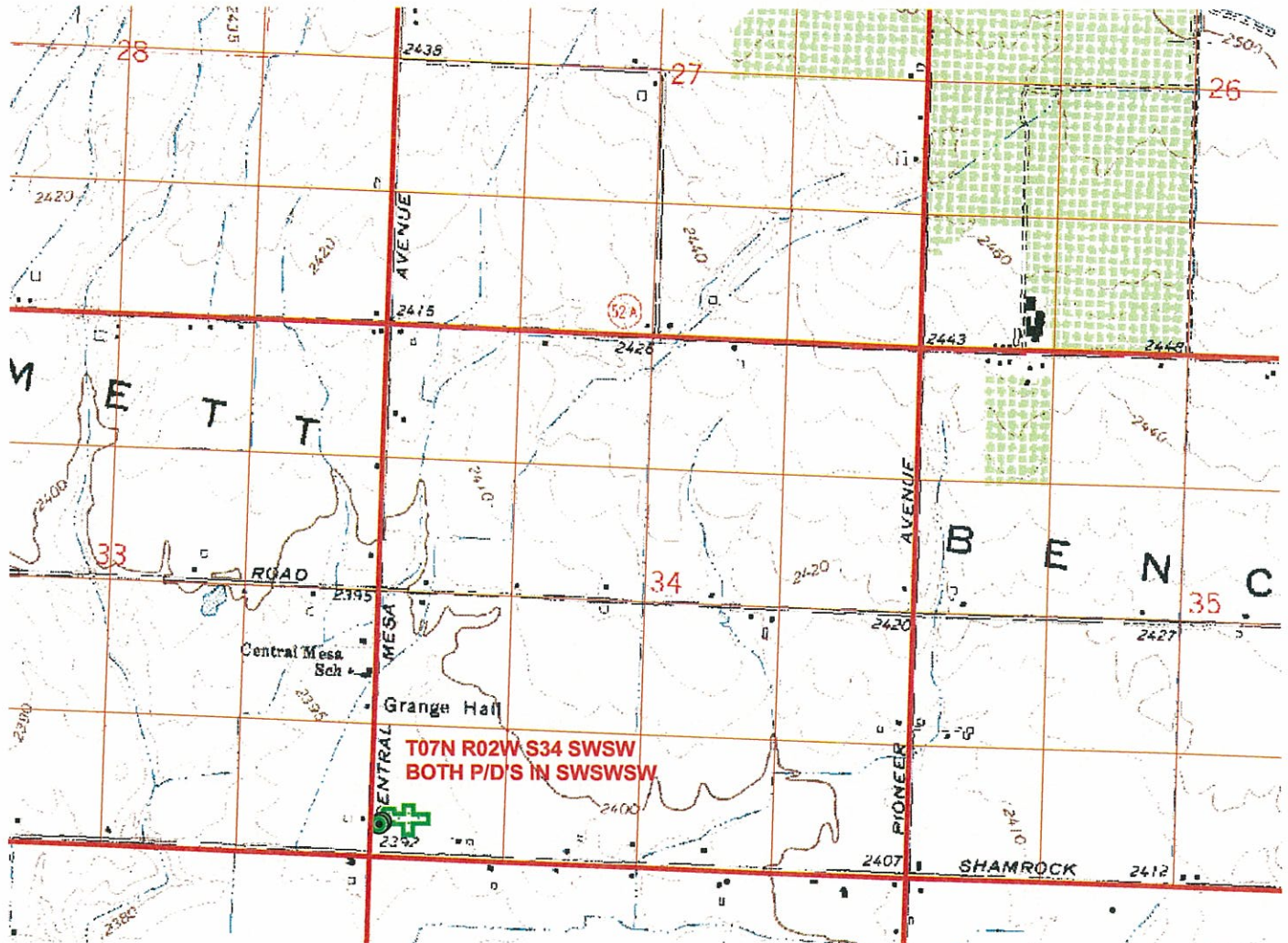
Per Pump curve 90-95 gpm

0.001 2-1-96

FIELD EXAM 65-13886

QUADRANGLE MAP

BY DAN NELSON

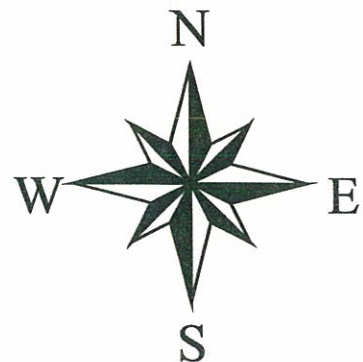


0.6 0 0.6 1.2 Miles

- POINTS OF DIVERSION
- PLACE OF USE (SCHOOL)
- 1/4 1/4 LINES
- SECTION LINES

PLEASE NOTE:

The school is the place of use for both the domestic and fire protection uses. There are two points of diversion, the fire well and the domestic well. Both wells are located in the SWSWSW.

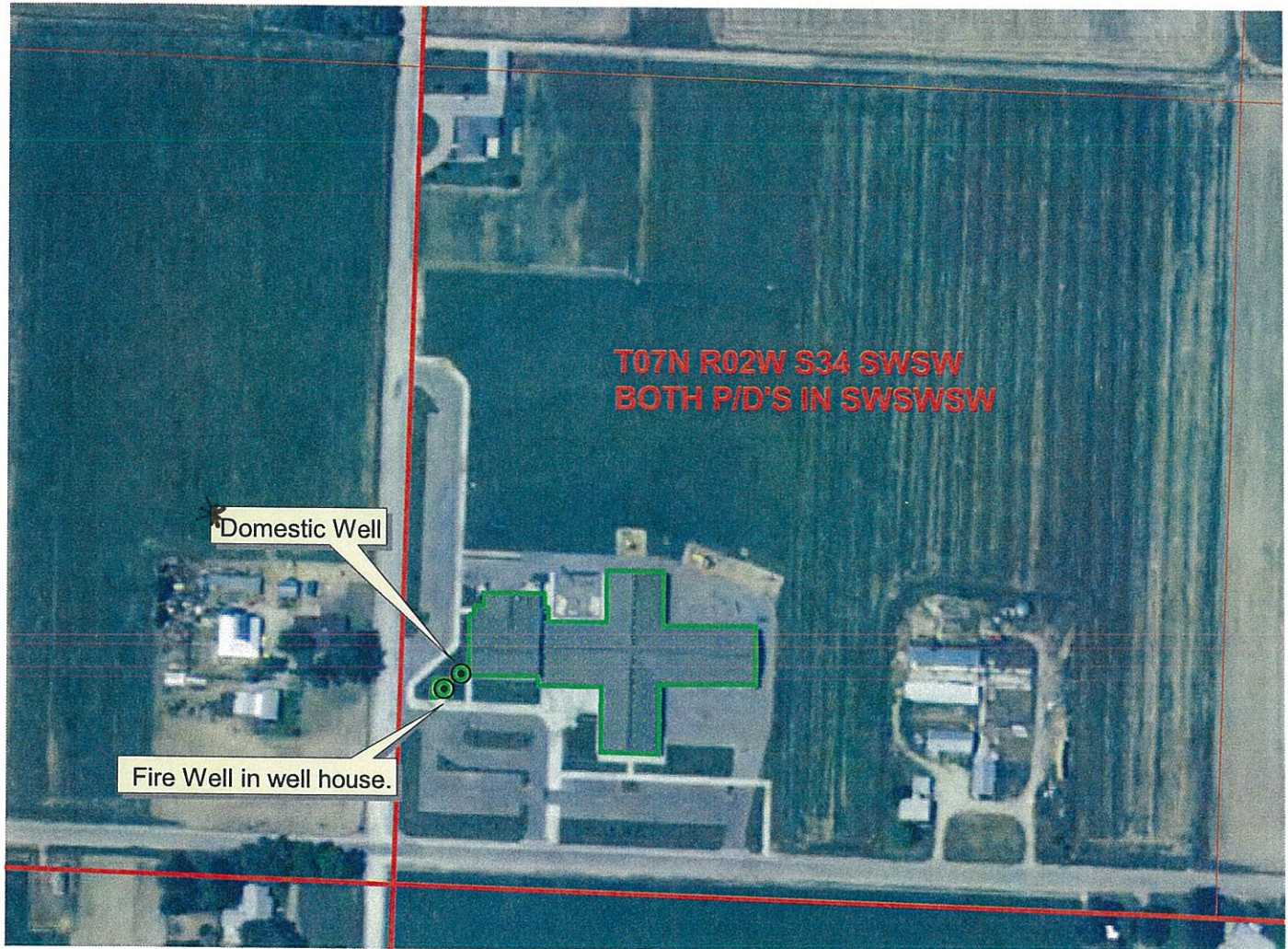


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FIELD EXAM 65-13806

2004 AERIAL PHOTO

BY DAN NELSON



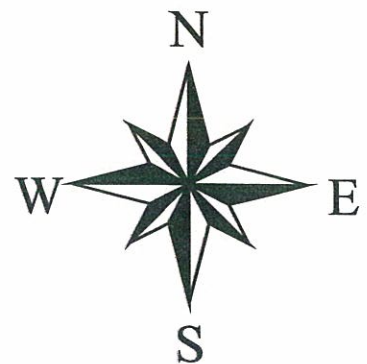
0.09 0 0.09 0.18 Miles

* Domestic Well also provides irrigation for the school
under 65-23037

- POINTS OF DIVERSION
- PLACE OF USE (SCHOOL)
- 1/4 1/4 LINES
- SECTION LINES

PLEASE NOTE:

The school is the place of use for both the domestic and fire protection uses. There are two points of diversion, the fire well and the domestic well. Both wells are located in the SWSWSW.



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PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 2/16/2002

FILE NUMBER 65-13886



These are photos of the wells and the well house. The domestic well is located outside the well house and the fire well is located inside the well house. The domestic well is a 7 1/2 Hp submersible pump and the fire well is a 250 Hp turbine pump. The domestic well is located approximately 30 feet from the well house and the fire well is located inside of the well house.

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PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 2/16/2002

FILE NUMBER 65-13886

Domestic
well enters
here.



Line out to
school.



These are photos of the well house. The fire well diverts into a main line that travels along the southern wall of the well house and then exits into the fire distribution system. The domestic well enters the well house from the floor on the east wall of the well house. From this point the domestic well goes through a flow meter and then splits. The first portion of the split goes to the south and is delivered to the irrigation system and then continues on to the south and connects with the fire well. The domestic well is used to maintain pressure in the fire well lines. This allows the fire department to start pumping immediately upon arrival. Once the pressure in the fire line drops below 40 psi the fire well kicks on to operate without a major loss in water pressure for the fire suppression. The irrigation line is kept separated from the pressure tanks so it isn't treated under the public drinking supply standards. The lines to pressure tanks are designated for the in-school use. It is run into the 3 large pressure tanks and is withdrawn for school use. The water coming out of the pressure tanks is treated to maintain public drinking water standards. The water being treated is measured and the total amount of water being diverted out of the well is being measured.

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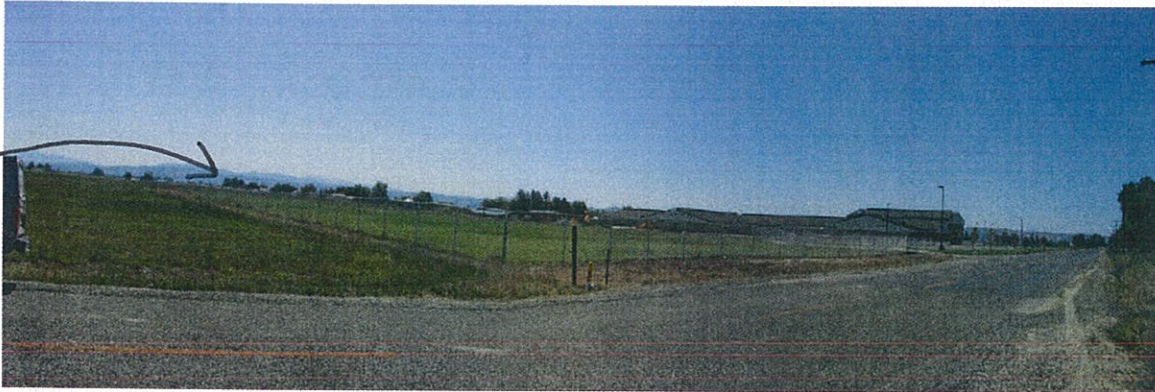
PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 2/16/2002

FILE NUMBER 65-13886

WELL
HOUSE



POV



WELL
HOUSE



These are photos of the school. The top photo is taken from the southeast corner of the school. The middle photo is taken at the northwest corner of the school. The bottom photo is taken at the southwest corner of the school. Please note the well house in the top and bottom picture.

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