

STATE OF OREGON  
**WATER RESOURCES DEPARTMENT**

725 Summer St. N.E. Ste. A  
 SALEM, OR 97301-4172

(503) 986-0900 / (503) 986-0904 (fax)

RECEIPT # **136301**

INVOICE # \_\_\_\_\_

RECEIVED FROM: *Elizabeth Ketcham*  
 BY: *Christopher Ketcham*

APPLICATION	<i>7-7984</i>
PERMIT	
TRANSFER	

CASH:  CHECK:# *6037* OTHER: (IDENTIFY)

TOTAL REC'D \$ *230.00*

**1083 TREASURY 4170 WRD MISC CASH ACCT**

0407 COPIES	\$
OTHER: (IDENTIFY)	\$

0243 I/S Lease \_\_\_\_\_ 0244 Muni Water Mgmt. Plan \_\_\_\_\_ 0245 Cons. Water \_\_\_\_\_

**4270 WRD OPERATING ACCT**

MISCELLANEOUS

0407 COPY & TAPE FEES	\$
0410 RESEARCH FEES	\$
0408 MISC REVENUE: (IDENTIFY)	\$
TC162 DEPOSIT LIAB. (IDENTIFY)	\$
0240 EXTENSION OF TIME	\$

WATER RIGHTS:

0201 SURFACE WATER	EXAM FEE	0202	RECORD FEE
0203 GROUND WATER	\$	0204	\$
0205 TRANSFER	\$		

WELL CONSTRUCTION

0218 WELL DRILL CONSTRUCTOR	EXAM FEE	0219	LICENSE FEE
LANDOWNER'S PERMIT	\$	0220	\$

*0200* OTHER (IDENTIFY) *COBA* \$ *230.00*

**0536 TREASURY 0437 WELL CONST. START FEE**

0211 WELL CONST START FEE	\$	CARD#
0210 MONITORING WELLS	\$	CARD#

OTHER (IDENTIFY) \_\_\_\_\_

**0607 TREASURY 0467 HYDRO ACTIVITY LIC NUMBER**

0233 POWER LICENSE FEE (FW/WRD)	\$
0231 HYDRO LICENSE FEE (FW/WRD)	\$
HYDRO APPLICATION	\$

**TREASURY OTHER / RDX**

FUND \_\_\_\_\_ TITLE \_\_\_\_\_

OBJ. CODE \_\_\_\_\_ VENDOR # \_\_\_\_\_

DESCRIPTION \_\_\_\_\_ \$

RECEIPT: **136301**

DATED: *8-30-2021* BY: *[Signature]*





# Checklist for Claims of Beneficial Use Received at CSG Counter

Application #:	WRD Reviewer: Judy
Transfer #: T-7984	
Date Received: 08/30/2021	
CWRE Name: Zane E Fernlund	
Priority Date (s): 08/09/1976	

## Fees Required:

- YES  NO  A fee of \$230 must accompany this form for permits with priority dates of July 9, 1987, or later.
- YES  NO  A fee of \$230 must accompany this form for any transfers including a water right with a priority date of July 9, 1987, or later.  
 Example – A transfer involves 5 rights and one of the rights has a priority date of July 9, 1987, or later, the fee is required.

Fill in App or Transfer Number

## Map Review:

- Map on polyester film (OAR 690-014-0170(1) & 310-0050(1)(b))
- Application & permit #; or transfer # (OAR 690-014-0100(1))
- Disclaimer (OAR 690-014-0170(5))
- North arrow (OAR 690-310-0050(2)(c))
- CWRE stamp and signature (OAR 690-014 & 310-0050)
- Appropriate scale (1" = 1320', 1" = 400', or the original full-size scale of the county assessor map) (014 & 310)
- Township, range, section, and tax lot numbers (OAR 690-310-0050(4))

**MONEY SLIP**

DATE: \_\_\_\_\_ RECEIPT #: \_\_\_\_\_

RECEIVED FROM: \_\_\_\_\_ APPLICATION: \_\_\_\_\_  
 PERMIT: \_\_\_\_\_  
 TRANSFER: \_\_\_\_\_

CASH CHECK # \_\_\_\_\_ OTHER (IDENTIFY) \_\_\_\_\_ TOTAL RECEIVED \$ \_\_\_\_\_

**040 TREASURY (STATE & LOCAL TAXES)**

0407 COPIES \_\_\_\_\_ \$ \_\_\_\_\_  
 OTHER (IDENTIFY) \_\_\_\_\_ \$ \_\_\_\_\_

0243 Interest Lease \_\_\_\_\_ 0244 Multi Water Right Filing \_\_\_\_\_ 0245 Cont. Water \_\_\_\_\_

**040 TREASURY (STATE & LOCAL TAXES)**

MISCELLANEOUS *4611*

0407 COPY & TAPE FEES \_\_\_\_\_ \$ \_\_\_\_\_  
 0410 RESEARCH FEES \_\_\_\_\_ \$ \_\_\_\_\_  
 0406 BASIC REVENUE (IDENTIFY) \_\_\_\_\_ \$ \_\_\_\_\_  
 0412 DEPOSIT LNS (IDENTIFY) \_\_\_\_\_ \$ \_\_\_\_\_  
 0414 EXTENSION OF TIME \_\_\_\_\_ \$ \_\_\_\_\_

**WATER RIGHTS**

0201 SURFACE WATER \_\_\_\_\_ EXAM FEE \_\_\_\_\_ RECORD FEE \_\_\_\_\_  
 0203 GROUND WATER \_\_\_\_\_ \$ \_\_\_\_\_ 0204 \_\_\_\_\_ \$ \_\_\_\_\_  
 0205 TRANSFER \_\_\_\_\_ \$ \_\_\_\_\_

**WELL CONSTRUCTION**

0218 WELL CONSTRUCTION \_\_\_\_\_ EXAM FEE \_\_\_\_\_ RECORD FEE \_\_\_\_\_  
 LANDOWNER'S PERMIT \_\_\_\_\_ \$ \_\_\_\_\_ 0219 \_\_\_\_\_ \$ \_\_\_\_\_  
 OTHER (IDENTIFY) *COBU* \$ *200.00*

**040 TREASURY (STATE & LOCAL TAXES)**

0223 POWER LICENSE FEE (FWWRD) \_\_\_\_\_ \$ \_\_\_\_\_  
 0221 HYDRO LICENSE FEE (FWWRD) \_\_\_\_\_ \$ \_\_\_\_\_

HYDRO APPLICATION \_\_\_\_\_ \$ \_\_\_\_\_

SPECIAL INSTRUCTIONS:

RETURN TO APPLICANT - LETTER ATTACHED

## Report Review:

- On form provided by the Department (OAR 690-014-0100(1))
- Application & permit #; or transfer # (OAR 690-014)
- Ownership information (OAR 690-014)
- Date of survey (OAR 690-014)
- Person interviewed (OAR 690-014)
- County (OAR 690-014)
- CWRE stamp and signature (OAR 690-014-0100)
- Signature(s) of all permittee of transfer holder (OAR 690-014-0100)

## Groundwater File Review:

- Pump Test not required (Priority Date prior to December 20, 1988) \*If no, include pump test flyer w/acknowledgment letter
- Pump Test required (Priority Date on or after December 20, 1988)
- Pump Test submitted
- Pump Test not submitted





# Oregon

Kate Brown, Governor

**Water Resources Department**

725 Summer St NE, Suite A

Salem, OR 97301

(503) 986-0900

Fax (503) 986-0904

September 08, 2021

Ketcham Living Trust  
91119 Dog Lake Lane  
Lakeview OR 97630

On August 30, 2021 the Water Resources Department received the Claim of Beneficial Use (COBU) for the following file(s):

Application T-7984

The COBU included a report and map. The Department hopes to review your submittal within approximately 2 - 4 years. At that time, we will review these items and provide a final certificate, proposed certificate, or a request for additional information.

If you are interested in having your COBU reviewed sooner, you may pay to have your file processed immediately, using the Reimbursement Authority program, which is described at:

<https://www.oregon.gov/OWRD/programs/WaterRights/RA/Pages/Certificate.aspx>

Customer Service phone: (503) 986-0900

Enclosed is your receipt for the \$230.00 COBU recording fee

If you sell the property, please contact the Department, or have the new owners contact the Department about the need to file an assignment.

Cc: file T-7984  
Zane E Fernlund, CWRE

**CLAIM OF  
BENEFICIAL USE  
for Groundwater Permits  
claiming more than 0.1 cfs**



**Oregon Water Resources Department**  
725 Summer Street NE, Suite A  
Salem, Oregon 97301-1266  
(503) 986-0900  
[www.oregon.gov/OWRD](http://www.oregon.gov/OWRD)

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**A fee of \$230 must accompany this form for permits  
with priority dates of July 9, 1987, or later.**

**A separate form shall be completed for each permit.**

*In cases where a permit has been amended through the permit amendment process, a separate claim for the permit amendment is not required. Incorporate the permit amendment into the claim for the permit.*

This form is subject to revision. **Begin each new claim** by checking for a new version of this form at:  
<https://www.oregon.gov/OWRD/Forms/Pages/default.aspx>

The completion of this form is required by OAR 690-014-0100(1) and 690-014-0110(4).

Please type or print in dark ink. If this form is found to contain errors or omissions, it may be returned to you. **Every item must have a response.** If any requested information does not apply to the claim, insert "NA." **Do not delete or alter any section of this form unless directed by the form.** The Department may require the submittal of additional information from any water user or authorized agent.

"Section 8" of this form is intended to aid in the completion of this form and should not be submitted.

A claim of beneficial use includes both this report and a map. If the map is being mailed separately from this form, please include a note with this form indicating such.

If you have questions regarding the completion of this form, please call 503-979-9103.

The Department has a program that allows it to enter into a voluntary agreement with an applicant for expedited services. Under such an agreement, the applicant pays the cost to hire additional staff that would not otherwise be available. This program means a certificate may be issued in about a month. For more information on this program see

<https://www.oregon.gov/OWRD/programs/WaterRights/RA/Pages/default.aspx>

**SECTION 1**

**GENERAL INFORMATION**

**1. File Information:**

APPLICATION # <b>G-</b>	PERMIT # (IF APPLICABLE) <b>G-</b>	PERMIT AMENDMENT # (IF APPLICABLE) <b>T-7984</b>
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**2. Property Owner (current owner information):**

APPLICANT/BUSINESS NAME <b>Ketcham Living Trust</b>		PHONE No. <b>717-847-4366</b>	ADDITIONAL CONTACT No.	
ADDRESS <b>91119 Dog Lake Lane</b>				
CITY <b>Lakeview</b>	STATE <b>OR</b>	ZIP <b>97630</b>	E-MAIL <b>betsy@ketchamranch.com</b>	

If the current property owner is not the permit holder of record, it is recommended that an assignment be filed with the Department. ***Each*** permit holder of record must sign this form.

**3. Permit holder of record (this may, or may not, be the current property owner):**

PERMIT HOLDER OF RECORD <b>Charles H. Krisor</b>				
ADDRESS <b>HC 60 Box 2420</b>				
CITY <b>Lakeview</b>	STATE <b>OR</b>	ZIP <b>97630</b>		

**4. Date of Site Inspection:**

<b>6 August 2021</b>
----------------------

**5. Person(s) interviewed and description of their association with the project:**

NAME	DATE	ASSOCIATION WITH THE PROJECT
<b>Lizabeth Ketcham</b>	<b>6 August 2021</b>	<b>Property Owner</b>
<b>Chris Ketcham</b>	<b>6 August 2021</b>	<b>Property Owner</b>

**6. County:**

<b>Lake</b>
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**7. If any property described in the place of use of the permit is excluded from this report, identify the owner of record for that property (ORS 537.230(5)):**

OWNER OF RECORD				
ADDRESS				
CITY	STATE	ZIP		

Add additional tables for owners of record as needed



**SECTION 2  
SIGNATURES**

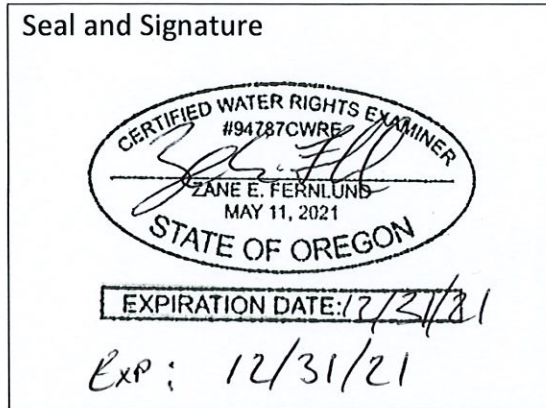
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CWRE Statement, Seal and Signature

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge.



CWRE NAME <b>Zane E. Fernlund</b>		PHONE NO. <b>541-947-4407</b>	ADDITIONAL CONTACT NO.	
ADDRESS <b>P.O. Box 28</b>				
CITY <b>Lakeview</b>	STATE <b>OR</b>	ZIP <b>97630</b>	E-MAIL <b>zanef@andersonengineering.com</b>	

Permit Holder of Record Signature or Acknowledgement

**Each** permit holder of record must sign this form in the space provided below.

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge. I request that the Department issue a water right certificate.

SIGNATURE	PRINT OR TYPE NAME	TITLE	DATE
	<b>Lizabeth Ketcham</b>	<b>Property Owner</b>	26-Aug-21
	<b>Chris Ketcham</b>	<b>Property Owner</b>	26-Aug-21

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**SECTION 3  
CLAIM DESCRIPTION**

**1. Point of appropriation name or number:**

POINT OF APPROPRIATION (POA) NAME OR NUMBER (CORRESPOND TO MAP)	WELL LOG ID # FOR ALL WORK PERFORMED ON THE WELL (IF APPLICABLE)	WELL TAG # (IF APPLICABLE)
Johnson Well #1	Lake 2731	N/A

Attach each well log available for the well (include the log for the original well and any subsequent alterations, reconstructions, or deepenings)

**2. Point of appropriation source, if indicated on permit:**

POA NAME OR NUMBER	SOURCE BASIN LOCATED WITHIN	TRIBUTARY
Johnson Well #1	Antelope Creek Basin	N/A

**3. Developed use(s), period of use, and rate for each use:**

POA NAME OR NUMBER	USES	IF IRRIGATION, LIST CROP TYPE	SEASON OR MONTHS WHEN WATER WAS USED	ACTUAL RATE OR VOLUME USED (CFS, GPM, OR AF)
Johnson Well #1	Irrigation	Alfalfa/Grass	March 1-October 31	245 AF
<b>Total Quantity of Water Used</b>				<b>245 AF</b>

**4. Provide a general narrative description of the distribution works.** This description must trace the water system from each point of appropriation to the place of use:

The water is pumped from the well, then distributed in a N-S mainline, until it meets an E-W mainline, after this the water runs east and is distributed to the wheel lines from risers along the mainline.

Reminder: The map associated with this claim must identify the location of the point(s) of diversion, Donation Land Claims (DLC), Government Lots (GLot), and Quarter-Quarters (QQ).

**5. Variations:**

Was the use developed differently from what was authorized by the permit, permit amendment final order, or extension final order? If yes, describe below.

YES  NO

(e.g. "The permit allowed three points of appropriation. The water user only developed one of the points." or "The permit allowed 40.0 acres of irrigation. The water user only developed 10.0 acres.")

**6. Claim Summary:**



POA NAME OR #	MAXIMUM RATE AUTHORIZED	CALCULATED THEORETICAL RATE BASED ON SYSTEM	AMOUNT OF WATER MEASURED	USE	# OF ACRES ALLOWED	# OF ACRES DEVELOPED
Johnson Well #1	1/80 cfs/acre	0.51 cfs	N/A	Irrigation	0.66	0.66
Johnson Well #1	1/80 cfs/acre	0.51 cfs	N/A	Irrigation	41.10	41.10
Johnson Well #1	1/80 cfs/acre	0.51 cfs	N/A	Irrigation	40.00	40.00

**SECTION 4  
SYSTEM DESCRIPTION**

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Are there multiple POAs?

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YES

**NO**

**A. Place of Use**

1. Is the right for municipal use?

YES

**NO**

*If "YES" the table below may be deleted.*

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
40S	18E	W.M.	1	SW SE				0.66	
40S	18E	W.M.	1	NE SW				6.72	
40S	18E	W.M.	1	NW SW				1.16	
40S	18E	W.M.	1	SW SW				19.65	
40S	18E	W.M.	1	SE SW				7.97	
40S	18E	W.M.	12	NE NW				0.50	
40S	18E	W.M.	12	NW NW				5.10	
40S	18E	W.M.	1	SW SE					6.0
40S	18E	W.M.	1	SE SE					34.0
<b>Total Acres Irrigated</b>								<b>41.76</b>	<b>40.0</b>

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (Glot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, Glot, and QQ.

**B. Groundwater Source Information (Well)**

1. Is the appropriation from a well?

**YES**

NO

*If "NO", items 2 through 4 relating to this section may be deleted.*

2. Describe the access port (type and location) or other means to measure the water level in the well:

A 1 1/2" stainless steel pipe with end cap. Located on north side of well.

3. If well logs are not available, provide as much of the following information as possible:

CASING DIAMETER	CASING DEPTH	TOTAL DEPTH	COMPLETION DATE OF ORIGINAL WELL	COMPLETION DATES OF ALTERATIONS	WHO THE WELL WAS DRILLED FOR	WELL DRILLED BY
12.75 INCHES	277.5 FT.	278.5 FT	7/26/1976	N/A	Robert Johnson	E.E. Story & Son Well Drilling INC.

4. In addition to the information requested in item "3" above, provide any other information which may help the Department locate any well logs associated with this appropriation.

C. Groundwater Source Information (Sump)

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1. Is the appropriation from a dug well (sump)?

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YES

NO

D. Diversion and Delivery System Information

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Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of appropriation to the place of use.

1. Is a pump used?

YES

NO

2. Pump Information:

MANUFACTURER	MODEL	SERIAL NUMBER	TYPE (CENTRIFUGAL, TURBINE OR SUBMERSIBLE)	INTAKE SIZE	DISCHARGE SIZE
Aurora	FH	V76-72121	Turbine	12"	12"
Cornell	6H75-4	22127	Centrifugal	12"	12"
Unknown	JPM2514T	39K036W669	Turbine	4"	4"

3. Motor Information:

MANUFACTURER	HORSEPOWER
Marathon	75
U.S. Electric	75

4. Theoretical Pump Capacity:

HORSEPOWER	OPERATING PSI	LIFT FROM SOURCE TO PUMP *IF A WELL, THE WATER LEVEL DURING PUMPING	LIFT FROM PUMP TO PLACE OF USE	TOTAL PUMP OUTPUT (IN CFS)
75	45	116	0	4.54 (total)

5. Provide pump calculations:

$(75 \text{ hp})(.8 \text{ efficiency})$

---

$= 0.51 \text{ cfs}$

116 ft.



**6. Measured Pump Capacity (using meter if meter was present and system was operating):**

INITIAL METER READING	ENDING METER READING	DURATION OF TIME OBSERVED	TOTAL PUMP OUTPUT (IN CFS)
Not measured			

Reminder: For pump calculations use the reference information at the end of this document.

**7. Is the distribution system piped?**

**YES** NO

If "NO" items 8 through item 13 may be deleted.

**8. Mainline Information:**

MAINLINE SIZE	LENGTH	TYPE OF PIPE	BURIED OR ABOVE GROUND
12"	4074' (combined)	PVC	Buried

**9. Lateral or Handline Information:**

LATERAL OR HANDLINE SIZE	LENGTH	TYPE OF PIPE	BURIED OR ABOVE GROUND
5"	4659' (combined)	Steel	Above

**10. Sprinkler Information:**

SIZE	OPERATING PSI	SPRINKLER OUTPUT (GPM)	TOTAL NUMBER OF SPRINKLERS	MAXIMUM NUMBER USED	TOTAL SPRINKLER OUTPUT (CFS)
3/16"	25	4.18	55	55	0.51

Reminder: For sprinkler output determination use the reference information at the end of this document.

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**E. Storage**

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir)?

YES  NO

**F. Gravity Flow Pipe**

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe?

YES  NO

**G. Gravity Flow Canal or Ditch**

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system?

YES  NO

**H. Additional notes or comments related to the system:**

This well and pump system supplies the water required to operate 2 additional irrigation pivots. This system far exceeds the capacity needed for T-7984.

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### SECTION 5 CONDITIONS

All conditions contained in the permit, permit amendment, or any extension final order shall be addressed. Reports that do not address all performance related conditions will be returned.

#### 1. Time Limits:

Permits and extension final orders contain any or all of the following dates: the date when the actual construction work was to begin, the date when the construction was to be completed, and the date when the complete application of water to the proposed use was to be completed. These dates may be referred to as ABC dates. Describe how the water user has complied with each of the development timelines established in the permit or permit extension order:

	DATE FROM PERMIT	DATE ACCOMPLISHED*	DESCRIPTION OF ACTIONS TAKEN BY WATER USER TO COMPLY WITH THE TIME LIMITS
ISSUANCE DATE	12/19/2001		
BEGIN CONSTRUCTION (A)	12/19/2001		
COMPLETE CONSTRUCTION (B)		10/1/2003	Extension of time to 10/1/2004
COMPLETE APPLICATION OF WATER (C)			

\* MUST BE WITHIN PERIOD BETWEEN PERMIT, OR ANY EXTENSION FINAL ORDER ISSUANCE AND THE DATE TO COMPLETELY APPLY WATER

#### 2. Is there an extension final order(s)?

YES NO  
YES NO

a. Did the Extension Final Order require the submittal of Progress Reports?

#### 3. Initial Water Level Measurements:

a. Was the water user required to submit an initial static water level measurement?

YES NO

#### 4. Annual Static Water Level Measurements:

a. Was the water user required to submit annual static water level measurements?

YES NO

#### 5. Pump Test:

a. Did the permit require the submittal of a pump test?

YES NO

#### 6. Measurement Conditions:

a. Does the permit, permit amendment, or any extension final order require the installation of a meter or approved measuring device?

YES NO

#### 7. Recording and reporting conditions:

a. Is the water user required to report the water use to the Department?

YES NO

If "NO", item b relating to this section may be deleted.

#### 8. Other conditions required by permit, permit amendment final order, or extension final order:

a. Were there special well construction standards?

YES NO

b. Was submittal of a ground water monitoring plan required?

YES NO

c. Was submittal of a water management and conservation plan required?

YES NO



d. Was a Well Identification Number (Well ID tag) assigned and attached to the well?

YES  NO

e. Other conditions?

YES  NO

If "YES" to any of the above, identify the condition and describe the water user's actions to comply with the condition(s):

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### SECTION 6 ATTACHMENTS

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Provide a list of any additional documents you are attaching to this report:

ATTACHMENT NAME	DESCRIPTION
Well Log	Lake County Well log 2731
Irrigation Audit	Irrigation System Audit
Summary of Sprinkler System	Sprinkler System flow
Final Order	T-7984 Final Order
Change in Place of Use	Special Order Volume 55, Page 1349
SVEC Pump Test	Pump Test
Final Proof Survey	Permit No. G-6956 Final Proof
Extension of Time	Extension of time for T-7984

### SECTION 7

#### CLAIM OF BENEFICIAL USE MAP

The Claim of Beneficial Use Map must be submitted with this claim. Claims submitted without the Claim of Beneficial Use map will be returned. The map shall be submitted on poly film at a scale of 1" = 1320 feet, 1" = 400 feet, or the original full-size scale of the county assessor map for the location.

Provide a general description of the survey method used to prepare the map. Examples of possible methods include, but are not limited to, a traverse survey, GPS, or the use of aerial photos. If the basis of the survey is an aerial photo, provide the source, date, series and the aerial photo identification number.

Location of Transfer-7984 improvements were located by Trimble R10 Base and Rover system. I also located the Section corner with this system. The tax lots were put in by record information. The irrigation ditches were drawn in with aerial imagery.

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## Map Checklist

Please be sure that the map you submit includes ALL the items listed below.

**(Reminder: Incomplete maps and/or claims may be returned.)**

- Map on polyester film
- Appropriate scale (1" = 400 feet, 1" = 1320 feet, or the original full-size scale of the county assessor map)
- Township, Range, Section, Donation Land Claims, and Government Lots
- If irrigation, number of acres irrigated within each projected Donation Land Claims, Government Lots, Quarter-Quarters
- Locations of fish screens and/or fish by-pass devices in relationship to point of diversion
- Locations of meters and/or measuring devices in relationship to point of diversion or appropriation
- Conveyance structures illustrated (pumps, reservoirs, pipelines, ditches, etc.)
- Point(s) of diversion or appropriation (illustrated and coordinates)
- Tax lot boundaries and numbers
- Source illustrated if surface water
- Disclaimer ("This map is not intended to provide legal dimensions or locations of property ownership lines")
- Application and permit number or transfer number
- North arrow
- Legend
- CWRE stamp and signature

## BEFORE THE WATER RESOURCES DIRECTOR OF OREGON

## LAKE COUNTY

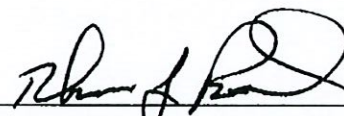
## EXTENSION OF TIME

The change approved under Transfer 7984, in the name of Charles H. Krisor, was to have been completed by October 1, 2003. Charles H. Krisor has requested additional time to complete the change.

Charles H. Krisor provided evidence of reasonable diligence in completing the project. The request for extension of time should be approved.

The time for completion of the change approved by Transfer 7984, in the name of Charles H. Krisor, shall be extended to October 1, 2004.

Witness the signature of the Water Resources Director, affixed OCT 13 2003

  
Paul R. Cleary, Director

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2).

Pursuant to ORS 536.075 and OAR 137-004-080 and OAR 690-01-005, you may either petition for judicial review or petition the Director for reconsideration of this order.



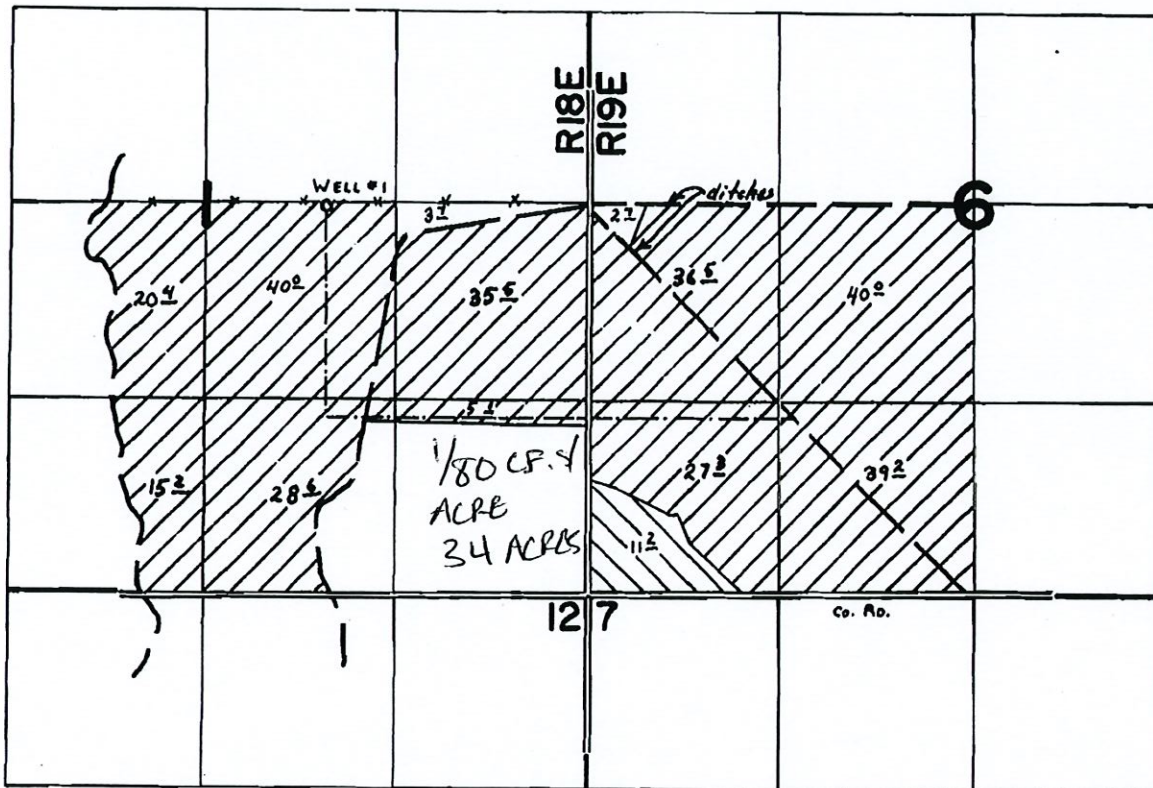
T7984  
51012  
79084

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# T40S. R18 & 19E. WM.



WELL LOC: 2630' N. & 1820' W. fr. S.E. Cor. Sec. 1.

▨ - SUPPLEMENTAL IRRIGATION  
▨ - PRIMARY IRRIGATION

## FINAL PROOF SURVEY UNDER

Application No. G-7472 Permit No. G-6956  
IN NAME OF

*Portello Ranch Company, Inc.*

Surveyed JUNE 24 1978, by C. L. HUGHES

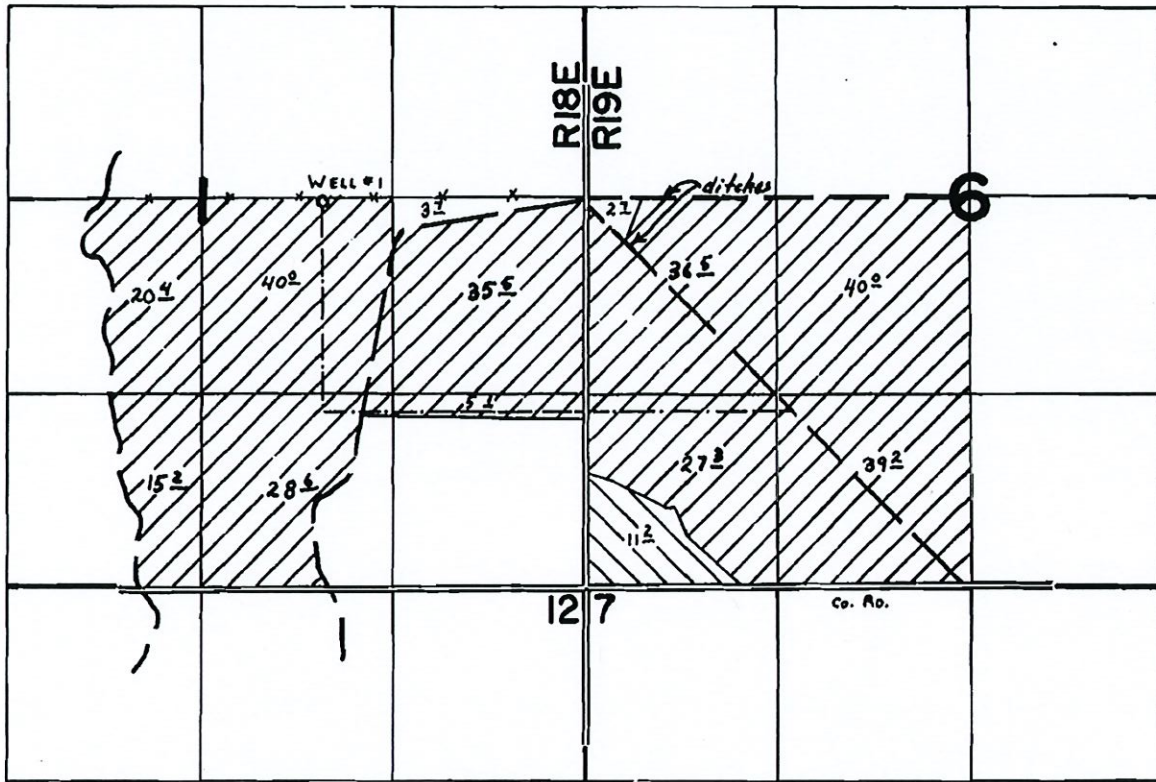
G-0124  
T7984  
51012  
79084

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# T40S. R18 & 19E. WM.



WELL Loc: 2630' N. & 1820' W. fr. SE. Cor. Sec. 1.

- ▨ - SUPPLEMENTAL IRRIGATION
- ▩ - PRIMARY IRRIGATION

## FINAL PROOF SURVEY UNDER

Application No. G-7472 Permit No. G-6956  
IN NAME OF

*Portello Ranch Company, Inc.*

Surveyed JUNE 24 1978, by C. L. HUGHES



TEST #1 - 2 PIVOTS RUNNING  
NO WHEEL LINES RUNNING

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SVEC PUMP TEST FORM

Name: CHARLIE KRISOR

Date: SEPT. 9, 1998

Acct #: 5-0844-00

Tested By: L. CULP

Meter # 3744

Multiplier 160

Pipe OD = 8.06" thinwall

Kh 1.2

Pipe Material = Steel

$\frac{10 \text{ REVS}}{57.4 \text{ SEC}}$

Standing Water =     

Pump Type: Turbine + Booster

Pumping Water = Est. 65'

Rated HP Motor = 75HP + 75HP

PSI =  $\frac{65 \times 2.31}{\text{misc.}} = \frac{150 \text{ ft}}{5 \text{ ft}}$

System Set Up:     

TDH = 220 ft

Type of Irrigation: SPRINKLER

READINGS WITH ULTRA SONIC FLOW METER:

SIGNAL 3.1% Good

Pressure at West Pivot  
50 psi.  
Flow measured at  
790 gpm

GPM = 1687

$$\text{Kilowatt} = 3.6 \times \frac{10 \text{ REV}}{57.4 \text{ SEC}} \times (\text{mult}) \times (\text{Kh}) = 120.4$$

$$\text{Elec. HP} = 1.34 \times 120.4 \text{ (Kw)} = 161.3$$

$$\text{Water HP} = \frac{1687 \text{ gpm} \times 220 \text{ ft}}{3960} = 93.7$$

$$\text{Efficiency} = \frac{93.7 \text{ WHP}}{161.3 \text{ EHP}} \times 100 = 58\% \text{ RATED AS FAIR.}$$

Estimated Brake HP = 145.2

TEST # 2 - 2 PIVOTS ON  
2 WHEEL LINES ON

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SVEC PUMP TEST FORM

Name: CHARLIE KRISOR

Date: 9-9-98

Acct #: 5-0844-00

Tested By: L. CULP

Meter # 3744

Multiplier 160

Pipe OD = 8.06"

Kh 1.2

Pipe Material = STEEL

10 REVS  
55.5 SEC

Standing Water = —

Pump Type: Turbine + Booster

Pumping Water = EST. 65'

Rated HP Motor = 75 + 75

PSI = 42 x 2.31 = 97 ft  
MISC. 5 ft

System Set Up: —

TDH = 167 ft

Type of Irrigation: —

READINGS WITH ULTRASONIC FLOW METER:

SIGNAL 3.1% GOOD

North Wheel line had  
24 psi at end  
South WL had  
8 psi - many leaks

GPM = 2025

$$\text{Kilowatt} = 3.6 \times \frac{10 \text{ REV}}{55.5 \text{ SEC}} \times (\text{mult}) \times \frac{160}{(\text{Kh})} = 124.5$$

$$\text{Elec. HP} = 1.34 \times 124.5 \text{ (Kw)} = 166.8$$

$$\text{Water HP} = \frac{2025 \text{ gpm} \times 167 \text{ ft}}{3960} = 85.4$$

$$\text{Efficiency} = \frac{85.4 \text{ WHP}}{166.8 \text{ EHP}} \times 100 = 51\% \text{ RATED AS LOW}$$

Est. Brake HP = 150.1

1 KSI #3 - 2 PIVOTS RUNNING  
2 Wheelines RUNNING  
1 open Valve at Pump

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SVEC PUMP TEST FORM

Name: CHARLIE KRISOR

Date: 9-9-98 OWRD

Acct #: 5-0844-00

Tested By: L. CULP

Meter # 3744

Multiplier 160

Pipe OD = 8.06"

Kh 1.2

Pipe Material = STEEL

5 REVS  
29.51 SEC

Standing Water = —

Pump Type: Turbine + Booster

Pumping Water = Est. 65'

Rated HP Motor = 75 + 75

PSI = 10 x 2.31 = 23 ft

System Set Up: —

MISC. 5 ft

TDH = 93 ft

Type of Irrigation: —

READINGS WITH ULTRASONIC FLOW METER:

SIGNAL 3.1% Good

GPM = 2105

$$\text{Kilowatt} = 3.6 \times \frac{5 \text{ REV}}{29.51 \text{ SEC}} \times (\text{mult}) \times \frac{160}{(\text{Kh})} = 117.1$$

$$\text{Elec. HP} = 1.34 \times 117.1 \text{ (Kw)} = 156.9$$

$$\text{Water HP} = \frac{2105 \text{ gpm} \times 93 \text{ ft}}{3960} = 49.4$$

$$\text{Efficiency} = \frac{49.4 \text{ WHP}}{156.9 \text{ EHP}} \times 100 = 31\% \text{ Low}$$

Est. Brake HP = 141.2



STATE OF OREGON

COUNTY OF LAKE

ORDER APPROVING A CHANGE IN PLACE OF USE

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Pursuant to ORS 537.705, after notice was given and no objections were filed, and finding that no injury to existing water rights would result, this order approves, as conditioned or limited herein, TRANSFER 7984 submitted by

CHARLES H. KRISOR  
HC 60 BOX 2420  
LAKEVIEW, OREGON 97630.

The first right to be modified, as evidenced by a PORTION of Certificate 51012, was perfected under Permit G-6956 with a date of priority of AUGUST 9, 1976. The right allows the use of JOHNSON WELL 1, in the ANTELOPE CREEK BASIN, for IRRIGATION OF 0.66 ACRE. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 0.01 cubic foot per second, if available at the original well; NW $\frac{1}{4}$  SE $\frac{1}{4}$ , SECTION 1, T 40 S, R 18 E, W.M.; 2630 FEET NORTH AND 1820 FEET WEST FROM THE SE CORNER OF SECTION 1, or its equivalent in case of rotation, measured at the well.

The second right to be modified, as evidenced by a PORTION of Certificate 62677, was perfected under Permit G-8101 with a date of priority of APRIL 17, 1978. The right allows the use of A WELL, in the DREWS CREEK BASIN, for IRRIGATION OF 41.1 ACRES. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 0.51 cubic foot per second, if available at the original well;

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2).

Pursuant to ORS 536.075 and OAR 137-004-080 and OAR 690-01-005 you may either petition for judicial review or petition the Director for reconsideration of this order.

T-7984.PKS

Page 1 of 5 Special Order Volume 55, Page 1349

NW¼ SE¼, SECTION 1, T 40 S, R 18 E, W.M.; 40 FEET SOUTH AND 650 FEET EAST FROM THE CENTER ¼ CORNER OF SECTION 1, or its equivalent in case of rotation, measured at the well.

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The amount of water used for irrigation, together with the amount secured under any other right existing on the same lands, is limited to ONE-EIGHTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3.0 acre-feet per acre for each acre irrigated during the irrigation season of each year.

The third right to be modified, as evidenced by a PORTION of Certificate 76813, was perfected under Permit G-11110 with a date of priority of APRIL 11, 1988. The right allows the use of WELL 1, in the QUARTZ CREEK BASIN, for SUPPLEMENTAL IRRIGATION OF 40.0 ACRES. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 0.50 cubic foot per second, if available at the original well; WELL 1 - NW¼ SE¼, SECTION 1, T 40 S, R 18 E, W.M.; 2631.1 FEET NORTH AND 2146.49 FEET WEST FROM THE SE CORNER OF SECTION 1, or its equivalent in case of rotation, measured at the well.

The amount of water used for irrigation, together with the amount secured under any other right existing on the same lands, is limited to ONE-EIGHTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3.0 acre-feet per acre for each acre irrigated during the irrigation season of each year. This right is limited to any deficiency in the available supply of any prior right existing for the same land.

The well shall be maintained in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

When required by the department, the water user shall install and maintain a weir, meter, or other suitable measuring devices, and shall keep a complete record of the amount of ground water withdrawn.



The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described. The water user is advised that new regulations may require use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water right must be in compliance with statewide land-use goal and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The use shall conform to any reasonable rotation system ordered by the proper state officer.

The authorized places of use are as follows:

PERMIT G-6956

SW $\frac{1}{4}$  SE $\frac{1}{4}$  0.66 ACRE  
SECTION 1

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.

PERMIT G-8101

NE $\frac{1}{4}$ SW $\frac{1}{4}$ 6.72 ACRES	NE $\frac{1}{4}$ NW $\frac{1}{4}$ 0.50 ACRE
NW $\frac{1}{4}$ SW $\frac{1}{4}$ 1.16 ACRES	NW $\frac{1}{4}$ NW $\frac{1}{4}$ 5.10 ACRES
SW $\frac{1}{4}$ SW $\frac{1}{4}$ 19.65 ACRES	SECTION 12
SE $\frac{1}{4}$ SW $\frac{1}{4}$ 7.97 ACRES	
SECTION 1	

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.

PERMIT G-11110

SW $\frac{1}{4}$  SE $\frac{1}{4}$  6.00 ACRES  
SE $\frac{1}{4}$  SE $\frac{1}{4}$  34.00 ACRES  
SECTION 1

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.

The right to use water for the above purpose is restricted to beneficial use on the lands or place of use described.

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The applicant proposes to change the place of use to:

PERMIT G-6956

SW¼ SE¼ 0.66 ACRE  
SECTION 1

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.

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PERMIT G-8101

NW¼ SW¼ 1.01 ACRES  
SW¼ SW¼ 0.09 ACRE  
SW¼ SE¼ 6.00 ACRES  
SE¼ SE¼ 34.00 ACRES  
SECTION 1

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.

PERMIT G-11110

NE¼ SW¼ 6.72 ACRES  
NW¼ SW¼ 1.16 ACRES  
SW¼ SW¼ 19.65 ACRES  
SE¼ SW¼ 7.97 ACRES  
SW¼ SE¼ 0.66 ACRE  
SECTION 1

NE¼ NW¼ 0.50 ACRE  
NW¼ NW¼ 3.34 ACRES  
SECTION 12

TOWNSHIP 40 SOUTH, RANGE 18 EAST, W.M.



THIS CHANGE TO EXISTING WATER RIGHTS MAY BE MADE PROVIDED THE FOLLOWING CONDITIONS ARE MET BY THE WATER USER:

1. The proposed change shall be completed on or before October 1, 2003.
2. The former places of use shall no longer be irrigated as part of these water rights.

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Certificates 51012, 62677, and 76813 are cancelled. New certificates will be issued to confirm those portions of the rights NOT involved in this transfer. When satisfactory proof of the completed change is received, new certificates confirming these water rights will be issued.

WITNESS the signature of the Water Resources

Director, affixed DEC 19 2001.

  
\_\_\_\_\_  
Paul R. Cleary, Director

BEFORE THE WATER RESOURCES DEPARTMENT  
OF THE STATE OF OREGON

IN THE MATTER OF A LOSS OF RIGHT DUE TO )  
FAILURE TO APPLY WATER TO BENEFICIAL USE )  
UNDER THE TERMS OF AN ORDER APPROVING ) FINAL ORDER  
T-7984, LAKE COUNTY )

**Authority**

Oregon Administrative Rule 690-380-6010(2) provides that any part of a transferred water use that is not applied to beneficial use under the terms of the transfer order for change in use or place of use, or within any extension of time allowed for completion, is lost.

**Applicant**

CHARLES H. KRISOR  
HC 60 BOX 2420  
LAKEVIEW, OR 97630

**Current Landowner**

KETCHAM LIVING TRUST  
91119 DOG LAKE LANE  
LAKEVIEW, OR 97630

**Findings of Fact**

1. On April 22, 1998, CHARLES H. KRISOR filed an application to change the place of use under Certificates 51012, 62677, and 76813. The Department assigned the application number T-7984.
2. On December 19, 2001, Transfer Application T-7984 was approved and the order is recorded in Special Order Volume 55, Page 1349. Certificates 51012, 62677, and 76813 were cancelled and the rights are considered inchoate.
3. The final order set a date of OCTOBER 1, 2003 for the changes to be completed. The claim of beneficial use was due OCTOBER 1, 2004.
4. On October 13, 2003, the Department approved an extension of time for transfer application T-7984 to October 1, 2004.

**NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW**

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.



5. On November 30, 2020, the Department contacted the applicant by certified mail, notifying them of an incomplete transfer, and that the rights involved with the transfer could be lost if a Claim of Beneficial Use or an Application for Extension of Time on a Transfer is not received. The Department requested a response by December 31, 2020. The certified mailing was returned to sender, unable to forward.
6. On December 21, 2020, the Department contacted the current landowner, verified as Ketcham Living Trust by the Lake County Assessor's office, by certified mail, notifying them of an incomplete transfer, and that the rights involved with the transfer could be lost if a Claim of Beneficial Use or an Application for Extension of Time on a Transfer is not received. The Department requested a response by January 25, 2021.
7. On January 4, 2021, the Department received a signed certified mailing card.
8. As of January 26, 2021, the Department had not received any further response to the incomplete transfer.
9. As of April 19, 2021, no Claim of Beneficial Use showing beneficial use of the inchoate water has been filed with the Department.
10. A description of the inchoate rights that are lost are as follows:

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**Certificate:** 51012 in the name of PORTELLO RANCH COMPANY, INC. (perfected under Permit G-6956)

**Use:** IRRIGATION of 0.66 ACRE

**Priority Date:** AUGUST 9, 1976

**Rate:** 0.01 CUBIC FOOT PER SECOND

**Limit/Duty:** The amount of water used for irrigation, together with the amount served under any other right existing for the same lands, shall be limited to ONE-EIGHTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3 acre-feet per acre for each acre irrigated during the irrigation season of each year.

**Source:** JOHNSON WELL 1, a tributary of ANTELOPE CREEK

**Authorized Point of Appropriation:**

Twp	Rng	Mer	Sec	Q-Q	Survey Coordinates
40 S	18 E	WM	1	NW SE	2630 FEET NORTH AND 1820 FEET WEST FROM THE SE CORNER OF SECTION 1

**Authorized Place of Use:**

IRRIGATION					
Twp	Rng	Mer	Sec	Q-Q	Acres
40 S	18 E	WM	1	SW SE	0.66

**Certificate:** 62677 in the name of PORTELLO RANCH COMPANY, INC. (perfected under Permit G-8101)  
**Use:** IRRIGATION of 41.10 ACRES  
**Priority Date:** APRIL 17, 1978  
**Rate:** 0.51 CUBIC FOOT PER SECOND  
**Limit/Duty:** The amount of water used for irrigation, together with the amount served under any other right existing for the same lands, shall be limited to ONE-EIGHTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3.0 acre-feet per acre for each acre irrigated during the irrigation season of each year.  
**Source:** A WELL in the DREWS CREEK BASIN

**Authorized Point of Appropriation:**

Twp	Rng	Mer	Sec	Q-Q	Survey Coordinates
40 S	18 E	WM	1	NW SE	40 FEET SOUTH AND 650 FEET EAST FROM THE C1/4 CORNER OF SECTION 1

**Authorized Place of Use:**

IRRIGATION					
Twp	Rng	Mer	Sec	Q-Q	Acres
40 S	18 E	WM	1	NE SW	6.72
40 S	18 E	WM	1	NW SW	1.16
40 S	18 E	WM	1	SW SW	19.65
40 S	18 E	WM	1	SE SW	7.97
40 S	18 E	WM	12	NE NW	0.50
40 S	18 E	WM	12	NW NW	5.10
Total					41.10

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**Certificate:** 76813 in the name of NW FARM CREDIT SVCS, RICHARD AND LUCY COLLMAN, AND CHARLES KRISOR (perfected under Permit G-11110)  
**Use:** SUPPLEMENTAL IRRIGATION of 40.0 ACRES  
**Priority Date:** APRIL 11, 1988  
**Rate:** 0.50 CUBIC FOOT PER SECOND  
**Limit/Duty:** The amount of water used for irrigation, together with the amount served under any other right existing for the same lands, shall be limited to ONE-EIGHTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3.0 acre-feet per acre for each acre irrigated during the irrigation season of each year.  
**Source:** A WELL in the QUARTZ CREEK BASIN

**Authorized Point of Appropriation:**

Twp	Rng	Mer	Sec	Q-Q	Survey Coordinates
40 S	18 E	WM	1	NW SE	WELL NO. 1 - 2631.1 FEET NORTH AND 2146.49 FEET WEST FROM THE SE CORNER OF SECTION 1



Authorized Place of Use:

IRRIGATION					
Twp	Rng	Mer	Sec	Q-Q	Acres
40 S	18 E	WM	1	SW SE	6.0
40 S	18 E	WM	1	SE SE	34.0
Total					40.0

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Conclusions of Law

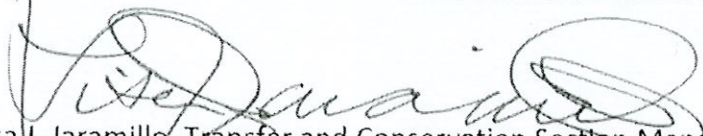
The loss of right described above is consistent with the requirements of OAR 690-380-6010(2).

Now, therefore, it is ORDERED:

1. The inchoate rights under Transfer Application T-7984 are lost, and are of no further force or effect.

JUL 14 2021

Dated in Salem, Oregon on \_\_\_\_\_

  
Lisa J. Jaramillo, Transfer and Conservation Section Manager, for  
THOMAS M. BYLER, DIRECTOR  
Oregon Water Resources Department

Mailing date: JUL 15 2021

# SUMMARY OF NOZZLE FLOWS

Ketcham Living Trust - T-7984

Wheel Lines (4)

#	NOZZLE SIZE	DIAMETER	PSI	FLOW (FT <sup>3</sup> /S)	TOTAL (FT <sup>3</sup> /SEC)	FLOW (GPM)	TOTAL FLOW (GPM)
0	1 1/64	0.1719	45	0.011	0.000	4.73	0.00
55	3/16	0.1875	25	0.009	0.514	4.20	230.80
0	13/64	0.2031	45	0.015	0.000	6.61	0.00
0	13/64	0.2031	45	0.015	0.000	6.61	0.00
0	5/16	0.3125	45	0.035	0.000	15.64	0.00

Total Flow

0.514

230.80

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# IRRIGATION AUDIT REPORT

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NELSON SOMERS  
ENERGY EFFICIENCY ANALYSIS

5-844  
75HP + 75HP BOOSTER

PREPARED BY:

---

---

FRED ZIARI



IRZ CONSULTING



# IRRIGATION AUDIT OBJECTIVES

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THE OBJECTIVE OF THIS IRRIGATION AUDIT WAS TO DETERMINE AND EVALUATE THE POTENTIAL ENERGY SAVINGS OF THE EXISTING IRRIGATION SYSTEM, AS WAS GUIDELINE BY THE BONNEVILLE POWER ADMINISTRATION'S (BPA) STATEMENT OF WORK.

IRRIGATION SYSTEM COMPONENT THAT WERE EVALUATED ARE AS FOLLOW :

- MAINLINE SIZES AND FRICTION.
- VALVE AND FITTING'S SIZES AND FRICTION.
- SPRINKLER OPERATING PRESSURE.
- PUMP AND MOTOR EFFICIENCIES.
- PUMP FLOW RATE.

ONE OR ALL OF THE ABOVE MEASURES CAN BE CHANGED TO REDUCE THE TOTAL HORSEPOWER OF THE PUMP AND THUS THE ENERGY REQUIREMENT OF THE IRRIGATION SYSTEM.

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**IRZ CONSULTING**  
115 W. Hermiston Ave. Suite 210  
Hermiston Oregon, 97838  
(503)567-0252

**IRRIGATION AUDIT REPORT**

Nelson Somers  
2777 W. Young RD.  
Fillmore, CA. 93015

DATE :September 30, 1992  
AUDIT# :SV092292-2

Dear Mr. Somers:

Enclosed please find the results of the Irrigation Audit which was conducted on September 22, 1992. The purpose of this audit is to determine the Potential energy savings of your irrigation system, as guided by the Bonneville Power Administration Water Wise Program. I hope you will take the time to review this report, and that it will be helpful in reducing your irrigation costs.

**RESULTS OF ENERGY SAVINGS**

From our analysis of the 75 horsepower pump and 75 horsepower booster (Well #1) it was determined that 14,800 Kilowatt-hours per year of energy could be saved by converting your pivot(s) to the low pressure nozzles operating at 20 psi and your wheel lines to the low pressure nozzles operating at 35 psi and by operating the system to supply 1,600 gallons per minute. This savings represents a reduction of 7.3% of your present energy usage or a total annual savings of approximately \$530, based on the past few years of electrical usage.

We also have checked the mainlines and the fittings around the pump and have found them to be properly sized and designed (assuming the information we were provided about the mainlines was correct).

As we measured the performance of this system, it was operating very well and you may choose to take no action. But, if these savings seem cost effective for your operation, you may then take the following actions, and need to consult your dealer.



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PUMP EFFICIENCY TEST

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The pump test was conducted using an accurate ultrasonic flow meter to measure the flow rate. Electrical readings consisting of voltage, amperage, power factor, and kilowatt (electrical horsepower) on all three legs were taken using an electrical measurement instrumentation.

We tested the system with both pumps on as well as with just the well pump on. During the first test with both pumps; the pivot and two wheel lines were on and two valves were open so that the discharge was around 2000 gallons per minute. During the second test with just the well pump; the pivot and the two wheel lines were on, but not operating near their design flows.

During our first pump test, the well pump was discharging 2040 gallons per minute, lifting from a depth of 65 feet, with 20 psi of discharge pressure, and it was drawing 84.8 electrical horsepower. It achieved an overall efficiency (combined efficiency of pump and motor) of 69.4%, which is rated as "EXCELLENT" efficiency. All electrical readings were found to be balanced within acceptable limits.

The motor was over-loaded by 13% which is just within the manufacturer's allowable 15% safety factor. Continuous use at this condition might result in motor damage and eventual burn-out. Pumping too much water is normally the main cause of motor over-load.

NOTE : Please be advised that we tried to measure the pumping depth and were not able to do so. The pumping level is an estimate based on information that you have provided us. Also, there was no access to measure the pressure between the two pumps, therefore, the discharge pressure from the well pump for this test is an estimate. The accuracy of the efficiency number depends on the accuracy of these two measurements. An error in the pumping level would effect the efficiency of the well pump; if the depth is greater the efficiency would be higher. An error in the pressure between the pumps would effect the efficiency of both pumps, but not of the pumping plant as a whole. If possible, both of these parameters should be measured before any work is done.

The booster pump was also discharging 2040 gallons per minute, had a suction side pressure of 20 psi (see above note), with 65 psi of discharge pressure, and it was drawing 84.2 horsepower. It achieved an overall efficiency (combined efficiency of pump and motor) of 63.7%, which is rated as "GOOD" efficiency. All electrical readings were found to be balanced. The motor was over-loaded by 12% which is just within the manufacturer's allowable 15% safety factor.



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During our second pump test, the well pump was discharging 870 gallons per minute, lifting from a depth of 53 feet, with 51 psi of discharge pressure, and it was drawing 78.5 electrical horsepower. It achieved an overall efficiency (combined efficiency of pump and motor) of 48.7%, which is rated as "LOW" efficiency. All electrical readings were, again, found to be balanced within acceptable limits.

For more detailed information, please refer to the enclosed pump efficiency field sheets and pump curves. For protection and prolonging the life of the motors, we recommend that you make sure to cover all the holes in the electric panels.

### SYSTEM MODIFICATIONS

It is our understanding that you plan to modify this system by replacing five of the wheel lines with another center pivot. Though this modification should improve the operation and may reduce operating costs, it will not be covered by the cost sharing program. There are parts of the modification, however, that may be covered. For example, the conversion from high to low pressure nozzles and the associated pump modifications may be covered.

One problem that you could face is the operation of center pivots with low pressure packages and wheel lines with standard nozzles. The high pressure necessary for the wheel lines would be wasted on the pivots. To avoid this situation, you could choose to convert the wheel lines to low pressure also. These low pressure conversions are discussed below. To facilitate this conversion, you could replace the two wheel lines you intend to keep that have the wide sprinkler spacing with two of the others that have a 40 foot sprinkler spacing.

The other consideration you have is to operate the system at a discharge rate of around 1,600 gallons per minute. This would enable the pumps to produce the necessary head while still operating efficiently.

### LOW PRESSURE NOZZLES FOR CENTER PIVOTS

We recommend that you install low pressure nozzles on the drop tubes. There are several types of low pressure nozzles available in the market today. One type, which is the most popular, is the "Spray Head", and is recommended for an operating pressure ranging from 10 to 20 psi. The spray heads can be installed either on the top of the pivot or preferably on a drop tube closer to the crop, so to minimize the effect of wind drift and evaporation losses. Also on the heavier soils, new nozzles such as Rotator or Wobbler can be used to reduce the runoff problem.



There is a second type, which is the "Diffuser" nozzle, which replaces the existing round nozzles on the impact sprinklers. It has an operating pressure ranging from 30 to 35 psi. Since the diameter of throw is wider than the spray head it is mainly recommended for use on heavier soils. Since only the nozzles need to be replaced this method might be less expensive, but you can not use the drop tubes to minimize evaporation losses.

NOTE. The calculated savings in this report is based on the spray nozzles on drop tubes, operating at 20 psi.

### PRESSURE REGULATORS

We strongly recommend the installation of the pressure regulators on all pivots with large field elevation differences or with multiple pivots operating with the same pump(s). Pressure variation causes poor water application uniformity and results in under or over irrigation of portions of your fields. The pressure regulators which are normally installed at the base of each spray head, will maintain a constant pressure throughout the length of the pivot, regardless of field slope or pump operating pressure.

### END GUN

In most cases, when the pumps are modified to operate at a low pressure system, the end pressure will be too low for the end gun to operate properly. There are several solution to this problem:

- (1) completely remove the end gun,
- (2) install a small booster pump (1 to 2 hp) at the end tower to boost the pressure for the end gun, or
- (3) install the new Diffuser type end gun, which will operate properly at much lower pressure.

I recommend that you consult your irrigation dealer for selection of a proper end gun.

### LOW PRESSURE OR FLOW CONTROL NOZZLES FOR WHEEL LINES

Traditionally, for a uniform water application, sprinklers on the wheel-lines and hand-lines were designed to operate at a relatively high pressure (55 to 65 psi). In the past few years, sprinkler manufacturers, such as Rain Bird, Nelson, etc. have introduced innovative new low pressure nozzles that can uniformly operate at much lower pressure ranging from 30 to 35 psi and thus reducing the horsepower requirement.



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With the reduced pressure, the diameter of throw are also reduced somewhat (by about 10 feet), which will require you to use the "OFF-SET" method. The off-set method, requires that you move the sprinklers as usual (i.e. 60 ft), and then on the second time around, use a 30 foot swing pipe and place the laterals halfway from the last moves. This method will improve the uniformity of water application over the present practice.

We recommend that you replace the existing high pressure round nozzles with the equivalent size of the new low pressure nozzles from one of the above mentioned sprinkler manufacturers. Since these nozzles are fairly new on the market, you have to be specific as to the low pressure nature of the nozzles.

Note: If your present moves take more than a week to ten days of turnaround, this system might leave some part of the field dry and it is not recommended.

Due to the existing low sprinkler pressure which at the critical high point of the field was measured as 32 psi, no further energy savings could be achieved by converting to the low pressure nozzles. However, such a conversion would allow you to operate at the lower pressure you intend to operate the pivots at.

One other option for the wheel lines that may be preferably you would be the use of flow control nozzles. Flow control nozzles replace the existing nozzles and are designed so that each sprinkler will discharge the same gallonage regardless of the field elevation, sprinkler pressure, or how close it is to the pump. This will result in much more uniform irrigation and a better crop yield. Though designed for 50 psi, these nozzles will operate at as low as 40 psi.

#### PUMP MODIFICATION

Before any pump modification, you need to install low pressure nozzles. Installation of a low pressure nozzles by themselves will not however result in any energy savings, unless pumps are modified to use less horsepower and therefore less energy. Normally pumps are modified to output less pressure at the same discharge.

For this system the need is not to lower the pressure, but to increase the pressure. As has been mentioned, this increase should be able to be achieved by operating at a slightly lower discharge rate (see the included pump curves). If a higher flow rate is desired, then pump modification may be required.



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After low pressure installation, the operating pressure requirements of the pivots will be around 45 to 50 psi. From our tests, this would require a total dynamic head for the pumping plant of around 265 feet.

The efficiency of both pumps is very good already, and no work is necessary. Any inefficiency of this pumping plant is probably due to either a drop in the water table and/or possibly worn impellers. To improve the efficiency of the pumping plant, the pumps and motors would need to be checked out by an experienced pump shop. You could decide to pull these pumps and have them checked out for any signs of wear in the impellers, bowls or casing, bearings, shaft, etc.. If wear was found, then you could have them repaired and restored to their original pump efficiency. However, the amount of improvement that could be achieved appears to be very small.

If you decide to pull the well pump, then you may want to lower a camera down the hole to determine the condition of the well's perforations. If clogged, you could consider a treatment to open the well's perforations.

In conjunction with the pump-work, and if for the past 5 years you have not done so, you should first megger the motor and if found to be low, you may then have the motor dipped and baked to restore it to the original efficiency.

I suggest that you consult your pump dealer on the details of the modification, before taking any action.

#### COST SHARING PROGRAM

If this report results in actual investment to conserve energy (i.e. low pressure nozzles, pump efficiency improvement, etc.), you should keep all the receipts and send copies to your local utility as soon as the work is completed. In the appendix you will find the list of all eligible equipment. This Irrigation Audit Program is sponsored by your local utility and the Bonneville Power Administration (BPA), and will pay up to 50% of the actual cost of all modifications except for eligible mainlines which are cost shared at 75%. This cost share shall not exceed 22 cents per kilowatt-hours saved (see page 6 of the report for maximum allowable cost-share). To qualify for cost sharing, pumps must be modified and a measured energy savings documented. To establish the actual energy savings and the exact amount of cost sharing, a retest of the pump will be required.

We encourage you to take advantage of this opportunity, and if you have further questions concerning this report please feel free to contact me.

Sincerely,

*Fred Ziari*

Fred Ziari and  
Paul Wattenburger  
IRZ CONSULTING

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Note: This is not a complete redesign of your systems, consult your dealer.



## PUMP EFFICIENCY TEST

NAME ..... NELSON SOMERS  
TEST NO ..... SV092292-2  
DATE ..... 9/22/92

UTILITY ..... SURPRISE VALLEY  
METER NO ..... 3744  
PUMP NO..... 1

### MOTOR DESCRIPTION

1. Manufacturer.. U.S.
2. Frame No..... 365TP
3. Rated HP..... 75
4. Rated Volt..... 460
5. Rated Amp..... 88
6. RPM..... 1770

### PUMP DESCRIPTION

1. Manufacturer.... AURORA
2. Model No..... FH
3. Serial No..... 1770
4. Impeller Dia..... NA
5. No. of Stage..... 3

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## FIELD TEST DATA

Flow Rate (gpm)	Pressure (psi)	Pumping Level (feet)	Total Head (feet)
2040.0 <- Test #1	20.0	65.0	114.2
870.0 <- Test #2	51.0	53.0	174.0

<----- Voltage ----->		<--- Current --->		---> <-Power Factor->		<-Kilowatt->	
(volt)		(amps)		(% )		(kw)	
470.0	471.0	471.0	78.6	82.0	85.3	94.7	63.3
477.0	478.0	478.0	71.7	75.0	77.4	94.7	58.5

Electrical Horsepower	Water Horsepower	Overall Efficiency	Rated Efficiency
84.8	58.8	69.4%	EXCELLENT
78.5	38.2	48.7%	LOW

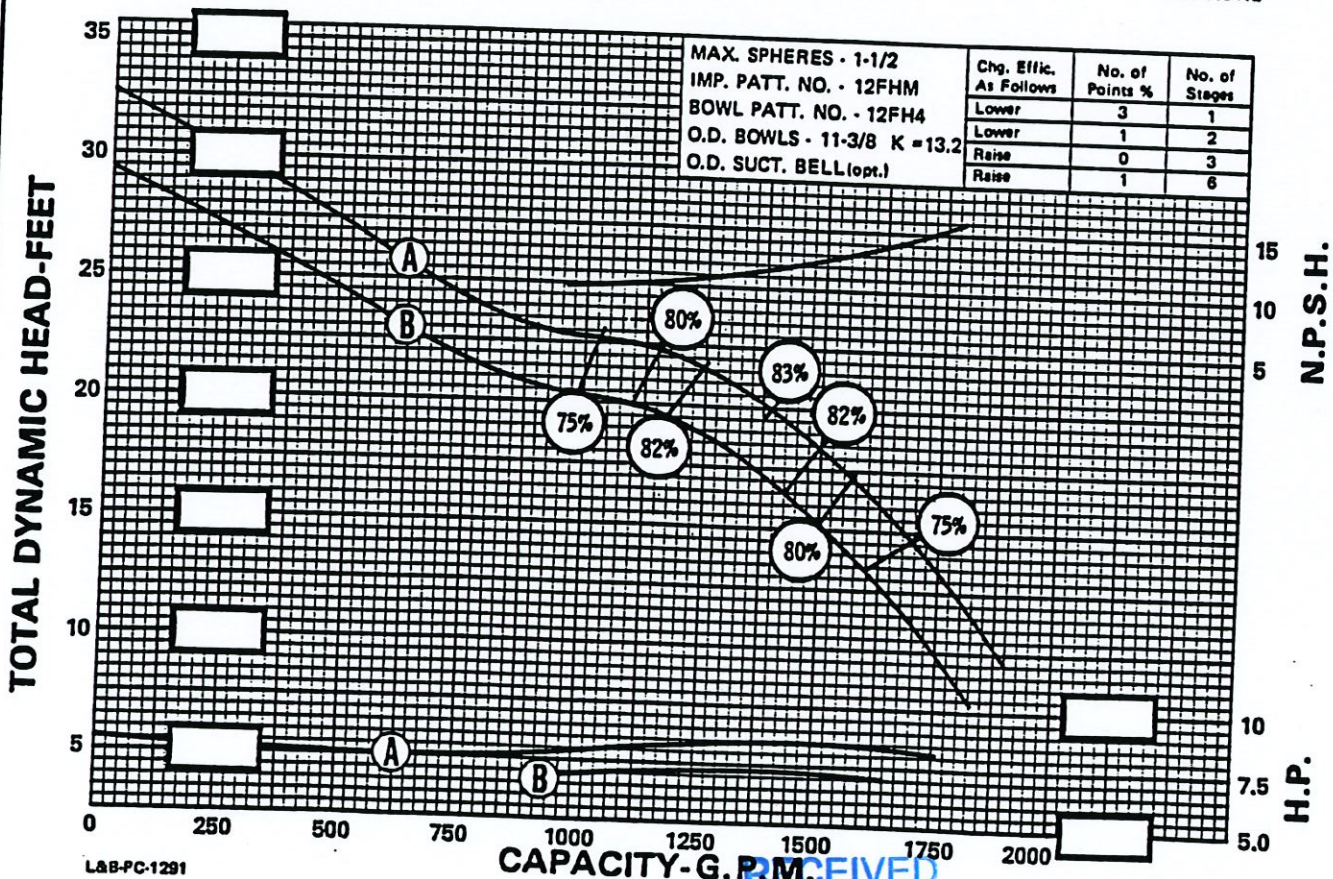
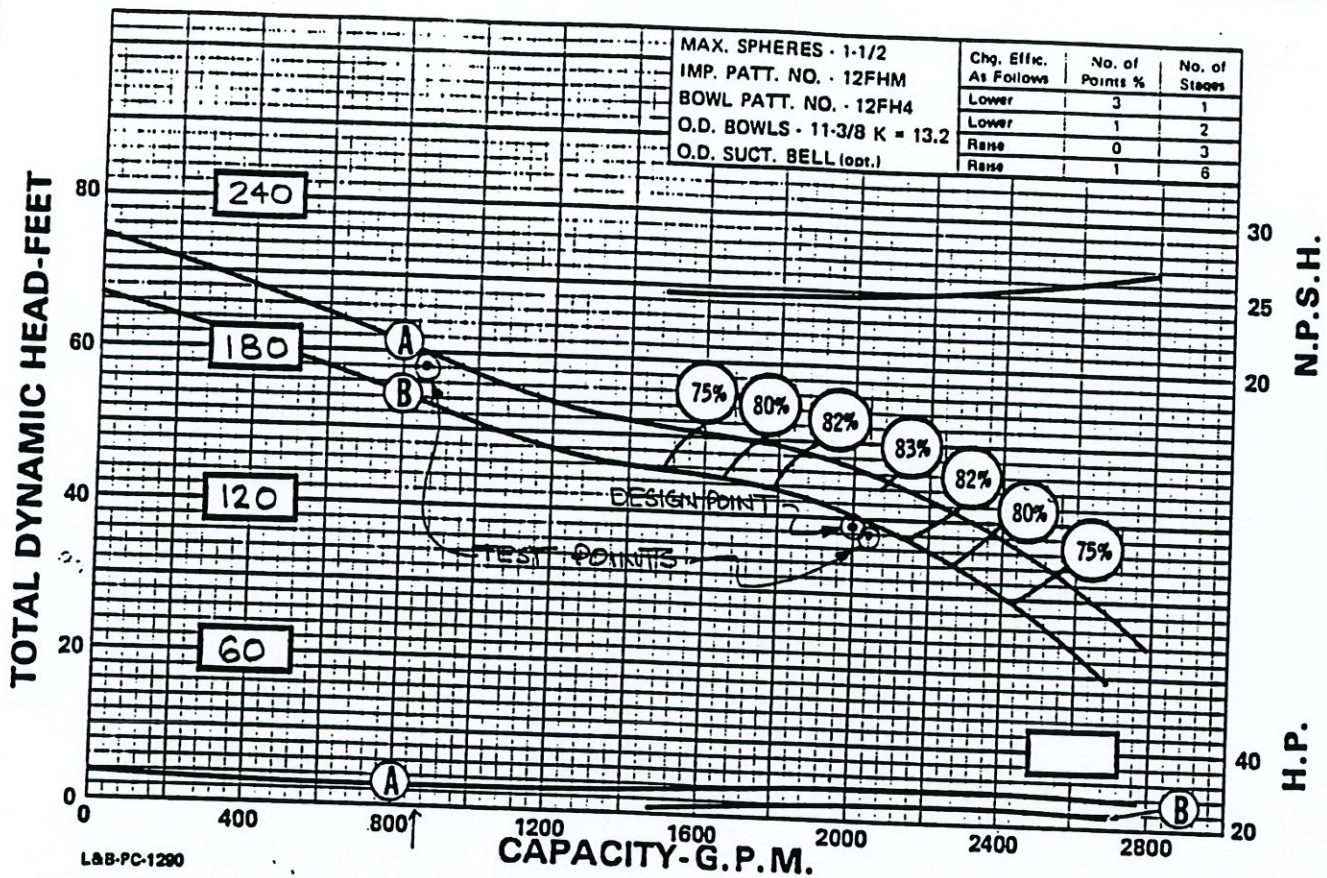
Test #1 was with the booster and Test #2 was without the booster.



# 12FHM SERIES 1110

## Veri-Line PUMP

SECTION 1110 PAGE:  
DATED MARCH 19



**VERTI-LINE PUMPS**  
Layne & Bowler - A Division of The Marley Co.

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A = 9.469  
B = 9.000  
C = REFER TO FACTORY

1770 R.P.M.

1170 R.P.M.



## PUMP EFFICIENCY TEST

NAME ..... NELSON SOMERS  
TEST NO ..... SV092292-2  
DATE ..... 9/22/92

UTILITY ..... SURPRISE VALLEY  
METER NO ..... 3744  
PUMP NO..... 2

### MOTOR DESCRIPTION

1. Manufacturer.. MARATHON
2. Frame No..... 365TC
3. Rated HP..... 75
4. Rated Volt..... 460
5. Rated Amp..... 91
6. RPM..... 1770

### PUMP DESCRIPTION

1. Manufacturer..... CORNELL
2. Model No..... 6H75-4
3. Serial No..... 1770
4. Impeller Dia..... 13

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## FIELD TEST DATA

Flow Rate (gpm)	Pressure (psi)	Incoming Pressure (psi)	Total Head (feet)
2040.0	65.0	19.9	104.2

<----- Voltage ----->		<--- Current --->		-->  <-Power Factor->		<-Kilowatt->	
(volt)		(amps)		(%)		(kw)	
469.0	471.0	471.0	90.3	90.0	91.3	85.2	62.8

Electrical Horsepower	Water Horsepower	Overall Efficiency	Rated Efficiency
84.2	53.7	63.7%	GOOD

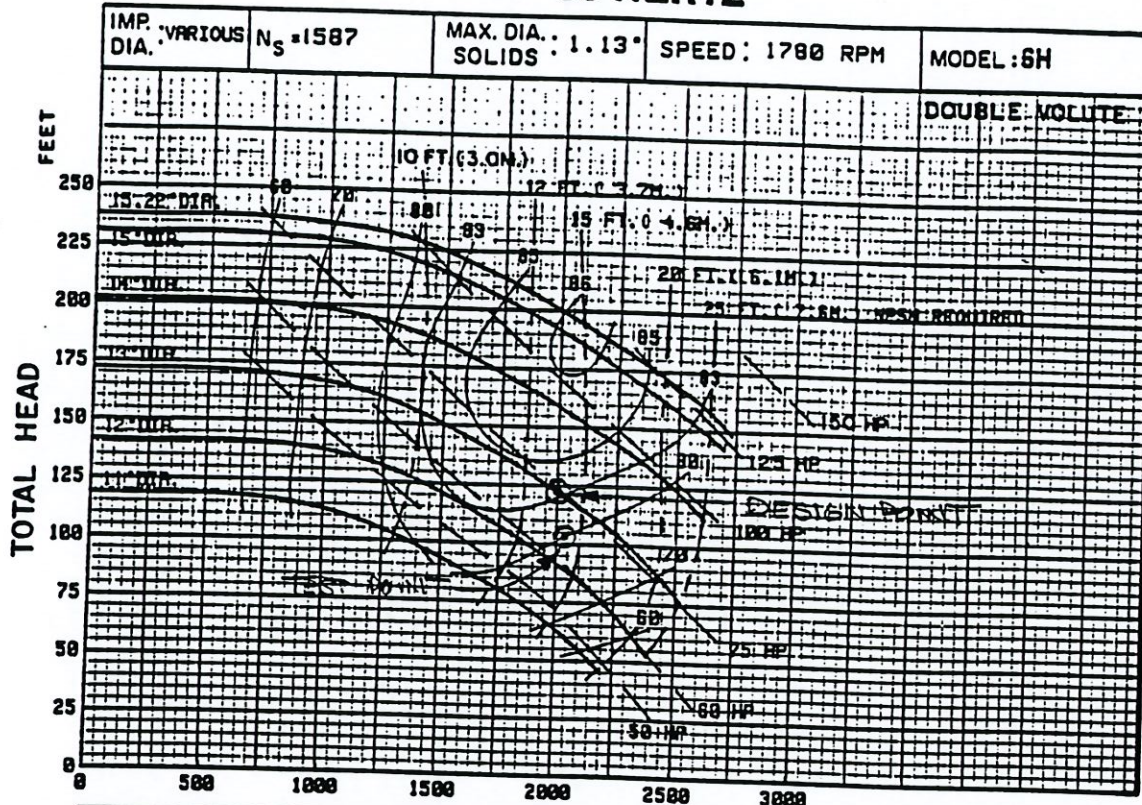


# MODEL 6H

## SPEED 1800 & 1200 RPM

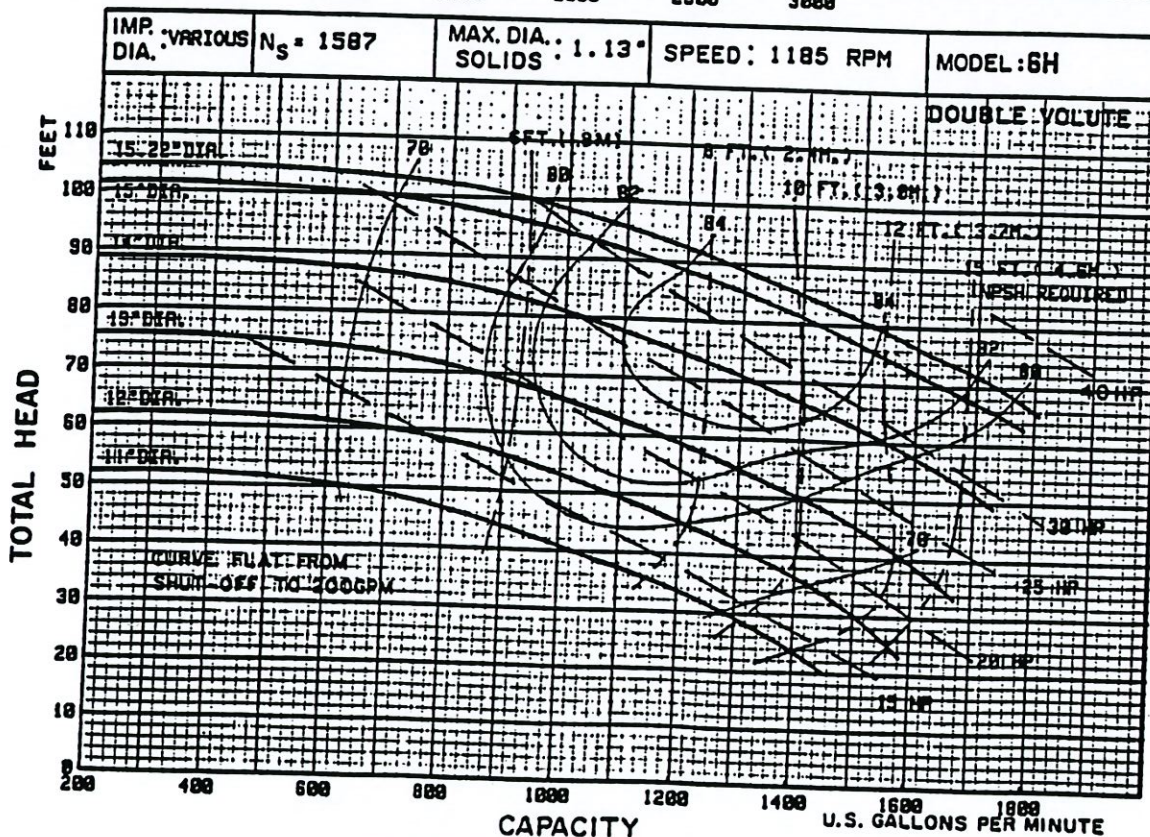
### VARIOUS IMPELLER

#### 60 HERTZ



Performances shown are for close coupled electric configuration with packing. Other styles may require horsepower and/or performance adjustments.

FT. x .305 = METERS  
GPM x .227 = CUBIC METERS PER HOUR





# PUMPING PLANT EFFICIENCY

THE OVERALL PUMPING PLANT EFFICIENCY IS THE RATIO OF WATER HORSE-POWER (output) TO THE ELECTRICAL HORSEPOWER (input). IT IS THE COMBINED EFFICIENCY OF PUMP AND MOTOR.

EXAMPLE: A 100 HORSEPOWER MOTOR IS RATED AS 90% EFFICIENT AND THE PUMP IS RATED AS 80% EFFICIENT, SO THE OVERALL EFFICIENCY IS  $90\% \times 80\% = 72\%$ .

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OVERALL EFFICIENCY RATING TABLE

MOTOR SIZE (HP)	LOW	FAIR	GOOD	EXCELLENT
7.5-10	44.9% OR LESS	45-52%	53-57.9%	58% OR ABOVE
15-30	47.9% OR LESS	48-55.9%	56-60.9%	61% OR ABOVE
40-60	52.9% OR LESS	53-59.9%	60-64.9%	65% OR ABOVE
75 TO 500	55.9% OR LESS	56-62.9%	63-68.9%	69% OR ABOVE

LEVEL 3  
=====

PUMP TEST AND SYSTEM INSPECTION  
Bonneville Power Administration

Name.....:NELSON SOMERS  
Address.....:2777 W. YOUNG RD.  
City,State,ZIP.:FILLMORE, CA. 93015  
Utility.....:SURPRISE VALLEY  
Account #.....:3744  
Inspector(s)...:FRED ZIARI

Inspection #...:SV092292-2  
Inspection Date:9/22/92  
BPA Area/Dist...:SNAKE RIVER  
# Irrig Acres...:300  
Crop Type(s)...:ALFALFA/PASTURE

\*\*\*\*\*

NOTE!! This form is intended to determine which conservation retrofit measures are eligible under Bonneville Power Administration's cost share program. It does not provide accurate system redesign information. Growers retrofitting systems are responsible for obtaining and using system redesign data from their irrigation dealers.

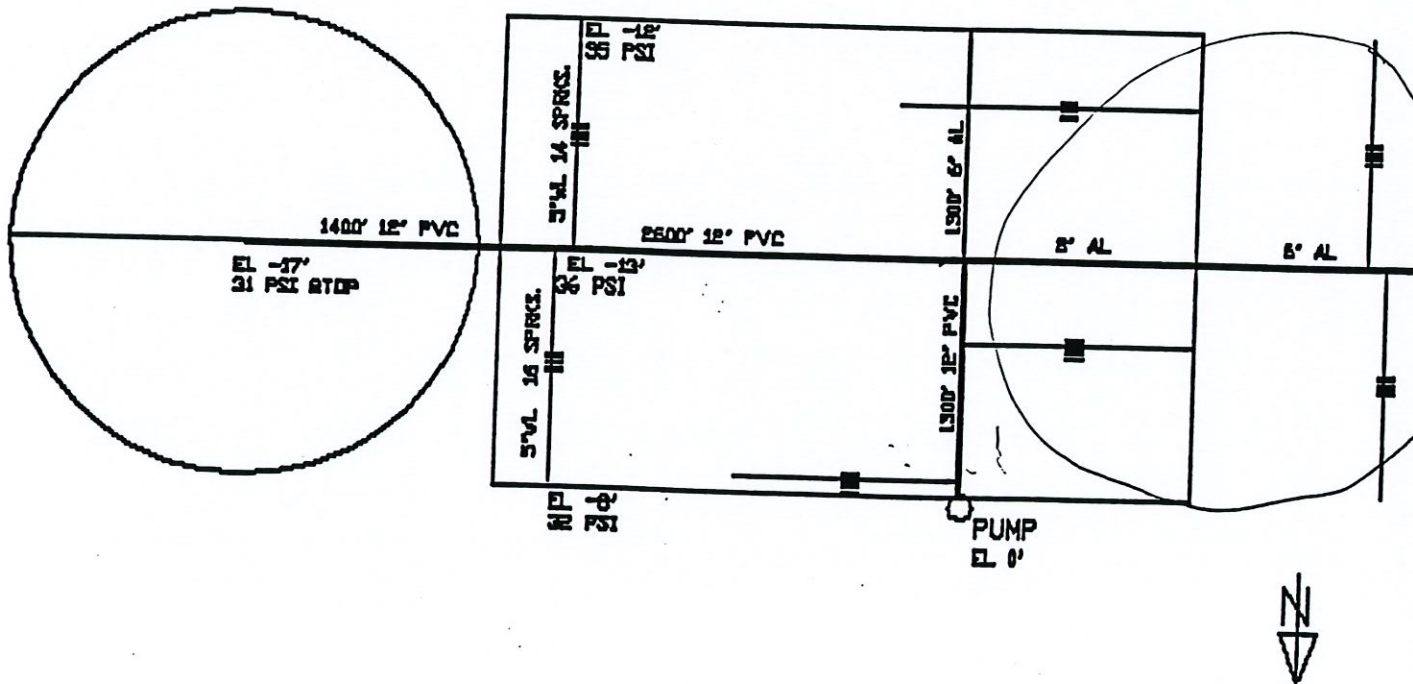
SYSTEM LAYOUT AS TESTED:

WELL #1

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Bonneville Power Administration  
INITIAL PUMP TEST FORM

Inspection #...:SV092292-2

A. # of Pumps in System 2

Pump # 1

MAIN X BOOSTER

SERIES PARALLEL

B. MOTOR DATA

1. Make.....:U.S.
2. Frame #.....:365TP
3. Rated HP....:75
4. Rated Volts:460
5. Rated Amps.:88
6. RPM.....:1770
7. Meter #.....:3744

C. PUMP DATA

1. Make.....:AURORA
  - a Centrifugal:
  - b Turbine-Sub:X
2. Model #....:FH
3. Serial #...:V76-72121
4. Rated Head.:116 ft.
5. Rated Flow.:2200 gpm
6. Implr Dia.:NA in.
7. Intake Dia.:NA in.
8. Intake Len.:NA ft.
9. # of Stages:3
10. Shaft Dia.:NA in.
11. Airline Len:NA ft.
12. Airline psi:NA psi
13. Calc Lift...:0.0 ft.

D. POWER INPUT DATA

1. Disc Revolutions....:
  2. Meter Constant Kh...:
  3. CTR.....:
  4. PTR/Multiplier.....:
  5. Time.....: sec  
kW Metered= 0.0 kWe
- |                       | 1-2   | 1-3   | 3-2   | Average  |
|-----------------------|-------|-------|-------|----------|
| 6. Line Voltage.....: | 470.0 | 471.0 | 471.0 | 470.7    |
| 7. Amperage.....:     | 78.6  | 82.0  | 85.3  | 82.0     |
| 8. Power Factor..(%): | 94.7  | 94.7  | 94.7  | 94.7     |
| kW Measured=          |       |       |       | 63.3 kWe |

E. FLOW AND PRESSURE DATA

1. Measurement Device.:ULTRASONIC
2. Pipe ID.....:7.791 in.
3. Pipe Material.....:STEEL
4. Flow Reading.....:2040 gpm
5. Discharge Pressure.:20.0 psi

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F. PUMPING WATER LEVEL AND FRICTION LOSSES

1. Pumping Lift.....:65.0 ft.
2. Suction Head.....:0.0 ft.
3. Gauge in feet.....:0.0 ft.
4. Water Level Fluct...:0.0 ft.
5. Misc Frict Losses...:3.0 ft.

G. EXISTING PUMPING PLANT CHARACTERISTICS

1. Total Dynamic Head.:114 ft.
2. Flow.....:2040 gpm
3. Water Horsepower...:58.8 WHP
4. Input Horsepower...:84.8 EHP
5. EST BRAKE HP.....:76.3 BHP
6. Pumping Plant Eff...:69.4 %

Bonneville Power Administration  
INITIAL PUMP TEST FORM

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Inspection #...:SV092292-2

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A. # of Pumps in System 2

Pump # 2

MAIN BOOSTER X SERIES PARALLEL

B. MOTOR DATA

1. Make.....:MARATHON
2. Frame #.....:365TC
3. Rated HP....:75
4. Rated Volts:460
5. Rated Amps.:91
6. RPM.....:1770
7. Meter #.....:3744

C. PUMP DATA

1. Make.....:CORNELL
  - a Centrifugal:X
  - b Turbine-Sub:
2. Model #.....:6H75-4
3. Serial #....:222127
4. Rated Head.:NA ft.
5. Rated Flow.:NA gpm
6. Implr Dia...:13 in.
7. Intake Dia.:NA in.
8. Intake Len.: ft.
9. # of Stages:
10. Shaft Dia... in.
11. Airline Len: ft.
12. Airline psi: psi
13. Calc Lift...:0.0 ft.

D. POWER INPUT DATA

1. Disc Revolutions....
  2. Meter Constant Kh..:
  3. CTR.....:
  4. PTR/Multiplier.....:
  5. Time.....: sec
  - kW Metered= 0.0 kWe
- |                       |          |       |       |         |
|-----------------------|----------|-------|-------|---------|
|                       | 1-2      | 1-3   | 3-2   | Average |
| 6. Line Voltage.....: | 469.0    | 471.0 | 471.0 | 470.3   |
| 7. Amperage.....:     | 90.3     | 90.0  | 91.3  | 90.5    |
| 8. Power Factor..(%): | 85.2     | 85.2  | 85.2  | 85.2    |
| kW Measured=          | 62.8 kWe |       |       |         |

E. FLOW AND PRESSURE DATA

1. Measurement Device.:ULTRASONIC
2. Pipe ID.....:7.791 in.
3. Pipe Material.....: STEEL
4. Flow Reading.....:2040 gpm
5. Discharge Pressure.:65.0 psi

F. PUMPING WATER LEVEL AND FRICTION LOSSES

1. Pumping Lift.....:0.0 ft.
2. Suction Head.....:46.0 ft.
3. Gauge in feet.....:0.0 ft.
4. Water Level Fluct...:0.0 ft.
5. Misc Frict Losses...:0.0 ft.

G. EXISTING PUMPING PLANT CHARACTERISTICS

1. Total Dynamic Head.:104 ft.
2. Flow.....:2040 gpm
3. Water Horsepower...:53.7 WHP
4. Input Horsepower...:84.2 EHP
5. EST BRAKE HP.....:75.8 BHP
6. Pumping Plant Eff...:63.7 %



Bonneville Power Administration  
 LOW PRESSURE RETROFIT OPTIONS  
 FOR SET SYSTEMS OR PIVOTS

SET SYSTEM X # HLines Inspection #...:SV092292-2  
 CENTER PIVOT X # WLines 7

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H. FIELD ELEVATIONS

1. Highest Irrigated Field Elevation...: 20.0 ft.
2. Lowest Irrigated Field Elevation...: -17.0 ft.
3. Is Flow or Pressure Control Recommended? YES
4. Elevation of critical sprinkler as tested.....: -8.0 ft.
5. Potential critical sprinkler elevation.....: 20.0 ft.
6. Does a runoff problem appear to exist now? NO
7. After retrofit, will there be a runoff problem? NO

I. REQUIRED PRESSURE AT CRITICAL POINT

1. Low Pressure Sprinkler Recommendation.....: 35.0 psi
2. Flow or Pressure control loss (5psi).....: 5.0 psi
3. REQUIRED OPERATING PRESSURE.....: 40.0 psi 92.4 ft.

J. LATERAL DATA --If Applicable

	# 1	# 2	# 3	# 4
1. Nozzle Diameter(s)...(in)...	9/32	9/32		
2. Average Pressure....(psi)...	35.0	35.0		
3. Flow per Sprinkler..(gpm)...	13.73	13.73	0.00	0.00
4. # of Sprinklers.....	16	14		
5. Lateral Flow.....(gpm)...	220	192	0	0
		Total Flow =		412

K. CRITICAL SPRINKLER PRESSURES

1. First Sprinkler Pressure.....: 36.0 psi
2. Last Sprinkler Pressure.....: 32.0 psi
3. LOWEST/AVERAGE/OTHER PRESSURE.....: 32.0 psi
4. Mainline Pressure Adjustment.....: 0.0 psi
5. Elevation Adjustment.....: -12.1 psi
6. ADJUSTED CRITICAL PRESSURE.....: 19.9 psi 45.9 ft.

L. POTENTIAL TOTAL HEAD SAVINGS

- |                                      | PSI   | FEET  |
|--------------------------------------|-------|-------|
| 1. ADJUSTED CRITICAL PRESSURE.....   | 19.9  | 45.9  |
| 2. REQUIRED OPERATING PRESSURE.....  | 40.0  | 92.4  |
| 3. POTENTIAL TOTAL HEAD SAVINGS..... | -20.1 | -46.5 |

NOTE! A negative number indicates an increase in pressure is suggested

NOTES:



Bonneville Power Administration  
 MAINLINE RETROFIT OPTIONS

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Inspection #.:SV092292-2

NOTE!! These procedures are not sufficient to fully analyze systems with parallel pipe or pump networks.

M. MAINLINE CALCULATION PROCEDURES:

1. Calculate the velocity in each mainline section with laterals positioned for maximum head conditions.
2. Calculate friction loss in each mainline section.
3. Resize (or size for parallel pipeline) all mainline sections with a velocity greater than 7 fps to reduce velocity to less than 5 fps.
4. Calculate the effect these changes will have on total head.
5. Use the PROPOSED flow for the retrofit condition to determine eligibility.

Mainline Section Number	Length (ft)	Inside Dia (in)	C* Value	Flow (gpm)	Velocity (fps)	Hf/100 (ft)	Total Frictn (ft)	Head Redctn (ft)
1. Current Retrofit	2600	12.00	150	1400	3.97	0.37	9.63	0.0
2. Current Retrofit	1300	12.00	150	1200	3.40	0.28	3.62	0.0
3. Current Retrofit	1400	12.00	150	1000	2.84	0.20	2.78	0.0
4. Current Retrofit								0.0
5. Current Retrofit								0.0
6. Current Retrofit								0.0
7. Current Retrofit								0.0
8. Current Retrofit								0.0
9. Current Retrofit								0.0
10. Current Retrofit								0.0
11. POTENTIAL TOTAL HEAD REDUCTION (sum section 1 thru 10)								0.0
*Steel.: C=100								
*Alum...: C=120								
*PVC...: C=150								
*Other.: See hydraulic handbook								

$$Hf/100 = 1054 * (gpm^{1.852}) / (C^{1.852} * dia^{4.8655})$$



Bonneville Power Administration  
SUMMARY

Inspection #...:SV092292-2

N. ACTION

HEAD SAVINGS

- 1. Install low pressure sprinklers or nozzles = -46.5 ft.
- 2. Retrofit high-energy-loss pipe and fittings
  - a. Mainline Friction Loss Savings = 0.0 ft.
  - b. Fittings Loss Saving (show work) = 0.0 ft.
  - c. Partially Closed Valve Savings = 0.0 ft.
  - d. TOTAL (a+b+c) = 0.0 ft.
- 3. SYSTEM TOTAL HEAD SAVINGS (1+2d) = -46.5 ft.

O. PUMPING PLANTS INFORMATION

1. Existing

Pump #	TDH	GPM	WHP	EHP	BHP	EFF
1	114.2	2040.0	58.8	84.8	76.3	69.4
2	104.2	2040.0	53.7	84.2	75.8	63.7
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5						
6						
<b>TOTAL</b>	<b>218.4</b>	<b>2040.0</b>	<b>112.5</b>	<b>169.1</b>	<b>152.1</b>	

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1100  
750  
-----  
1850

2. Proposed

Pump #	TDH	GPM	WHP	E S T I M A T E D			EFF
				EHP	BHP		
1	135.0	1600.0	54.5	78.6	70.8	69.4	
2	130.0	1600.0	52.5	75.7	68.2	69.4	
3	0.0	0.0	0.0	0.0	0.0	0.0	
4	0.0	0.0	0.0	0.0	0.0	0.0	
5							
6							
<b>TOTAL</b>	<b>265.0</b>	<b>1600.0</b>	<b>107.1</b>	<b>154.4</b>	<b>138.9</b>		

P. SYSTEM INFORMATION

- 1. Total Plant Efficiency (existing) =  $(WHP_e/EHP_e) * 100 = 66.5 \%$
- 2. Total Plant Efficiency (proposed) =  $(WHP_p/EHP_p) * 100 = 69.4 \%$
- 3. Operating Hours per Year (based on kWh usage)  
(Avg kWh/yr) \* (Meter Portion) / kWh = 1607 Hrs/Yr
- 4. Average Acre Inch per Year (based on kWh usage)  
(GPM) \* (Op Hrs/Yr) / (452.6 \* Acres) = 24.14 Acre inch

Bonneville Power Administration  
POTENTIAL ENERGY SAVINGS

Inspection #.....:SV092292-2

Q. HISTORICAL kWh USAGE AND RATE DATA

1. Annual Metered kWh usage

N/A	Year	kWh
	1992	241440
	1991	175840
	1990	190560
X	1989	
X	1988	
f.	Average	202613 kWh/Yr

2. Rate Data

a.	HP Charge/month.....:	0.00 dollars
b.	kWh/hp @ no Charge.:	0.00
c.	Fixed Cost/kWh.....:	3.60 cents
d.	HP Charge/yr.....:	0.00 dollars
e.	Total Nameplate HP.:	150 hp/meter
f.	Average cost/kWh....:	3.60 cents

R. PUMPING PLANT COMPARISONS

	a. EXISTING	b. PROPOSED
1. Total Head (O1 and O2)	218 FTe	265 FTp
2. Flow (O1 and O2)	2040 GPMe	1600 GPMp
3. Pumping Plant Efficiency	66.5 %e	69.4 %p
4. Input Kilowatts	126.1 kWe	115.2 kWp
5. Input Horsepower (O1 and O2)	169.1 HPe	154.4 HPP
6. ESTIMATED BRAKE HORSEPOWER	152.1 BHPe	138.9 BHPP

S. ENERGY SAVINGS, ENERGY CAP AND MINIMUM GUARANTEE

1. Estimated kWh Saved Annually and Estimated Energy Cap:

CALCULATION METHOD:  
\*1=KW, 2=KW/GPM :1

	ESTIMATED Measure kWh Savings	Eligible	Energy Cap
a. Low Pressure Savings (N1/R1a)*Avg kWh/Yr =	0	NO	\$0
b. Mainline Savings (N2a/R1a)*Avg kWh/Yr=	0	NO	\$0
c. Fittings Savings (N2b/R1a)*Avg kWh/Yr=	0	NO	\$0
d. Flow Savings (Flow diff)*kWh/GPMe=	14800	YES	\$3,256
e. Efficiency Savings (Eff diff)*kWh/EFfp =	2789	YES	\$614
f. TOTAL POTENTIAL KWH* SAVED AND ENERGY CAP	17589		\$3,870

\* METHOD 1=KW,2=KW/GPM:1

2. MINIMUM GUARANTEE = \$15 \* ( Installed Nameplate HP ) =  
= \$15 \* ( 150 ) = 2250 dollars

NOTE: Due to weather conditions, crop requirements, water levels, usage patterns, etc., the above estimates may vary from year to year.

THIS SYSTEM IS ELIGIBLE FOR THE MEASURES MARKED ABOVE WITH 'YES'.



**WATER WELL CONTRACTOR**

The original and first copy of this report are to be filed with the

STATE ENGINEER, SALEM, OREGON 97310  
within 30 days from the date of well completion.

RECEIVED  
AUG 30 2021

**WATER WELL REPORT**

STATE OF OREGON

(Please type or print)

(Do not write above this line)

AUG 27 1976

State Well No. \_\_\_\_\_

State Permit No. \_\_\_\_\_

405/18E-1a  
(2131)

UNITED RESOURCES DEPT.

**(1) OWNER:**

Name Robert P. Johnson  
Address Rt 6, Box 4461  
Seaside, Oregon 97130

**(2) TYPE OF WORK (check):**

New Well  Deepening  Reconditioning  Abandon   
If abandonment, describe material and procedure in Item 12.

**(3) TYPE OF WELL:**

Rotary  Cable  Dug   
Driven  Jetted  Bored

**(4) PROPOSED USE (check):**

Domestic  Industrial  Municipal   
Irrigation  Test Well  Other

**PIPING INSTALLED:**

1 1/4" Diam. from 7-1 ft. to 277 1/2 ft. Gage 250  
" Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Gage \_\_\_\_\_  
" Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Gage \_\_\_\_\_

**PERFORATIONS:**

Perforated?  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.

**(7) SCREENS:**

Well screen installed?  Yes  No

Manufacturer's Name \_\_\_\_\_  
Type \_\_\_\_\_ Model No. \_\_\_\_\_  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ Set from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ Set from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**(8) WELL TESTS:**

Drawdown is amount water level is lowered below static level

Was a pump test made?  Yes  No If yes, by whom? INTERSTATE  
Yield: 2300 gal./min. with 47 ft. drawdown after 2 hrs.

Ballor test \_\_\_\_\_ gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.

Artesian flow \_\_\_\_\_ g.p.m.

Temperature of water 54 Depth artesian flow encountered \_\_\_\_\_ ft.

**(9) CONSTRUCTION:**

Well seal—Material used CEMENT  
Well sealed from land surface to 18 ft.  
Diameter of well bore to bottom of seal 12 in.  
Diameter of well bore below seal 16 in. - 277  
Number of sacks of cement used in well seal 50 sacks  
Number of sacks of bentonite used in well seal 0 sacks  
Brand name of bentonite \_\_\_\_\_  
Number of pounds of bentonite per 100 gallons of water \_\_\_\_\_ lbs./100 gals.  
Was a drive shoe used?  Yes  No Plugs 10 Size: location 11 ft.  
Did any strata contain unusable water?  Yes  No  
Type of water WASTEWATER Depth of strata 23-101  
Method of sealing strata off CASING & CEMENT  
Was well gravel packed?  Yes  No Size of gravel: \_\_\_\_\_

**(10) LOCATION OF WELL:**

County CLATSOP Driller's well number \_\_\_\_\_  
1/4 1/4 SE 1 Section 1 T. 40S R. 18E W.M.  
Bearing and distance from section or subdivision corner \_\_\_\_\_

**(11) WATER LEVEL: Completed well.**

Depth at which water was first found 23 ft.  
Static level 29 ft. below land surface. Date 7/26/76  
Artesian pressure \_\_\_\_\_ lbs. per square inch. Date \_\_\_\_\_

**(12) WELL LOG:**

Diameter of well below casing 7 1/8  
Depth drilled 520 ft. Depth of completed well 520 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
STICKY BROWN CLAY TEP-SIT	0	3	WB
YELLOW CLAY	3	23	
FINE BLACK HEAVY SAND	23	24	
SANDY YELLOW CLAY	24	45	
COARSE BROWN SAND	45	46	
DRY SANDSTONE	46	52	
COARSE BROWN SAND	52	52	
BROWN SANDSTONE	60	67	
BROWN COARSE SAND	67	80	
YELLOW SHALE ESTIMATED SANDSTONE	80	95	
HEAVY COARSE SAND	95	107	WB
SANDY YELLOW CLAY	107	125	
YELLOW CLAY	125	242	
BROWN SANDSTONE	242	272	
HARD BLACK BASALT	272	301	
YELLOW CLAY	301	308	
BLACK BASALT	308	311	
YELLOW CLAY	311	314	
BLACK BASALT	314	330	
DECOMPOSED BLACK BASALT EST. YELLOW CLAY	330	333	
BLACK BASALT	333	357	WB
BROKEN BLACK BASALT	357	520	

Work started 7/15/76 19 Completed 7/26/76 19  
Date well drilling machine moved off of well 7/26/76 19

**Drilling Machine Operator's Certification:**

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.  
[Signed] \_\_\_\_\_ Date 8/24, 1976  
(Drilling Machine Operator)  
Drilling Machine Operator's License No. 656

**Water Well Contractor's Certification:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.  
Name E.E. STONEY & SON WELL DRILLING, INC.  
(Person, firm or corporation) (Type or print)  
Address 3047 1/2 ST. KLAMATH FALLS  
[Signed] \_\_\_\_\_  
(Water Well Contractor)